MAPPING STUDENT SUCCESS AND CAREERS WITH GEOSPATIAL TECHNOLOGY

BCC Geospatial Center of the CUNY CREST INSTITUTE
A satellite center formed under the CUNY CREST Institute
Visit us at www.bcc.cuny.edu/geospatial/
BCC students have the twin objectives of completing their studies with excellent grades and securing jobs in a competitive environment that demands cutting-edge skills. Geospatial Technology is an emerging field of study that includes Geographic Information System or GIS, Remote Sensing (RS) and Global Positioning System (GPS). Geospatial technology enables us to acquire data that is referenced to the earth and use it for analysis, modeling, simulations and visualization. Geospatial technology allows us to make informed decisions based on the importance and priority of resources most of which are limited in nature. Geospatial technology may be used to create intelligent maps and models that may be interactively queried to get the desired results in a STEM application or may be used to advocate social investigations and policy based research. It may be used to reveal spatial patterns that are embedded in large volumes of data that may not be accessed collectively or mapped otherwise.

Several BCC faculty and students participated in scholarly activities since 2010 which helped in the dissemination of geospatial technology on campus and enabled the college to form a central core that is essential to build a reputation of excellence in emerging technologies. I am delighted to announce that the BCC Geospatial Center was launched on the 3rd October, 2014. The center was formed as a satellite center under the already existing CUNY CREST Institute (http://crest.cuny.edu/). The center promotes education and research in geospatial technology and works collaboratively with the industry to create career pathways. It provides opportunities for BCC-CUNY students and faculty to learn and acquire hands-on skills at the state-of-the-art Geospatial Computing Center. The center has received numerous awards and grants from federal and private agencies apart from funding by the CUNY Workforce development initiatives.

Two new pathway courses (Introduction to Geographic Information System and Introduction to Remote Sensing) were offered by the University. These courses provide BCC students a rare opportunity to learn concepts and acquire hands-on training by using industry standard software for analyzing and modeling different types of data. Lab manuals written with a place-based and problem solving approach by the center’s affiliated faculty are made available to students at subsidized prices. The learning materials developed at the center are designed to foster spatial thinking and cognition. Affiliated faculty at the center has been delivering seminars and information sessions to different departments at BCC-CUNY to provide an insight into geospatial applications and collaborations. BGCCCI works with the CUNY collaborative programs including the College Now program which enrolls over 25,000 students each year from New York Public Schools. A 14-week GIS course – Introduction to Geographic Information System (GIS 11; 3 credits) was offered to high school students who successfully completed the course requirements and earned 3 valuable college credits. A National Summer Transport Institute sponsored by the Federal Highway Administration and US Department of Transportation sponsored a 1-week intensive geospatial workshop for middle and high schools. The center has a history of working with school students particularly those from resource poor institutions in the NYC region.

The proposed Associate in Applied Sciences degree program in Geospatial Technology will prepare students for entry level positions and provide students with the educational foundation necessary for a four-year degree. Internship programs with NASA (Climate Change), NOAA-CREST, Long Island Rail Road, MTA, EPA, DEP etc. will provide BCC students insight into geospatial applications in the real world and professional environment. International collaborations with the City of Townsville, Australia and the IBM – Smarter Cities project will provide much needed global exposure to students.

The Geospatial Computing Center (330, Meister Hall) is a state-of-the-art facility that will present students with a unique one-stop environment to perform a multitude of analyses, simulations and
modelling. Students, Interns, faculty and collaborators will have access to large volumes of geospatial datasets including spaceborne imaging spectroscopy data sets for their projects and use a super computer to process them. A large repository of open source data and cloud based computing platforms at the center will present users endless possibilities to perform spatial analysis for a wide range of applications. The center has been attracting interns and collaborators from all parts of the world which has provided BCC-CUNY students a unique opportunity to learn. Interns from Italy, Australia, University of Maryland, Stony Brook College, LaGuardia Community College, City College of New York, the United Nations, York College, Pratt Institute, and CUSP-NYU have participated in supervised multidisciplinary projects which has facilitated the development of a unique learning environment for BCC-CUNY students.

Our accomplishments at BCC and CUNY have been appreciated by many. On the 3rd March, 2017 CUNY hosted its first ever GIS summit at the CUNY Law School. The event highlighted the importance of geospatial technology and its wide range of applications for the university. It emphasized the critical role that CUNY has to play in reducing the skill gaps in the geospatial industry. As we grow the center’s spatial activities and sphere of influence in the region and beyond, we would like to take this opportunity to thank all our collaborators and partners for their continual support.

Dr. Sunil Bhaskaran
Professor and Founding Director
BCC Geospatial Center of the CUNY CREST Institute
Foreword by CUNY University Vice-Provost for Research, Dr. Mark E. Hauber

It is with great pleasure that I write this foreword expressing my enthusiastic support for the Bronx Community College Geospatial Center of the CUNY CREST Institute (BGCCCI). The information provided in these pages details the many impressive accomplishments of the Geospatial Center. The original vision, conceived in 2010, to establish a Geospatial Center at Bronx Community College (BCC) of the City University of New York (CUNY), and the subsequent steps taken by an inspired group of faculty and students to realize this vision, is a genuine CUNY success story. I commend the pioneering efforts of the founding director, Dr. Sunil Bhaskaran, who has spearheaded the promotion and development of geospatial research and technology at BCC.

The Center is already an established intellectual hub for geospatial research at CUNY, and has been involved in numerous scholarly activities that support CUNY’s core values of igniting curiosity and promoting diversity. Affiliated faculty have received significant research funding from Federal Agencies and private organizations, and have mentored students in applications of geospatial technology in both STEM and non-STEM disciplines. Faculty members who work with the Geospatial Center have also developed teaching materials and textbooks using a place-based and problem solving approach. The hands-on exercises outlined in the textbooks utilize geospatial datasets that resulted from grant-funded research. Faculty affiliated with the center have designed new core courses that have shown an increasing enrollment since 2015. The newly proposed Associates in Applied Sciences (A.A.S.) degree in geospatial technology is designed with input from an advisory board that includes leaders from the geospatial industry. Although, originally designed to be a terminal degree, two CUNY baccalaureate institutions—Lehman and York Colleges—have already agreed to articulate their B.S/B.A courses with the A.A.S. program, thereby facilitating expanded career opportunities for greater numbers of CUNY students. The Pathways to Geospatial Technology and Careers grant proposal that is currently being reviewed by the National Science Foundation Advanced Technological Education (ATE) program will enable the BCC Geospatial Center to grow into a regional hub for geospatial research, training, and workforce development.

The BGCCCI's Geospatial Computing Center located in Meister Hall at BCC provides a very special environment in which students can perform cutting-edge research on issues that are national and international in scope. The Center’s affiliated faculty have conducted collaborative research with national and international institutes that often result in peer-reviewed publications co-authored by BCC students. The Center also hosts interns from numerous local-area four-year colleges both within and outside of CUNY including, New York University, Stony Brook University, York College, The City College of New York, and The New School.

The Geospatial Center is a satellite center of the CUNY CREST Institute founded in 2010 at The City College of New York. The Geospatial Center was formally established in 2014 by a memorandum of understanding between BCC and the CUNY CREST Institute. The BGCCCI is a wonderful example of the “CUNY American Dream Machine” and Chancellor J.B. Milliken’s vision for a “Connected University” because it provides a unique, specialized, high quality, and affordable educational experience. The Center has received numerous accolades, is frequently visited by renowned experts from many fields, and is growing in reputation by the day. I expect the Center to do many great things in the future and I wish it my very best.
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Memorandum of Understanding

and

Inauguration of the BCC Geospatial Center of the CUNY CREST Institute (BGCCCI)

3rd October, 2014

(left) Dr. Claudia Schrader (BCC Provost and Senior Vice President) and Dr. Reza Khanbilvardi (Director of NOAA-CREST Institute) signing the MOU to create CUNY’s only and unique Geospatial Center.

(Above) BGCCCI Ribbon-cutting event, 3rd October, 2014.
What is Geospatial Technology?

Geospatial technology is an umbrella phrase associated with a suite of technologies including remote sensing, Global Positioning System (GPS), Geographic Information System (GIS), information technologies and field sensors, that helps in capturing, storing, processing, displaying and disseminating information tied to a particular location. It is therefore a set of technological approaches, such as GIS, photogrammetry, and remote sensing, for acquiring and manipulating geographic data.

**Geographic Information System or GIS:** A geographic information system (GIS) lets us visualize, question, analyze, and interpret data to understand relationships, patterns, and trends. GIS benefits organizations of all sizes and in almost every industry. There is a growing interest in and awareness of the economic and strategic value of GIS. A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data. Data is the fundamental component of any GIS and the power of a GIS is determined by its ability to relate different data in a spatial context and to reach a conclusion about this relationship. A combination of two data types: spatial (location data) and attributes (descriptive data) are related and presented visually by means of an interactive user interface, GIS software, using raster and vector graphics.

Sources of data are vast (i.e. weather bureaus, NASA, municipalities, etc.) and the combination of sources often leads to more revealing and descriptive data analysis via spatial modelling and statistical methods. Given the availability of GIS components and that 80% of data can be geographically referenced, building your own GIS represents an increasingly viable and useful Management Information System (MIS) across many applications.

**Remote Sensing:** Remote sensing can be defined as the collection of data about an object from a distance. Humans and many other types of animals accomplish this task with aid of eyes or by the sense of smell or hearing. Earth scientists use the technique of remote sensing to monitor or measure phenomena found in the Earth's lithosphere, biosphere, hydrosphere, and atmosphere. Remote sensing of the environment by geographers is usually done with the help of mechanical devices known as remote sensors. These gadgets have greatly improved the ability to receive and record information about an object without any physical contact. Often, these sensors are positioned away from the object of interest by using helicopters, planes, and satellites. Most sensing devices record information about an object by measuring an object’s transmission of electromagnetic energy from reflecting and radiating surfaces. These sensors are either passive or active. Passive sensors detect energy when the naturally occurring energy is available such as sun energy. Active sensors provide their own energy source as radar waves and record its reflection on the target. Remote sensing imagery has many applications in mapping land-use and cover, agriculture, soils mapping, forestry, city planning, archaeological investigations, military observation, and geomorphological surveying, among other uses. For example, foresters use aerial photographs for preparing forest cover maps, locating
possible access roads, and measuring quantities of trees harvested. Specialized photography using color infrared film has also been used to detect disease and insect damage in forest trees.

**Global Positioning System:** The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS satellites circle the earth twice a day in a very precise orbit and transmit signal information to earth. GPS receivers take this information and use trilateration to calculate the user's exact location. Essentially, the GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver how far away the satellite is. Now, with distance measurements from a few more satellites, the receiver can determine the user’s position and display it on the unit's electronic map.
GEOSPATIAL INDUSTRY

- A HIGH GROWTH INDUSTRY
- FACING CRITICAL SHORTAGE OF SKILLED LABOR
High Growth Industry Profile - Geospatial Technology

**Industry Snapshots**

- Revenues from the public sector lead geospatial market growth and account for more than one-third of total revenue. While federal governments were among the early adopters of GIS technology, recent trends toward devolving more responsibilities to states and localities have spurred those entities to become important consumers of GIS. While industries in the regulated sector, such as utilities, telecommunications, transportation and education, are the largest consumers of GIS/geospatial solutions, private-sector growth remains dependent upon business adoption based on the added-value these technologies provide. (Daratech, GIS/Geospatial Markets and Opportunities)
- Geospatial products and specialists are expected to play a large role in homeland security activities. Information gathering needs to protect critical infrastructure have resulted in an enormous increase in the demand for such skills and jobs. (Lorraine Castro, NIMA Human Resources Department)
- Because the uses for geospatial technology are so widespread and diverse, the market is growing at an annual rate of almost 35 percent, with the commercial subsection of the market expanding at the rate of 100 percent each year. (Geospatial Information & Technology Association)

**Workforce Issues**

**Skills, Competencies, and Training**

- Emerging occupations within the geospatial technology industry require developing competency models for new applications of geospatial technology. Aligning training in geospatial applications with industry developed competency models is essential to developing the necessary pipeline of skilled workers. This approach is necessary for preparing entry-level workers with basic skills to ensure career success.
- Increasing demand for readily available, consistent, accurate, complete and current geographic information and the widespread availability and use of advanced technologies offer great job opportunities for people with many different talents and educational backgrounds. (U.S. Geological Survey and U.S. Bureau of Labor Statistics)

**Image and Outreach to the Public**

- The public is not aware of the necessary skill sets and competencies needed to prepare for the diverse career opportunities available within the geospatial technology industry. Reaching an industry-wide consensus that defines "geospatial," its technologies and its applications is of utmost importance. There is also a need for better industry promotion by creating a national image campaign that raises awareness about the industry and dispels stereotypes and misperceptions.
Pipeline

- In order to meet industry growth requirements employers need to examine alternatives to the traditional pipeline. These alternatives include recruiting young workers through apprenticeship and high school/college dual-enrollment-dual-credit agreements as well as tapping nontraditional labor pools to diversify the workforce.

(Source: ASPRS: The Imaging and Geospatial Information Society)

- College preparatory courses that emphasize the sciences are suggested for individuals interested in pursuing careers in photogrammetry, remote sensing and geographic information systems (GIS).
- For individuals who do not wish to pursue an advanced degree, there is a substantial demand for technicians in geospatial information technology. Many 2-year academic and technical institutions offer education and training in photogrammetry, remote sensing and GIS and related fields. Associate degree and certificate programs in GIS, surveying, photogrammetry and similar curricula provide a sound foundation for work experience or for transfer to other academic institutions for further education.
- It is highly recommended that any individual wishing to pursue a career in photogrammetry, remote sensing and GIS participate in an internship program to obtain hands-on experience as part of their preparation for employment, in addition to formal education.

ETA in Action

In June 2003, Employment and Training Administration (ETA) announced the High Growth Job Training Initiative to engage businesses with local education providers and the local/regional workforce investment system to find solutions that address changing talent development needs in various industries.

In October 2005, the Community-Based Job Training Grants were announced to improve the role of community colleges in providing affordable, flexible and accessible education for the nation's workforce.

ETA is investing more than $260 million in 26 different regions across the United States in support of the WIRED (Workforce Innovation in Regional Economic Development) Initiative. Through WIRED, local leaders design and implement strategic approaches to regional economic development and job growth. WIRED focuses on catalyzing the creation of high skill, high wage opportunities for American workers through an integrated approach to economic and talent development.

These initiatives reinforce ETA's commitment to transform the workforce system through engaging business, education, state and local governments, and other federal agencies with the goal of creating a skilled workforce to meet the dynamic needs of today's economy.
ETA has invested over $8,367,110 in the geospatial industry. This includes six High Growth Job Training Initiative grants totaling $6,438,653 and one multi-industry Community-Based Job Training Grant totaling $1,928,457. Leveraged resources from all of the grantees total $7,132,543.
LEARN MORE ABOUT GEOSPATIAL TECHNOLOGY AT BCC-CUNY

Contact: Director of BGCCCI – Professor Sunil Bhaskaran
Meister Hall Room No: 807
Tel: 1.718.289.5566/5233; Fax: 1.718.289.6448
Sunil_director.bgccci@bcc.cuny.edu
www.bcc.cuny.edu/geospatial/

If you are satisfied enroll in course/s by browsing CUNY FIRST

• Learn about professional environments and job opportunities in the Geospatial Sector
• Enroll in one of the many Internship opportunities
• Check your Blackboard and with the Instructor for more information about these Internships

Transition successfully into the work environment & launch your career!
PIONEERING EFFORTS TO PROMOTE AND DEVELOP GEOSPATIAL TECHNOLOGY AT BCC BEGAN IN 2010

• We delivered seminars & Workshop to students, faculty and staff.

• We mentored students in focused undergraduate research projects using industry standard software.

• We mentored them in focused cutting-edge research.

• We inspired and trained them to present at conferences.

• We published with them in peer-reviewed journal articles.

• We helped them to received scholarships and awards.

• We captured all scholarly activities in geospatial newsletters
MENTORING STUDENTS IN FOCUSED RESEARCH

Geospatial students (with their mentors) presenting at the CUNY CREST, BCC Science Fairs
We are proud to showcase some peer-reviewed journal articles co-authored by BCC students!

This achievement is a Jewel in the Crown of all our achievements simply because it takes a lot of analytical skills, patience, perseverance and time commitment to publish in peer-reviewed journals.


Jimenez, K., Aboubaker Kaba, Brown, Leroy, Mohammad Rahman and Bhaskaran, S., (2012), Undergraduate research and faculty supervision – Research Experiences in Geospatial Science and Technology Projects at the Bronx Community College, Perspectives on Undergraduate Research and Mentoring (PURM, Issue 3-1, pp. 1-9).


Urban planning requires timely acquisition and analysis of spatial and temporal information for making informed decisions. Whilst spectral analysis of images has yielded satisfactory results, they may not be enough to extract urban features from very high resolution (VHR) satellite data such as Ikonos. A combined spectral and spatial approach may be useful to map urban features particularly those with low spectral separability. The paper describes an approach using both per-pixel and object-based classification methods for mapping urban features from VHR satellite data. We tested the suitability of Ikonos satellite data for mapping urban features at a planning scale in near-real time. Parametric per-pixel supervised (maximum likelihood) classification methods are used in combination with object-based classification methods to map urban features over New York City. We employed a combination of spectral, spatial attributes and membership functions for mapping urban features. Accuracy assessment was carried out using ground truth data acquired from field surveys and from other reliable secondary data sources. Whilst the per-pixel approach produced reasonable overall accuracy, specific classes such as white roof and vegetation registered low user's accuracy (79.82 and 70.07) respectively. We were able to improve the accuracy of these two classes by using an object-oriented classification method further to 89% and 97%. The combined approach using per-pixel and object-oriented classification methods may prove useful in the analysis of VHR satellite data like Ikonos, Quickbird, since it results in higher per class accuracy. In this study different urban classes were extracted that can be exported into GIS for further analysis and modeling. Mapping output generated in this study may be beneficial to planning, environmental and emergency services that depend on current geospatial information either for mapping land use changes, or for rapid updating of current maps and spatial information, and management of resources in near real-time. Given the high spatial accuracy, but limited spectral resolution of Ikonos data, we recommend a combined classification approach for extracting sub-pixel urban features. © 2010.

Featuring BGCCCI Research Associate - Leroy Brown

Leroy Brown is a Baccalaureate Student at York College the City University of New York (YC-CUNY) in Queens, New York. He earned an Associate Degree in psychology from Bronx Community College and is currently working on his BA in Environmental Science Major and psychology Minor at York College/ CUNY. He has been working with Dr. Sunil Bhaskaran for 3 years and has published 3 peer reviewed articles in journals and proceedings of conferences. His research interests include using geospatial technologies for urban environment.
AUTOMATED FEATURE EXTRACTION ALGORITHMS FROM MULTISPECTRAL SPACE BORNE DATASETS

BROWN, Leroy, Earth and Physical Sciences (EHS major), York College of the City University of New York, 94-20, Guy R. Brewer Blvd, Jamaica, NY 11451, BHASKARAN, Sunil, Bronx Community College of CUNY, 2155 University Ave, Bronx, NY 10453 and DHAR, Ratan, Earth and Physical Sciences, York College of the City University of New York, 94-20, Guy R. Brewer Blvd, Jamaica, NY 11451, rdhar@york.cuny.edu

Many current and future applications in spatial science will require proper management of resources demanded for spatial and temporal information about terrestrial targeted objects acquired from multiple sources. According to the literature, pace of urban development and consequent sprawls demands an analysis of the current spatial and temporal data that can lead to a better understanding of infrastructural needs, land use planning, imperviousness and monitoring of water and air pollution. Tremendous effort has to go into helping to monitor environmental changes in cities that has increasing population growth, which results into the expanding of urban sprawls such as newly develop housing facilities, more denser congestion of traffic, flooding, more commercial business areas that all leads to reduction in air and water quality. Urban environments are also dynamic and undergo rapid physical and socioeconomic changes.
These environmental changes can only be accurately study and monitor by using satellite imagery data, which give real time results and provide a view over the area of interest.

Managing resources demands spatial and temporal information about terrestrial target objects. The paper describes innovative methods of extracting target objects from worldview-2 MSS Dataset over the Bronx Borough in New York. Spatial and spectral attributes were computed to build algorithms that were used to extract different sets of target objects from the imagery. The algorithms were tested on a study area and the accuracy of the classification was estimated using the confusion matrix model. Results show that several target objects from urban areas such as the Bronx may be extracted in near-real time from satellite data. The approach described in the study may be applied to any geographic region that has similar characteristics to the Bronx.
We have designed new courses in Geospatial Technology at BCC.

These Introductory level courses (GIS 11 & GIS 12) provide a unique opportunity for students to learn Geospatial Technology.

The courses are offered in the pathways Scientific E bucket, which means that their credits are transferrable to any of the 600,000 CUNY college students!
INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEM (GIS 11)
Pathways Courses offered in Fall, Spring and Summer
(3 Credits; 4hrs)

INTRODUCTION:
This 3 credit 4 hr. new course will introduce you to the world of Geographic Information System or GIS. GIS is an emerging technology that provides an environment to analyze geographic data for modeling spatial relationships between different objects and people on the earth. A GIS enables us to ask important questions such as - How far is a River from residential areas? How many houses may be exposed to the danger of flooding in case the river over flows it banks? How many people in New York City may be exposed to air pollution? The course will be of interest to science and social studies students and all others who have a need to analyze data and visualize patterns for making informed decisions. GIS is an emerging discipline in the US and the Geospatial Industry is growing exponentially. However, the GIS industry is facing critical shortage in skilled labor and there are many job opportunities that are yet to be filled. A well trained GIS student can easily find employment in the exponentially growing geospatial industry.

COURSE SYLLABUS:
The course will be taught by lectures and lab work. Key concepts in GIS will be taught by lectures and hands-on training will be provided in the state-of-the-art GIS computer lab. Assessment will be by a combination of quizzes, written assignments, and term paper.
Prerequisites: RDL 2 and ENG 2 and MTH 5, if required

For any questions on the course please contact Director of BCC Geospatial Center of the CUNY CREST Institute. Prof. Sunil Bhaskaran – Sunil_director.bgcct@bcc.cuny.edu /Sunil.Bhaskaran@bcc.cuny.edu
INTRODUCTION TO REMOTE SENSING (GIS 12)
Pathways Courses offered in Fall, Spring and Summer
(3 Credits; 4hrs)

INTRODUCTION:
This 3 credit 4 hr. new course will introduce you to the world of Remote Sensing or RS. RS is an emerging technology that involves the study of the earth by analyzing images taken from sensors mounted on satellites and aircrafts. Different types of remotely sensed data may be acquired for studying urban growth, drainage patterns, water pollution, transportation networks, disaster zones. GIS is an emerging discipline in the US and the Geospatial Industry is growing exponentially. However, the Geospatial industry is facing a critical shortage in skilled labor and there are many job opportunities that are yet to be filled. A well trained RS student can easily find employment in the exponentially growing geospatial industry.

COURSE SYLLABUS:
The course will be taught by lectures and lab work. Key concepts in RS will be taught by lectures and hands-on training will be provided in the state-of-the-art geospatial computer lab. Assessment will be by a combination of quizzes, written assignments, and term paper.
Prerequisites: RDL 2 and ENG 2 and MTH 5, if required

Ask a question
Remotely Sensed Data
Acquire data
Analyzed and Classified Remotely Sensed Data
Examine the results
Applications for Planning, Agriculture, Homeland security, Social sciences, Emergency, Disasters, Pollution, Transportation, Mining, Archaeology, Environment
Implement policies
Emerging Discipline
High Growth Industry
Many Job Opportunities
Many Scholarships and Internship Opportunities

For any questions on the course please contact Director of BCC Geospatial Center of the CUNY CREST Institute. Prof. Sunil Bhaskaran – Sunil_director.bgcci@bcc.cuny.edu /Sunil.Bhaskaran@bcc.cuny.edu

Get hands-on training at the State-of-the-Art Geospatial Computing Center (ME 330)
The enrollment in the courses have grown since it was first offered in fall 2015. We have designed an assessment and evaluation model that has enabled us to maintain low attrition rates and high pass rates!

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<thead>
<tr>
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**GIS 11 & GIS 12 course offerings since fall 2015.**
### Ethnicity of Geospatial Participants

- **Asian**: 43%
- **African American**: 15%
- **African**: 15%
- **Carribean**: 21%
- **Hispanic**: 6%

### Genders of Geospatial Participants

- **Male**: 56%
- **Female**: 44%
We are also designing a new Associate of Applied Sciences in Geospatial Technology.

The A.A.S. Geospatial Technology will be a terminal degree for securing employment.

Or

A pathway for higher studies since the A.A.S. program articulates with 4-year College as well!
Articulation agreements with Lehman and York College will facilitate career pathways.

GIS 11 – Introduction to Geographic Information System
GIS 12 – Introduction to Remote Sensing

Associate of Applied Science in Geospatial Technology
60 Credits

Terminal Degree

Enter geospatial industry with competitive skills

BS 4-year college 120 credits (60 from A.A.S. at BCC)*

Pursue Advanced Studies
MS → PhD

The AAS Geospatial Technology articulates with the B.A. Geography (Lehman College); B.S in Geology and Environmental Science (York College)
We wrote books and manuals with a place-based approach by using examples from the Bronx and New York City regions.

We made sure that the costs of the manuals were affordable to all!

We used the grants from Federal Agencies, Corporate Companies and CUNY Workforce Development Initiative (WDI) to create the learning materials that were used in the manuals.
BGCCCI AFFILIATED FACULTY AUTHORED TEXTBOOKS AND LAB MANUALS THAT WERE WRITTEN WITH A PLACE-BASED APPROACH

Introduction to Geographic Information System

Spatial Questions
Where am I?
Where is the College?
How far am I from the subway?
How many people were affected by the Cyclone?
Where are the water hydrants?
Which street is blocked?

A lab manual for STEM and Non-STEM disciplines
Second Edition
Sunil Bhaskaran

INTRODUCTION TO REMOTE SENSING

A Lab Manual for STEM and Non-Stem Disciplines

Sunil Bhaskaran
We are proud to showcase some geospatial applications (STEM) projects by students and interns.
Mapping Global Urbanization Patterns from the high resolution spaceborne data
Sunil Bhaskaran, Dhruvkumar Bhatt, Amrutha Elampurathy and Leroy Brown

Spaceborne data from high resolution satellite data may reveal spatial patterns that may assist in mapping key environmental variables, urbanization pattern and sprawls. Due to their synoptic coverage, spatial, and spectral resolution they may be used in image and spatial analyses. The analysis of time-series of spaceborne data may provide valuable inputs to a wide range of scientists from the STEM and Non-STEM disciplines. In this project we will develop feature extraction algorithms based on the computation of spatial and spectral attributes of urban objects. Rule sets and algorithms will be designed to extract vegetation, built-up areas, water bodies, types of roofing materials etc. The anticipated results from the project may assist in improving the accuracy of climate change models, planning and development, emergency management, land cover mapping, and sustainable development.

False Color Composite of Abha, Saudi Arabia
False Color Composite of Bangalore, India
False Color Composite of Mumbai, India

Acknowledgments: The data from the project is provided by DigitalGlobe Foundation and the project is managed by the BCC Geospatial Center of the CUNY CREST Institute (BGCCCI). www.bcc.cuny.edu/geospatial/
Feature Extraction of Environmental Features from High-Res Satellite Data

Introduction: Feature extraction is a powerful tool for mapping environmental variables. Spatial and spectral attributes are calculated on remotely sensed data. Prior to feature extraction, the image needs to be segmented and demarcated to extract specific features that may be classified and mapped. Segmentation is the process of partitioning the image into segments on the basis of internal homogeneity criteria with spectral, spatial, and/or texture characteristics. These segments ideally correspond to real-world objects.

Objective: Study aims to develop automated algorithms to map the land cover over section of New York City (Bronx). Different spectral and spatial attributes were computed on a high-resolution World-View 2 (8 Band) satellite data set to extract specific environmental features.

Results: We hope to classify the images accurately using advanced techniques and use the extracted results for mapping the urban environment over the Bronx. The extracted features from WorldView-2 MSS satellite datasets may give us additional information about target objects from the image. Showing urban features that have been extracted, which may be beneficial to both federal and private sectors and identifying urban terrestrial target objects in other cities, while comparing the Bronx feature targets with other boroughs. Also, useful to urban planners and policy makers.

BSGCCI WEB SITE - www.bcc.cuny.edu/geospatial
Automated extraction of Land Cover Land Use from high-res Satellite data

**Introduction:** Remote sensing is the science of extracting information about the earth and its processes by satellites, aircrafts etc. It is a non-destructive mode of observing, monitoring and recording details about the earth without coming into direct contact with any of the features on the earth.

**Objective:** Study aims to develop classification techniques to map the land cover over section of New York City (Bronx). Different per-pixel mapping techniques were employed over a high-resolution World-View 2 (8 Band) satellite data set.

**Results:** The image was classified using a supervised classification technique. The classes created clearly define areas of water, grass, trees, roads, building structures, etc. This information can then be used to answer Questions related to urbanization patterns, population growth, Natural disasters, or a variety of other applications.
Applications of Global Positioning Systems

**Introduction**: Imagine a map that accounts for one’s movement, location, and allows that person to manipulate certain characteristics of the map to allow for navigation and bookkeeping. A Global Position System is the culmination of all these abilities and more. With proper training and knowledge, one can utilize the device to his or her advantage.

**Objective**: The device being used here is the Trimble GeoXH. The device must be fully charged and outside in order to be of any use. Using the device, a point, line, and area feature will be constructed. In addition a waypoint will be used to guide the user to a desired point in the map.

**Conclusion**: After finding a point, line, and area feature, the results will be displayed on a map and then a waypoint will be assigned to understand how one can get to a point and how the device will guide the person to get the point. Then the file will be saved. This device is already used in various pieces of technology and is a public necessity for navigation and geographic guidance. Certain devices are much more powerful for heavy analysis for those who need a more powerful GPS such as the GeoXH.

Left: The Navigation Screen for General Navigation and Waypoints

Right: The Feature Map that shows the point, line, and area features that were made.
Applications of Imaging Spectrometry

**Introduction:** Hyperspectral analysis is the collection of data from a satellite image that is used to determine the mineral composition of the surface that the image was taken from. This, as opposed to procedures like soil sampling, will not require any contact with the surface that is under analysis. In addition, fewer tests are needed to determine composition of multiple locations in proximity of each other.

**Objective:** The aim is to analyze the composition of the ground in Cuprite, Nevada, USA. Using high-quality images of Cuprite from AVIRIS and ENVI geospatial analysis software, the emission of light from the photo was corrected and then analyzed to determine the composition of the surface of each pixel that the image has.

**Conclusion:** By accounting for atmospheric and other types of interference in addition to techniques used to combine groups that contain similar properties, a confident mapping of different material types in the region was acquired. Such data can now be used for mining, agriculture, and environmental analysis.

**Above:** How Imaging Spectrometry analyses the ground.

**Right:** A Black and White image of Cuprite, Nevada

**Specific Regions of Interest with the same properties.**

**A visualization of the regions on the map.**
Geospatial applications (Non-STEM) projects
For
Social Sciences, Archaeology, History,
By Students and Interns
Projects:-
Gentrification of population, community and diversity mapping, environmental justice, green index in cities
Urban Heat Island
New Clean Energy Initiatives – Impact on social and economic policy
Social behavior – Harlem River Pollution
A diverse campus provides an opportunity to the college community to learn about cultures, backgrounds, lifestyles and food. A great example of a united globe is one in which its inhabitants co-exist despite their personal differences and lifestyles characterized by religion, culture, food, dressing styles etc. Successful college environments and experiences are built on campuses which promote diversity and ensure that there is a balanced representation of diversity.

In many instances there may be limited methods of visualizing diversity on campus. Mapping diversity on college campuses by using Geographic Information System (GIS) tools provides an effective method of visualizing time-series of data that may reveal hidden spatial patterns. It guides the college in addressing diversity related issues. The project demonstrates a method of mapping diversity by using time-series of data from the office of Institutional Research at BCC. As a case study if diversity of students from two major and popular streams environmental and earth sciences are mapped and assessed. The results of maps are there for all to see and make their own interpretations.

We thank the BCC-Office of Institutional Research for providing us with the data for the above project. The project was carried out at the state-of-the-art Geospatial Computing Center of the BCC Geospatial Center of the CUNY CREST Institute. www.bcc.cuny.edu/geospatial/
Change in Hispanic of Latino Population by Total Household from 2000 to 2010
The Geospatial Center has received several grant awards and funding. The grants have provided both monetary and in-kind support that has enabled the center to sustain itself for a long time.
<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
<th>Funding Status</th>
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</thead>
<tbody>
<tr>
<td>2017</td>
<td>Training BCC students and faculty in 3D Geographic Information System Data Analysis and Modeling [Status - funded $16,000].</td>
<td></td>
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<tr>
<td>2017</td>
<td>Teaching Early Childhood Students about Geospatial Faculty Mentor: Sunil Bhaskaran [Status – funded $2,500].</td>
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<td>2017</td>
<td>CUNY WIDE GIS research repository [Status-funded $15,000].</td>
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<td>2016</td>
<td>Hyperspectral Imagery Classification, Search, and Retrieval National Geospatial Intelligence Agency, [Status – under preparation $300,000].</td>
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<td>2016</td>
<td>Pathways to Geospatial Technology and Careers National Science Foundation-Advanced Technological Education, 2016, [Status - in Review $900,000].</td>
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<tr>
<td>2016</td>
<td>Mapping Air Quality in New York City using Geospatial Technology. Student Tech Fee [Status- funded $7,000].</td>
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<td>2016</td>
<td>Interning to Careers in Geospatial Technology, Job Linkages Grant – BCC-OAA [Status – funded $9,564.00].</td>
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<td>2015</td>
<td>NASA Space Grant faculty mentor release time [Status – funded $6,000].</td>
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<td>2015</td>
<td>‘Mapping Global Urbanization Patterns’. Digital Globe Foundation [Status –funded $120,000].</td>
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<td>BCC Environmental Technology Program NYCDEP Internship Program. Approved for funding but not awarded [Status – Nominated but not funded $13.500].</td>
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<td>2015</td>
<td>BCC STEM Majors participation in the 2015 Black Engineer of the year award (BEYA), Conference, Washington, DC (Grant from NOAA-CREST Institute [Status – funded $5,500].</td>
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<td>2015</td>
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<td>2013-2015</td>
<td>Workforce Development Initiative Grant – CUNY, [Status – funded $38,000].</td>
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<td>2013</td>
<td>Grant from Federal Highway Administration (FHWA) to host Summer Transport Institute at BCC. (Grant from Federal Government), [Status – funded $15,000].</td>
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<td>2013</td>
<td>Faculty Travel Grant, BCC-CUNY, [Status – funded $500].</td>
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<td>2013</td>
<td>Environmental System Research Institute (ESRI) &amp; PCI Geomatics Natural Resources imagery grant award. (Grant from the Industry) [Status – funded $100,000].</td>
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<td>2011-2013</td>
<td>Exelis curriculum development software grant award, (Grant from the Industry) [Status – funded $20,000].</td>
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<td>2012/2013</td>
<td>GeoEye Foundation Award, GeoEye, Colorado, USA, GeoEye. Foundation Imagery Grant Award. Mapping land cover and land Megacities. (Grant from the Industry) [Status – funded $15,000].</td>
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<td>2010/2011</td>
<td>GeoEye Foundation Award, GeoEye, Colorado, USA Grant award from GeoEye Foundation, Colorado, USA. (Grant from the Industry) [Status–funded $15,000].</td>
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<td>2011</td>
<td>BCC Foundation Faculty Scholarship Support Grants, [Status – funded $500].</td>
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<tr>
<td>2011</td>
<td>BCC Global Initiative - Faculty Presidential Grant Awards, [Status – funded $4,000].</td>
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Funding from the Industry
ESRI, PCI GEOMATICA, RADARSAT, BLACKBRIDGE, Digital Globe Foundation, Exelis Inc.

Funding from
The City University of New York
Workforce Development Initiative
PSC CUNY
Office of Academic Affairs
BCC-IT Student Tech Grant
Graduate Research Technology Initiative Grant

Funding from the Federal Government
Federal Highway Administration,
US Department of Transportation
BGCCCI Interns

We have grown in stature also because of talented interns from:

University of Maryland, United Nations, CUSP-NYU, Stony Brook, York College, City College of New York, New School and LaGuardia Community College
Geospatial Technology is a High-Growth Industry Sector in the US.

• According to the Department of Labor, the Industry is growing at a staggering 35% rate.

• It is also an industry that is facing a severe shortage of skilled labor!

• This means that there is no better time to acquire skills in geospatial technologies!!!
Sample Geospatial Technology
Job descriptions and
Company profiles
1. GIS Remote Sensing

A GIS remote sensing professional analyzes data from digital and analog aerial photographs, global positioning systems (GPS), and space or airborne sensors. Working closely with field personnel and the chief GIS unit, the remote sensing specialist plans, develops, and operates GIS-related functions such as image processing, mapping, and other applications. The position requires at least 2 years' extensive experience, in-depth knowledge of GIS software, and fluency in written and spoken English.

2. GIS Cartographer

A GIS cartographer is the person responsible for researching, designing, and producing digital geographical maps for use in intelligence, presentations, and interactive applications. Its responsibilities also include writing comprehensive reports on project findings and recommendations. Applicants must have at least one year's experience and be knowledgeable in map projections, data formatting, and geographic coordinate systems.

3. GIS Mapping

The job involves creating and maintaining printable maps for internet and other applications using ESRI mapping software. The position is responsible for evaluating and recommending appropriate hardware and software for producing maps and other GIS outputs. Candidates must have at least 3 years’ experience in GIS applications and demonstrate strong project management skills.

4. Geomatics

A geomatics specialist makes ground measurements; conducts digital mapping; and utilizes data from various sources such as aerial photography, satellites, and laser measuring systems. The data is then interpreted using computer-aided design and other software. Geographic information system jobs in geomatics require at least 2 years' experience, preferably in the oil and gas industry.

5. GIS Photogrammetry

One of the most challenging geographic information system careers, photogrammetry involves the operation of a softcopy stereo plotter using AutoCAD software to accurately collect 3D mapping detail from satellite imagery or aerial photography. Other responsibilities include volumetric analysis, aerial triangulation, and photo rectification and color balancing. To find geographic information system employment in photogrammetry, you must have strong interpersonal skills and more than 4 years' experience in software engineering.
6. Geospatial

A geospatial is one of the most in-demand geographic information system jobs. It involves researching, extracting, manipulating, analyzing, and integrating digital data and imagery from geospatial and research databases related to biodiversity. It is also responsible for processing digital imagery and performing customer information analysis. To start a geographic information system career in geospatial, you must have a minimum of 2 years' experience and knowledge of biodiversity.

7. GIS Digitizer

A GIS digitizer involves the preparation and maintenance of cartographic layouts, assembling maps, and performing digital data revisions and updates. Other responsibilities include the development and maintenance of GIS manuals and other continuity documents. Applicants must have an associate degree with a major in computer science or a GIS-related field.

8. GIS Technician

The job requires collecting data through GPS equipment, manual mapping methods, and mobile terminals for inputting into the geographic information system. Part of the job is to produce exhibits and reports using graphic and non-graphic tools. Finding geographic information system employment as a technician requires knowledge in GIS map reading and superb time management skills. Two years' experience or training in GIS applications is also essential.

9. GIS Manager

The position involves planning, implementation, and coordination of central geographic information systems. It has the authority to specify, acquire, operate, prioritize, and maintain major GIS systems including aerial photography, remote sensing, and digital mapping. To be considered for the job, you must have extensive experience in staff management as well as a high level of knowledge in language programming.

10. GIS Specialist

The GIS specialist heads a task force formed by the geographic information officer (GIO) to manage specific projects and exercise oversight responsibility over any ongoing development program. The job also involves developing a strategic plan, assisting in budget preparation, and conducting business development activities. To be a GIS specialist, you must have at least 8 years' experience in enterprise GIS as well as excellent verbal and written skills in the English language.

If you can combine technical aptitude with great interpersonal skills, the world of GIS is waiting for you. If you're interested to pursue a career in geographic information systems, here are the top 10 job opportunities in the field:
JOB DESCRIPTION OF A POSITION AT DIGITALGLOBE — A LEADING MULTINATIONAL COMPANY
Associate Geospatial Analyst

About the Company

Digital Globe is a leading provider of commercial high-resolution earth observation and advanced geospatial solutions that help decision makers better understand our changing planet in order to save lives, resources and time. Sourced from the world's leading constellation, our imagery solutions deliver unmatched coverage and capacity to meet our customers' most demanding mission requirements. Each day customers in defense and intelligence, public safety, civil agencies, map making and analysis, environmental monitoring, oil and gas exploration, infrastructure management, navigation technology, and providers of location-based services depend on Digital Globe data, information, technology and expertise to gain actionable insight. Digital Globe is a public company listed on the NYSE as DGI, and is headquartered in Westminster, Colorado.

Summary

The Geospatial Analyst will be responsible for providing technical support to customer projects involving dynamic geospatial information to include social media and foundational intelligence data. Key types of analytics expected will be fusing multiple sources of information into key findings, and geo-temporal pattern-of-life analysis to provide insight to customer requirements. Additionally, the candidate will possess excellent research skills to find meaningful information in unstructured data. All research and analysis will be aggregated into finished products that will be published to a diverse audience--therefore good writing and publishing skills are highly desired. S/he will ensure all of the products created meet quality and material specifications in accordance with customer needs. This position will assist in the implementation of emerging capabilities, using leading edge technologies to perform analysis and derive information from large geospatial data sets.

Responsibilities

The Geospatial Analyst will:

- Gather requirements, determine scope, and estimate hours needed to develop and deliver custom geospatial analytic solutions to our government customer
- Produce custom information layers derived from social media and other open-source data sources using COTS and proprietary software
- Collaborate daily with cross-functional internal and external team members and occasionally third party vendors, sometimes as project lead, and other times under other team member leadership
- Identify and implement improvements to system designs and processing methodologies to improve efficiency, scale, reliability, and mitigate operational risk
- Maintain production line operations and other tasks as needed to satisfy customers and fulfill contractual commitments
- Advise, train, mentor, and learn from other team members on technical topics
- Write procedures, methods, workflow documents and standard operating processes
Job Requirements

This person must possess a strong client focus and have the following experience:

- A Bachelor’s Degree in Information Technology, Geographic Information Science (GIS) or related field preferred or the equivalent combination education and experience. Master’s degree preferred.

Preferred Skills

- 1-5 years work experience in GIS, remote sensing, and/or photogrammetry
- 1-3 years scripting experience with Python, GDAL, ENVI IDL, and/or ArcGIS Model Builder.
- Ability to thrive in a fast-paced environment as an individual contributor on a transparent, agile team

Location:

Tampa, FL

Compensation

DigitalGlobe offers a generous compensation package including a competitive salary; choice of medical plan; dental, life, and disability insurance; a 401(K) plan with competitive company match; paid holidays and paid time off

Applicants for this position will be required to take and pass a drug test.

DigitalGlobe is an equal opportunity employer and considers qualified applicants for employment without regard to race, color, sex, sexual orientation, gender identity or expression, religion, national origin, marital or familial status, age, disability, veteran status, military service or application for military service, status with regard to public assistance, genetic information or any other characteristic protected by law.
INTERACTIONS WITH THE INDUSTRY

- BGCCCI is served by an Advisory Board that consists of members from the Industry.

- Invited Guest Lectures and Workshops is a unique feature of the Geospatial courses.

- We solicit feedback from industry on the scope and design of courses and programs.
Working with the Industry to create Geospatial Career Pathways

The BGCCCI Advisory Board

BGCCCI ADVISORY BOARD Chair – Dr. Sunil Bhaskaran – Director BCC Geospatial Center of the CUNY CREST Institute (As of 5-1-2017)

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<th>CUNY</th>
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| **BCC-OAA**  
Provisor Dr. Claudia Schrader/Dean Luiz Montenegro |
| **NOAA-CREST**  
Reza Khanbilvardi / Shakila Merchant |
| **BCC Departments**  
Chemistry - Neal Phillip, Physics - Jalil Moghadassi, B & IS - Howard Clampman |
| **BCC & CUNY STUDENTS**  
Nicola Cartagena (City College of New York), Leroy Brown (BGCCCI & York) |
| **CUNY COLLEGES**  
Paul Marchess (Provisor- Queensborough Community College)  
Meleties Panayioties (Provisor -York College) |
| **COLLEGE NOW**  
Susiya Rivera |
| **College Readiness Initiatives/College**  
LINC  
CUNY Collaborative Programs  
Sarah McConnell |

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<th>INDUSTRY</th>
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| **FEDERAL GOVERNMENT**  
NYS DOL  
Karen Coleman/Atul Skeffee |
| ***NASA-Jet Propulsion Lab**  
Tanvir Islam |
| **NASA**  
Matthew Pearce |
| **DIGITAL GLOBE**  
Devon Libby |
| **ENCANA IO**  
Jeremy Kinsley |
| **CARTO**  
Stuart Lynn, Michelle Ho |
| **TABLEAU**  
Meagan Corbett |
| **LANGAN**  
Paul Fisher, Michael Georgalas |
| **FSRI**  
Cina Martin, David LaShell |
| **BOUNDLESS**  
Anthony Calamito, Betsy Emmons |
| **MAPZEN**  
Alyna Wright |

OTHER UNIVERSITIES / INSTITUTIONS

Sanjiv Bhatia - Missouri University, Ashok Samal - Nebraska Lincoln

OFFICE OF RESEARCH CUNY – Eric Vicira
Workshops by the Industry,
Federal and International Agencies and
Institutes
Workshop by US Census Department

David Kraiker from the US Census delivering workshop at the Geospatial Computing Center
GIS students at BCC Geospatial Center had yet another wonderful opportunity to connect with an industry expert. This time it was Michael Georgalas, a Senior GIS Analyst from LANGAN, an environmental engineering company. Michael spoke to our students about LANGAN, his role in the company, the trends of GIS application and how it is shaping the industry, and how LANGAN uses Michael’s GIS expertise in their various engineering projects. He showed them some of the projects he has worked on where GIS was used which included Brownfield Redevelopment and Building Design. He was met with attentiveness, excitement and curiosity from the GIS students. The GIS students asked several questions regarding his GIS projects. By the end of the event, the GIS students were left with quite an impression on the versatility of GIS and how valuable it can be for companies like LANGAN. They even had the insight scoop on the upcoming internships available at LANGAN.
UrbanEyes 3D mapping project collaboration
4/13/2017 – 3-4 PM

Meeting with NYU faculty, students, and staff to discuss geospatial applications and collaborations.

Participants:
NYU --> prof. Debra F. Laefer, Ms. Brittnay O’Neill, Ms. Devon Frazier, Dr. Anh-Vu Vo, Mr. Howard Zhang.

BGCCCI --> prof. Sunil Bhaskaran, Leroy Brown, Asif Zaman and Tania Vara Mazariegos
Collaboration with New School-
Fresh food access for elderly in the Bronx and Milan
(5/12/2017 – 6/1/2018)

A comparative spatial analysis of two cities in Italy and USA.
Welcome to the second edition of the Geospatial Newsletter! Geospatial Newsletter reports on all activities related to geospatial sciences at BCC and each issue covers 3-4 months of activities (e.g., this issue covers activities from March, April, and May 2011). BCC has made several developments since August 2010. We are delighted to bring a list of events and the most recent developments in geospatial technology at BCC.

1. The Geospatial Newsletter may be accessed at the Chemistry and Chemical Technology website. The link is: http://www.bcc.cuny.edu/chemistry252-page-SpatialTechnology.

2. Dr. Sunil Bhaskaran was invited to deliver a presentation at the Provost Lecture Series at York College of CUNY on March 16, 2011. You can watch the presentation here: http://www.youtube.com/watch?v=4Y7jn9zA8.


4. Dr. Sunil Bhaskaran has been invited to represent BCC. The first official website of NY View is online and available for general viewing. NY View represeting New York State, is one of the members of AmericaView. NY View became an affiliate (non-funded) member of AmericaView on January 27, 2009. SUNY ESF led the proposal effort resulting in affiliate status. SUNY ESF is the official "member of record" and point of contact for New York View. In 2011, New York View will apply for associate membership status in AmericaView. Website: http://nyview.esf.edu/index.php#members.

5. Undergraduate student Juliana Lora has been accepted into NCAR's Undergraduate Leadership Workshop to be held in Boulder, Colorado, June 13–17, 2011. MODIS satellite data will be used to calibrate and map data collected at NCAR. This is great news for the department. Congratulations to Juliana Lora, who is also active as a Student Senator and chairperson of the Public relations committee. If you wish to know more about NCAR please visit its website at http://www.ucar.edu/educ_ outreach/ubw/.

6. ENV 11 students Karolyn Jiminez, Yamilde Hernandez, Mattias Gomez, Danielle Prince and Luige Luciano presented findings from a research project using GIS at the BCC Science Fair on April 7, 2011.

Third prize winners of the 2011 BCC Science Fair: ENV 11 and GIS Students: Mattias Gomez, Yamilde Hernandez, and Karolyn Jiminez, with their certificates.
• The BCC Geospatial Center is a one of a kind center in the CUNY system.

• It was established as a satellite center under the CUNY-CREST Institute that is administered by the City College of New York.

• It has a state-of-the-art geospatial computing center.

• It has a huge geospatial data archive.

• It has cutting-edge geospatial software that is also used by NASA, EPA, USGS, National Geospatial Intelligence Agency, US Defense and other leading agencies.

Visit the Center at

www.bcc.cuny.edu/geospatial/
BCC GEOSPATIAL CENTER OF THE CREST INSTITUTE (BGCCCI)

Meister Hall Room # 330, 2155 University Avenue
Bronx Community College of the City University of New York
Bronx, NY 10453
Tel: 1-718.289.5566/5233; Fax: 1-718.289.6448
www.bcc.cuny.edu/geospatial/

MAPPING WHAT MATTERS

‘Training Geospatial Technicians of the Future’
Geospatial technology is an invaluable tool for visualizing monitoring and modeling different phenomena and processes of the earth. The BCC Geospatial of the CREST Institute promotes education, training and cutting-edge research in the emerging field of geospatial technology. It supports the mission of NOAA-CREST center and aims to deliver excellence in education, research and outreach activities. The center will engage its multidisciplinary team of expert faculty and ethnically diverse group of talented students for developing spatial solutions. It will collaborate with institutions, federal and private agencies for developing internships, articulation programs and pathways to geospatial careers and advanced studies.

The geospatial laboratory consists of State-Of-The-Art facilities. It has the latest versions of image and spatial analysis software that is used in almost all federal and private agencies around the world. From conventional classification methods to new object based approaches the lab is equipped with software to train any BCC student in geospatial technology. The software is partially funded from CUNY’s Work Force Development Initiative (WDI) Grant Award (2013-2015). The lab also has a sophisticated ink-jet 44” wide format plotter and a color printer for producing superior cartographic output.

These tools will give BCC students, faculty and staff a great opportunity to learn new skills at a time when the geospatial industry is growing exponentially but also facing a critical shortage of skilled labor.

(left) state-of-the-art Geospatial Computing Center and (above) BCC’s students presenting geospatial project outcomes at the 2012 annual BCC science Fair
Endless possibilities in education and research

BGCCCI Activities

**Develop models to monitor phenomena and processes remotely:** Ground based data may be calibrated to satellite data for regular monitoring of pollution. Develop satellite monitoring stations in the Bronx.

**Develop simulation models:** ‘What if’ scenarios are critical to plan resources and manage the environment. Very high resolution (VHR) data and 3-D capabilities permit simulations of data.

**Tool to map spatial patterns of land processes and resources:** Land cover/Land use changes, urbanization trends, need to be visualized and understood at all scales for sustainable development. Image analysis of time-series of satellite data provides a tool to perform such analyses due to its synoptic, spectral and temporal properties.

**Design new Curriculum:** Designing new curriculum and collaborative projects with multidisciplinary faculty. Formulating of articulation agreements with 4-year colleges and pathways to careers.

**Model disparate datasets:** Complex processes involving large volumes of data have to be integrated and modeled to formulate decisions. A Geographic Information System provides an ideal environment to model complex data.

**Develop models to visualize social behavior:** Socio-economic characteristics need to be mapped to better understand pollution, crime, migration, tourism, solid waste, and transformation into smarter cities.
CANDIDATES CAN APPLY FOR INTERNSHIPS AT NASA, LIRR, NGIA, EPA, MTA AND SEVERAL LEADING AGENCIES WHO USE GEOSPATIAL TECHNOLOGY IN THEIR DAILY BUSINESS.

SUCCESSFUL CANDIDATES MAYBE ABSORBED BY COMPANIES AS FULL TIME EMPLOYEES!

MOST OF THE INTERNSHIPS ARE FOR UNDERREPRESENTED COMMUNITIES BY FEDERAL MANDATE.
New York Space Grant Community College Partnership Program

We’re looking for Community College students up to the challenge to join this exciting new network of NASA scientists and engineers in New York State.

The NYSG CCPP:
- Involves you in real research right now
- Introduces you to this exciting field & the people at its frontier – your new peers
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- Trains you to prepare for summer research and to graduate to a four-year college
- Organizes summer opportunities at your college, a four-year college, or NASA Center
- Provides fellowships to defray tuition for an academic semester
- Provides summer research fellowships
- Supports travel and lodging for summer internships as needed

Apply today!
Students should be enrolled in a 2-year or technical college, be a US citizen, and have an interest in pursuing a career in Science, Technology, Engineering, or Mathematics as evidenced by their application essays, and choice of courses and major. Students from groups underrepresented in the sciences – e.g., African Americans, Hispanics, Native Americans, and women – are particularly encouraged to apply. Please complete your application by Oct 16, 2015.

Visit the NYSG CCPP page at [http://astro.cornell.edu/spacegrant/ccprogram.html](http://astro.cornell.edu/spacegrant/ccprogram.html) for more information and the link to the application, or also email [paglione@york.cuny.edu](mailto:paglione@york.cuny.edu).
What is OSSI?
OSSI is a NASA-wide system for the recruitment, application, selection and career development of undergraduate and graduate students primarily in science, technology, engineering and mathematics disciplines. Opportunities for students in other disciplines are available.

Key Features for Students
Students have the ability to search and apply for all types of NASA internship, fellowship, scholarship opportunities in one system. A single internship or fellowship application places students in the applicant pool for consideration by mentors for all NASA internships or fellowships.

Getting Started for Students
1. Register in OSSI by going to the 'Log in/Register' tab
2. Create an interest profile to specify your areas of interest;
3. Complete an application;
4. Search and select opportunities of interest, identifying your top 15 prior to the end of the application period.
# NATIONAL AND INTERNATIONAL COLLABORATIONS

## Collaborations in the U.S.

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## International Collaborations

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BGCCCI HAS BEEN COLLABORATING WITH THE CITY OF TOWNSVILLE, AUSTRALIA
CITY OF DUBUQUE
AND
IBM SUPPORTED SMARTER CITIES PROJECTS SINCE 2013

A DELEGATION CONSISTING OF PROFESSORS: NEAL PHILLIP, SUNIL BHASKARAN, AARON SOCHA

WERE INVITED BY THE HONORABLE MAYOR OF TOWNSVILLE COUNCILLOR JENNY HILL TO VISIT THE CITY AND DISCUSS COLLABORATIVE PROJECTS
FOSTERING INTERNATIONAL COLLABORATIONS –
BCC TEAM VISIT TO AUSTRALIA

Team of professors led by Prof Neal Phillip were invited to the Land Down Under to visit the City of Townsville. The main focus of the visit was to see new clean energy projects in a real-world context and understand the issues that a city has to grapple with in their transition to an alternate form of energy. The visit was sponsored by the Office of the President of BCC and the City of Townsville lead by Mayor Jenny Hill and Greg Bruce (Chief Sustainability Officer). Highlights of the trip was the visit to the James Cook University, Hermit Park State School and Queensland Emergency Service.
INTERNATIONAL COLLABORATIONS – 2013

VISIT TO THE CITY OF TOWNSVILLE, AUSTRALIA

26 August–4 July, 2013

Report prepared by

Dr. Sunil Bhaskaran
Associate Professor
Department of Chemistry and Chemical Technology

BRONX COMMUNITY COLLEGE and CITY OF TOWNSVILLE
FOSTERING MULTIDISCIPLINARY COLLABORATIONS AT BCC

An important mission of BGCCCI is to build core institutional strength in geospatial technologies and we believe that by fostering multidisciplinary research we can achieve that goal!

We deliver geospatial workshops and seminars to college wide departments.
Presentation by Dr. Sunil Bhaskaran to Faculty from the Art and Music Department

Geospatial Technology and Data Visualization

World View – 2 Satellite Imagery Sydney Australia

Dr. Sunil Bhaskaran
Professor and Founding Director
BCC Geospatial Center of the CUNY CREST Institute
www.bcc.cuny.edu/geospatial
http://www2.cuny.edu/about/centers-and-institutes/
Applications of Geospatial Technology for Business Projects
Students of Professor Harini Mittal
March 28, 2017 11:00am-11:25am, BGCCCI Geospatial Computing Center, Meister Hall 330

Geospatial Technology has become a fast-growing, emerging field. Its broad range implications can be used to answer many real world questions. Here at the BCC Geospatial Center, the bright students of Dr. Harini Mittal had the wonderful opportunity to discuss how Geospatial Technology can be implemented in defining and achieving the goals of their business projects. Below is a summary of the student groups and their goals of their business projects. Students are encouraged to define their products and project ideas to better direct them in the use of geospatial technology.

Group 1: Lady, Christopher, Juan, Kimberly
Business Goal: Produce an app for courier service to customers and businesses while ensuring safe transactions to occur between clients in the Bronx location.

Geospatial Questions
• What is the demographics to build the Customer Profile?
• Where are the locations of all local businesses?

Group 2: Pablo, Andy, Jamie, Leslie, Daphne
Project Goal: Market self-charging case for cell phones relying on solar power and magnet/coil technology

Geospatial Questions
• Where are all the retail locations to market this charging case?
• What are the proximities of the retail locations to major highways?
• What are the demographics build Customer Profile?

Group 3: Stephanie, Tahmessha, Patrick, Daneesa
Project Goal: Market specialized mats that uses disposal sheets to collect disposed hair to salons.

Geospatial Questions
• How many salons in NYC? What are the locations?
• What is geographic and spatial distribution of Private/Public Ownership of salons?
• What are the non-spatial data of interest associated with salons?

For Further Information Contact:
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Sunil_director.bgccci@bcc.cuny.edu

Ariana Boston-Hill, Coordinator of BGCCCI
Ariana.Boston-Hill@bcc.cuny.edu

BCC Geospatial Center of the CUNY CREST Institute
2155 University Ave, Bronx
New York, 10453
www.bcc.cuny.edu/geospatial
Geospatial Technologies for Health and Human Services  
May 4, 2017 10:30am-11:30 am, BGCCCI Geospatial Computing Center, Meister Hall 330

The Public Health Students of Professor Stan’s Reader were cordially invited to attend an important health workshop at the BCC Geospatial Center. The workshop introduced Professor Reader and her students to GIS and its implication to Public Health. Adjunct Faculty Asif Zaman of BGCCCI provided a crash course in GIS to the students. Later the students mapped hypothetical Lead Concentrations of Public Schools in New York. Students learned the GIS process of obtaining and cleaning open source data and importing the data into ESRI’s ArcMap program. Students also understood the perils of using open source in terms of reliability. For most of Professor Reader’s students, GIS was entirely a new concept. However, by the end of the workshop, students recognized how the understanding of health issues can be enhanced with the aid of GIS.

For Further Information Contact:  
Dr. Sunil Bhaskaran, Director of BGCCCI  
Sunil_director.bgccci@bcc.cuny.edu

Artana Boston-Hill, Coordinator of BGCCCI  
Artana_Boston-Hill@bcc.cuny.edu

BCC Geospatial Center of the CUNY CREST Institute  
2155 University Ave, Bronx  
New York, 10453  
www.bcc.cuny.edu/geospatial
BGCCCI’s assessment model and evaluative activities.

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August 2, 2012, Bronx, New York—From sun-seared Mercury to the icy outer planets, sensors mounted on satellites are gathering useful data from virtually every corner of our solar system—except perhaps one: the Bronx. “The Bronx area has not produced high quality data,” explains Dr. Sunil Bhaskaran, an Assistant Professor at Bronx Community College (BCC) and an expert in the emerging field of geospatial technology. “There’s always a complaint from the Census Bureau, Department of Defense (DOD), National Aeronautics and Space Administration (NASA), about it.”

But a major new exploration of the Bronx is underway. The explorers are multidisciplinary faculty members and students from Bronx Community College. They are led by Dr. Bhaskaran, a member of the faculty of the BCC Department of Chemistry and Chemical Technology, who is focused on this revolutionary new way of comprehending our planet.

Geospatial technology uses the images captured by sensors in orbit above the earth with very down-to-earth information of all sorts—from census records, to data from global positioning devices in cars and cell phones, to facts collected by researchers in the field. All those pictures and statistics are entered into cutting edge computer software—and out pours maps overflowing with discoveries about the interaction between geography and human activity.
What fields of human endeavor can use such information? Ask Dr. Sunil Bhaskaran that question and he reels off real life applications of geospatial technology with the enthused rapidity of a scientist so in love with his area of expertise, his words barely keep pace with his thoughts. “The sky’s the limit!” he exults — though considering that space-roving satellites are involved, even the sky is no limit for geospatial technology:

1. **The environment.** Geospatial technology can map out the most effective locations for energy-producing windmills or solar panels.
2. **Business.** Shopping mall planners can use geospatial technology to determine nearby income levels or where to place a parking lot.
3. **Health.** The prevalence of obesity in a community can be displayed on a geospatial map, which can then be used to project health needs and services.
4. **Sociology.** Sunil is planning to work with a professor from the sociology department on using the technology in understanding spatial patterns of foreclosures in Mt Vernon.

Born in India, the 45-year-old Sunil came to The City University of New York from Australia with extensive experience in geospatial technology. Dr. Bhaskaran has a Ph.D. from the School of Geomatic Engineering, University of New South Wales. For 10 years, he taught the subject and conducted cutting-edge research at the School of Geomatic Engineering, University of New South Wales, Faculty of Engineering, University of Southern Queensland, Australia. During that time, he lent his expertise to the Corporate Strategy Division of the New South Wales Fire Brigades, using geospatial technology to identify potential fire and chemical hazards. This information was then instantly available to emergency first responders.

Sunil continued to preach the gospel of geospatial technology when he came to the United States in 2008 — for very non-scientific reasons. “I found my wife here,” he explains simply (presumably NOT with geospatial technology). His classes and lectures at CUNY’s Lehman and York Colleges and BCC, where he demonstrated the remarkable potential of the software, were instantly popular with students, faculty and staff. In 2010, Sunil set up shop at Bronx Community College. During the past two years, he has led six workshops for students and faculty and mentored some 20-student research projects. “We’ve installed a very specialized state-of-the-art software program here. We have tried to introduce geospatial technology to students in a very balanced way because they already have regular courses and busy schedules.”

The results have been impressive. Leroy Brown, 22, who graduated in June with a liberal arts and psychology double major, is the co-author of a soon-to-be published book on image analysis of satellite data. Brown is currently taking summer courses at BCC and is also processing his application to attend York College. Karolyn Jimenez, liberal arts major who graduated in January, was one of the first BCC students to work with Sunil. She went on to win an $8,000 scholarship from the National Oceanic and Atmospheric Administration and Cooperative Remote Sensing Science and Technology Center
(NOAA-CREST). NOAA-CREST is administered by the City College of New York where Karolyn is seeking admission. Karolyn is the main author of a major report to NOAA-CREST and a peer-reviewed manuscript that will soon be published.

Three formal courses in geospatial technology and its countless applications will be offered at BCC this fall semester. Sunil expects up to 35 students to sign up for the entire unit.

“When we work with the students, we are also creating a research community,” says Sunil. His ultimate goal: to make Bronx Community College a center of geospatial technology that will attract major government and industry projects of which BCC students and the Bronx can be a part. In a letter of support, the Education Office of the Goddard Space Flight Center at the Goddard Institute for Space Studies, National Aeronautics and Space Administration (NASA) has already committed to provide such a center with data acquired from their satellites.

Sunil’s future plans include going into local high schools and even middle schools to introduce young minds to geospatial technology — perhaps inspiring them to one day attend BCC. Sunil has noticed that minority students and girls are especially fascinated by the technology, two groups very much underrepresented in the sciences.

As the Bronx contributes its best young minds to a BCC geospatial center, BCC in turn will contribute the results of its research to the Bronx, something the borough is greatly in need of. For the same reason, the city government is also greatly supportive of Sunil’s geospatial dream.

And if all this weren’t enough to keep Sunil busy, he realized another dream in April when his wife gave birth to their first child — a baby girl they have named Dahlia. “I first heard her voice on the phone — that was the only time when I didn’t think of research.”

About Bronx Community College

Bronx Community College of The City University of New York offers more than 30 academic programs that prepare students for careers and to continue their education at four-year colleges. Located on a 43-acre, tree-lined campus, BCC is home to the Hall of Fame for Great Americans, the country’s first hall of fame. The College provides its more than 10,500 students with quality academic programs, outstanding faculty, and flexible class schedules. Students at BCC represent more than 100 countries from around the world. For more information about Bronx Community College, visit www.bcc.cuny.edu.

Link to the Feature

http://www1.cuny.edu/mu/forum/2012/09/06/positioning-the-bronx-on-the-geospatial-map/
March 28, 2013, Bronx, New York—In the increasingly competitive field of geospatial research, Bronx Community College (BCC) has taken a major step towards becoming a national center of recognition. The school was awarded a grant by two geospatial industrial giants, Environmental Systems Research Institute and Canada-based PCI Geomatics. Dr. Sunil Bhaskaran, an assistant professor at BCC and an expert in geospatial technology, is the principal investigator. Other team members include faculty members Professor Therese Soosairaj, Dr. Nicolas Anuku, Dr. John Molina, and Ms. Maryam Karimi, and environmental sciences undergraduate students Karolyn Jimenez, Francine Frances, and Leroy Brown.

The award, which is valued at $100,000, includes cutting-edge geospatial software, time-series of satellite data over New York City and virtual training. Geospatial technology is a new and unprecedented way to understand the world. Sensors are mounted on satellites that orbit the earth and deliver photographs and other information, which is used to make discoveries about geography and human behavior. Not surprisingly, it is useful to scientists, doctors, and even politicians looking to better serve their constituents.

Dr. Bhaskaran has been dedicated to making BCC a geospatial center since he arrived at the college in 2010, and this grant will help considerably. “The implications are huge,” he say. Since geospatial technology can be used for areas outside of the STEM, fields, Dr. Bhaskaran and his team can investigate everything from the cause of asthma in the Bronx to something non-scientific such as income levels of New York City’s population through various decades. Says the professor: “The grant will be used in fostering geospatial education and multi-disciplinary research at BCC, as well as for developing spatial solutions for Natural Resources in the New York region.” Students who have helped make Dr. Bhaskaran’s classes extremely popular can also get involved. “Any who are interested will be invited for discussion and assigned faculty to mentor them,” he explains, adding that this is a high-growth industry with many career options.

For more information related to the project, contact Dr. Sunil Bhaskaran at Sunil.Bhaskaran@bcc.cuny.edu.

LINK TO THE FEATURE

http://www1.cuny.edu/mu/forum/2013/04/03/bronx-community-college-receives-grant-for-groundbreaking-work-in-geospatial-technology/
MAPPING WHAT MATTERS- BRONX COMMUNITY COLLEGE ANNOUNCES OFFICIAL OPENING OF THE BRONX COMMUNITY COLLEGE GEOSPATIAL CENTER OF THE CREST INSTITUTE (BGCCCI)

September 15, 2014 | Bronx Community College

Please join us

What: Official Ribbon Cutting Ceremony and Reception

When: Friday October 3rd, 2014

Where: Meister Hall [ME] Rm. 330
Bronx Community College
2155 University Avenue
Bronx, New York 10453

Cutting Edge Academic and Research Center Will Enable BCC to Prepare Geospatial Technicians

What is Geospatial technology?

“Geospatial technology” or “Geomatics” is the discipline of gathering, storing, processing and delivering spatially referenced information. It includes the fields of Geographic information systems (GIS), global positioning systems (GPS) and remote sensing (RS). Geospatial Technology is one of the fastest growing career fields in the world, with analysis and planning applications in numerous areas. Since all activities have a spatial component, geospatial technology is often used to develop decision support systems for managing resources.

What is the Bronx Community College Geospatial Center of the CREST Institute (BGCCCI)?

BGCCCI is a collaboration in environmental remote sensing between Bronx Community College and The CUNY Remote Sensing Earth System (CREST) Institute. Under the direction of Dr. Sunil Bhaskaran, an associate professor in applied geomatics at BCC, the BGCCCI will focus on education and research in GIS, GPS and RS in the Bronx. As the only center of its kind within The City University of New York system, it will provide students conceptual and hands-on training in geospatial technology. BGCCCI will make significant national contributions by delivering future geospatial technicians to a high-growth industry that is currently facing a critical shortage in skilled labor. BGCCCI will gain from the excellent resources available at CREST institute, including their
partnership with the National Oceanic Atmospheric Administration (NOAA), and form internships and pathways to exciting careers. The Center will offer research opportunities for BCC undergraduates, faculty and staff and specialized training in geospatial technology.

The Bronx is impacted by several issues such as water and air pollution, traffic congestion, inadequate planning, environmental justice and other socioeconomic challenges that undermine the quality of life for many residents. The BGCCI will play a significant role in the region by creating a data farm, analysis and modeling tools that may be used in developing spatial solutions for informed decision making. BGCCI will also develop models that may be visualized interactively by policy and decision makers in both the public and private sectors

**LINK TO THE FEATURE**

Natural Resources Imagery Grant Program

Dr. Sunil Bhaskaran, a Professor in Geospatial Applications for Earth and Environmental Sciences, based in the Department of Chemistry and Chemical Technology at Bronx Community College (BCC), has received the Natural Resources Imagery Grant Program award. This award is funded by industry leaders, the Environmental Systems Research Institute (ESRI) and PCI Dynamics, and seeks to fund research that demonstrates the value of GIS and image processing for natural resource management. The grant—valued at $100,000—

takes the form of geospatial software, a time series of current multi-sensor optical radar satellite data for New York City, and a virtual training package. Dr. Bhaskaran’s team will investigate new data fusion techniques and develop an innovative land cover use model for New York City. The anticipated outcome of their research will be to develop a classification model that will be useful for numerous applications including urban planning, land cover mapping, and natural resource management. Their new data fusion technique may be used in fusing multispectral optical and microwave radar data.
SCHOLARLY ACTIVITIES IN GEOSPATIAL TECHNOLOGY

Since 2010, a team of faculty and students led by Professor Sunil Bhaskaran of BCC's Chemistry and Chemical Technology Department have been developing a series of scholarly activities in geospatial technology. These activities range from demonstrations, information sessions and seminars, focused undergraduate research, presentations to academic departments and senior administrators, peer-reviewed publications in journals, and conference proceedings. These activities have particularly focused on undergraduate research by BCC students and are helping to create institutional realization about the potential and promise that geospatial technology holds for developing workforce skills in this emerging area of study in the United States.

The National Oceanic and Atmospheric Administration-Cooperative Remote Sensing Science & Technology Center (NOAA-CREST) Institute, formed in 2001 by a consortium of colleges, including Bronx Community College and led by City College of New York, were awarded funding by NOAA in 2001. A memorandum of understanding (MOU) was signed by Provost Dr. Claudia Schrader and Dr. Reza Kahrilavardi, Director and Senior Vice President of NOAA-CREST, on October 3rd, 2014, which led to the creation and launch of the BCC Geospatial Center of the CUNY CREST Institute or BGCCI http://www.bcc.cuny.edu/geospatial/.

On the MOU the BCC center is described as a satellite under the already established CUNY’s CREST Institute http://crest.cuny.edu/. A ribbon-cutting event was held at the state-of-the-art Geospatial Computing Center located in Meister Hall, BCC. The event was attended by guests from BCC’s senior administrators, deans, faculty and staff, NASA, NOAA, NOAA-CREST Institute, IBM, the City of Townsville, Australia, and several other dignitaries. http://www.bcc.cuny.edu/geospatial/?p=gccci-Photo-gallery-grand-opening.

Affiliated faculty at Bronx Community College Geospatial Center of the CUNY CREST Institute (BGCCI) have helped to promote geospatial education and research by working collaboratively in designing new curricula in Geographic Information Systems (GIS 11) and Remote Sensing (GIS 12). Since these courses were first offered in fall 2015 a total of 152 BCC students have enrolled in them. A new Associate’s degree (Associate in Applied Sciences/A.A.S.) in geospatial technology is being designed for BCC students that will act as a terminal degree. The proposed A.A.S. in geospatial technology will give BCC students competitive workforce development skills that will enable them to compete for internships and careers in the high-growth geospatial industry. Affiliated faculty at BGCCI have also authored geospatial textbooks that are based on a place-based approach which has promoted spatial thinking and cognition. Affiliated faculty also have a high success ratio in securing funding from federal and private sectors. They have delivered many workshops to participants from the K-20 institutions including the nation’s largest urban dual programs, College Now and CUNY Collaborative programs.

Additionally, BGCCI has developed strong links with the geospatial industry to design new course curricula and to develop geospatial internships and career pathways. BGCCI boasts interns from New York University, Pratt Institute, York College, Stony Brook College, City College of New York, the United Nations and many other reputed institutions. The center has developed strong collaborations in research with the University of Missouri, University of Nebraska, Townsville (Australia) and Dubuque (Iowa) through IBM’s smarter cities - a global initiative to design sustainable projects.

The founding director of BGCCI, Professor Sunil Bhaskaran, has been serving on the NYC Mayor’s Committee on Urban Heat Island mitigation since 2013 and was recently featured in CUNY NEWS channel’s American Dream Machine. Professor Bhaskaran was been honored on four different occasions (2014-2016) by the university for outstanding research and service to the university. BGCCI is currently developing a CUNY WIDE geospatial project and is committed to support the University’s forthcoming Geographic Information Systems summit that will be held March 3, 2017.

DID YOU KNOW?

GIS 11 Introduction to Geographic Information Systems and GIS 12 Introduction to Remote Sensing both fulfill the Scientific Requirement in the Pathways Flexible Core.
Inaugural CUNY Geospatial Summit 3/3/2017

The City University of New York
Geographic Information Sciences
Summit (GIS)

Hosted by

Dr. Mark Hauber
CUNY Interim University
Vice Provost for Research

Dr. Glen Johnson
Professor, CUNY Graduate
School of Public Health &
Health Policy

Dr. Sunil Bhaskaran
Professor and Director
Bronx Community College
Geospatial Center of the
CUNY CREST Institute

Dr. Andrew Maroko
Professor, CUNY Graduate
School of Public Health &
Health Policy

Friday, March 3, 2017, 12:30-5:00pm

The CUNY School of Law
The Dave Fields Auditorium, 2nd Floor
Two Court Square
Long Island City, New York
FIRST GEOGRAPHIC INFORMATION SYSTEM (GIS)
SUMMIT BY CUNY
3/3/2017 HISTORY IS BEING MADE EVERY DAY
The CUNY Geographic Information Sciences (GIS) Summit made its debut last Friday, March 3rd, at the CUNY Law School’s Dave Fields Auditorium. Over 70 geographic information scientists gathered to give presentations like Exploring Patterns of Tiger (Panthera Tigris) Movement and Interaction, Urban People vs. Urban Land and Implications for Climate Modelling, Pioneering Geospatial Technology at Bronx Community College, Why Place Matters: The Precautionary Principle vs Keystone and Dakota Pipelines (via Skype), and many more. Dr. Sara McLafferty, Professor and Department Head of Geography & Geographic Information Science at the University of Illinois, delivered the keynote speech after a warm welcome from Interim University Vice Provost for Research Mark Hauber. In her speech, Dr. McLafferty discussed the past, present and future of GIS in public health research and policy. She also advocated for theoretical engagement with GIS, rather than solely using documentation. “One of the exciting areas of this research for me is that we’re starting to think about new kinds of spaces. Not just euclidian space or people traveling in straight lines, and things like that, but networks that connect people and that don’t map perfectly onto our geographic spaces.” Looking at the field today, she added, “I would say that there is much better modeling of health related
experiences, exposures and behaviors. That doesn’t mean we can’t do more but we’ve come very far in this field.”

Each presenter who followed matched Dr. McLafferty’s passion for the fields and emphasized one sentiment: it’s important for researchers to communicate with their peers. The oral presentations were later followed by poster presentations and a $500 giveaway sponsored by the CUNY Research Foundation. After circling the room and engaging with each poster, attendees voted for the best poster presentation. And the winner is… College of Staten Island Graduate student Amanda Schettini! She and her Pokémon Go poster stole the show. Overall, the 2017 CUNY Geographic Information Sciences (GIS) Summit was a festival of knowledge that emphasized the diversity in GIS

LINK TO THE FEATURE
https://www1.cuny.edu/mu/research/2017/03/06/the-2017-cuny-geographic-information-sciences-gis-summit-was-a-festival-of-knowledge/
The program is designed to heighten awareness about geospatial technology and its application to STEM, increase and diversify the number of young adults interested and academically prepare them to enter into the field. It is a partnership between Bronx Community College, and York College who will work in collaboration with the industry, and federal agencies to train participants in geospatial technology. New model courses and degree programs will be designed to meet workforce needs. Innovative summer workshops, research internship and professional development programs in geospatial applications will be designed for students and educators from resource poor institutions. New articulation agreements between the proposed degree program and advanced level courses at senior colleges will be implemented, for facilitating effective career pathways. The project team will expand the well-qualified, diverse geospatial workforce and improve technician education of students from underrepresented groups of and lead them to career pathways in a high technology field that drives the country’s economy.

The program is designed to meet the goals and objectives of the NSF-ATE: education of students with 21st century knowledge and skills to create a diverse world-class workforce that will make significant contributions to the geospatial industry. Proposed activities will focus on a) year-round workshops for students from resource poor schools and colleges b) student participation in national-priority faculty-mentored STEM research topics, and exposure to cutting-edge research and careers in geospatial technology c) professional development workshops for educators and faculty focusing on integration of technology and curricula d) development and assessment of new curricula and degree program in geospatial technology and STEM disciplines e) articulation of the program from two-year to four-year colleges f) Collaborations with the industry and federal agencies to create flexible workforce internship program and career pathways. The program will recruit students, educators, and faculty from resource poor schools and colleges to year-round workshops and developmental activities. In collaboration with the Industry, CUNY Office of Research Innovation and Entrepreneurship Initiative, and NYSDOL, the team will design out-of-the-box internship pipelines that will provide students with a flexible model for acquiring life-long learning skills and experiences critical for successful careers. Since Bronx Community & York colleges are minority-serving institutions with a diverse population of approximately 20,000 students, the program will successfully recruit and train students from historically underrepresented groups, changing demographics of the future workforce and, thus, fostering a stronger and inclusive economy of tomorrow.
CREATE A SUSTAINABLE EARTH WITH GEOSPATIAL TECHNOLOGY

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