NEW YORK CITY
COLLEGE OF TECHNOLOGY
THE CITY UNIVERSITY OF NEW YORK

PROGRAM

11th Annual POSTER SESSION

of Faculty and Student Research and Faculty Publications Exhibit

Faculty Research Recognition Day

Thursday, November 21, 2013
1:00 pm to 3:00 pm
Atrium Ground Floor Gallery

CUNY The City University of New York

PROGRAM OF POSTER SESSION

Welcome and Greetings

1:30 pm-1:50 pm — Dr. Russell Hotzler, President
Dr. Bonne August, Provost
Dr. Karl Botchway, Dean of the School of Arts and Sciences
Kevin Hom, Dean of the School of Technology and Design

The program is organized by topics rather than by departments. Frequently the presentations are cross-disciplinary or difficult to assign to the discipline represented by the department with which the presenter is affiliated.

Architectural and Graphic Arts Technology

1. Kenneth Conzelmann, Holz Haus at One Millimeter Equals One Foot
2. Harold Morales, Contemporary Architecture in Cyprus 1990-Present
3. Illya Azaroff, Designing for Disaster: Building Back Better
4. Lloyd Carr, How to Create Similar Colors in All Media
5. Cindy Alonzo, Cynthia Alonzo, Micahel DiCarlo, Lia Dikigoropoulou, and Jill Bouratoglou, Design and Development of the Computer Systems Technology Department Faculty Offices

Biology and Health Sciences

6. Maria-Elena Bilello and Susan Nilsen-Kupsch, Focused Practice Bridges the Gap Between Learning and Mastery of Dental Hygiene Instrumentation
7. Peregrino Brimah, Sleep Duration and Reported Functional Capacity among Black and White US Adults
8. Tatiana Voza, A New Stage in the Malaria Parasite Life Cycle?
9. Jeremy Seto, Elucidating Cytokine Biomarkers in an Animal Model of Neuropsychiatric Disease
10. Ghassan Yehia, Geber Peña, Rafael Torres and Luis Ulloa, Role of Lymphocyte-derived Acetylcholine in Neuromodulation
11. Christine W. Thorpe, A Health Literacy Model for Patient Navigation
12. Barbara Grumet, Mary Sue Donsky, and NEH Group, NEH Comparative Perspectives on Health, Illness, and Healing
13. Kathleen Falk, Appreciative Inquiry to Transform Nursing Practice for Mentoring Children of Promise
14. Joycelyn A. Dillon, Inter-professional Collaboration for a Workforce Development Initiative Grant: Focus on Communication and Patient Safety
15. Andrew R. Bohm and Josef Bohm, Rapid Read Technology, Technology to Save Time and Lives

Business

16. Timothy W. Reinig, Intellectual Property Law Basics
17. Lucas Bernard, The Macroeconomics of Global Warming – an Update on the Oxford University Press Handbook I Am Editing
18. Paul Salisbury, Pay to Protect the Environment: Two Consumer Issues—Pro and Con
19. Jierong Cheng, Small and Medium Sized Entities Management's Perspective on Principles-Based Accounting Standards on Lease Accounting
20. Avis J. Smith, Research in Business From Manufacturing to the Social Customer

Chemistry

21. Alberto Martinez, Resveratrol Analogues Chelate Cu(II) and Zn(II), Display Antioxidant Properties and Reduce in vitro Ab(1-40) Toxicity
22. Diana Samaroo, Charles Michael Drain, Xinbin Gu, Amit Aggarwal and Sunaina Singh, Efficacy of Self-Organized Nanoparticles of Photodynamic Therapeutics and Theragnostics

Computer Engineering and Information Systems Technology

23. Renoldo Francis and Edward Morton, A Comparative Study of the Arduino and PicMicrocontroller Architectures
24. Ashwin Satyanarayana, Data Mining Visualization Tools
25. Adnan Khan, Secured Web Services for Smart Homes Energy Management in a Smart Grid Environment
26. Erick Barros and Edward Morton, Raspberry Pi Microcontroller System and Python Programming
27. Fangyang Shen, Modeling Energy Efficient RAID Systems
28. Marcos Pinto, Face Recognition Using PCA Analysis
29. José M. Reyes Álamo, A Cloud Robotics Architecture Using the Lego NXT Robot
30. Kirk Lewis and Aparicio Carranza, Computer Clusters in Linux and the Possibility of a Cluster Farm
31. Anthony Armor, Kenny Cruz, Lateef Legrand, and Aparicio Carranza, Temperature Sensing Using the Raspberry Pi
32. Jamaal Ward, Rahman Bakare, and Aparicio Carranza, Arduino and Android VAR Remote Control Wireless Telecom Systems
33. Carolyn Sher DeCusatis, Networking for Data Centers, Cloud Computing and the Wide Area Network
34. Dan Wong, Information Design and Activism in a Mobile Age: A Redesign of IJDH.org

Engineering Technology

35. Michael Johnson, Improving Manufacturing through Feature-Based Recognition Software
36. Alejandro McNab-Segarra, Improving Manufacturing through Feature-Based Recognition Software
37. Angran Xiao, Information Driven FEA Modeling for Highly Coupled Variable Topology Multi-Body Problems

Hospitality

39. Elizabeth Schaible, Tea and Shortbreads - The Historical and Social Implications of Women Training in Tea Room Management in Early 20th Century New York City
40. Amit Mehrotra, Business of Travel – Examining Safety Issues for LGBT Travelers within South / South East Asia
41. James Robert Reid, Sunny's Renaissance: Raw Hospitality Along the Waterfront
42. Jovany Bravo, Technology Revolutionizing the Hospitality Industry
43. Patrick O'Halloran, Student Debt

Humanities, Social Sciences and English

44. Mark Noonan, Writing Booklyn/Brooklyn Writing
45. Jane Mushabac, Word
46. Mary Nilles, Adella's Diary
47. Dionne Bennett, Re-gendering Post-racial Fantasies: How Black Women Mix Media
48. Aaron Barlow, Star Power: On the Impact of Branded Celebrity
49. Lisa Pope Fischer, Traces of Communist Legacy in Post Socialist Hungary: The Kitsch-ifcation of Material Culture
50. Gulgun Bayaz-Ozturk, Consolidating the Evidence on Income Mobility in the Western States of Germany and the U.S. from 1984-2006
51. Victoria Lichterman and Shauna Vey, Celebrating Works in the Works
52. Martin Garfinkle, Heroes: Who Are They and Do They Make a Difference?
53. Junior Tidal, Using Web Analytics to Develop a Mobile Interface
54. Damon Baker, Immersive Virtual Worlds For Everyone
55. Patrick Corbett, Exploring an Ethic of Service in Professional Communication
56. Anne Leonard and Peter Spellane, Documenting New York's Copper-Sulfuric Acid-Petroleum Triangle with Geo-referenced Historic Fire Insurance Maps

Education

57. Lisette Santisteban and Aida Egues, Guiding Nursing Adjuncts
58. Ian Beilin and Anne E. Leonard, Teaching the Skills to Question: A Credit-Course Approach to Critical Information Literacy
59. Andleeb Zameer, Academic Service Learning Project: Use of a High Impact Educational Practice in Human Biology Course
60. Rosalyn Forbes, Association Bring Simulation
61. Virginia Curran, Emma Kontzamanis, and Bridget Maley, How Students Achieve Mastery of Course Content
62. Barbara Smith Mishara, Student Self-Assessment of Prior Knowledge to Foster Active Learning
63. Diana Samaroo and Ralph Alcendor, Using Field-Based Undergraduate Research in Chemistry and Biology at City Tech
64. Anna Matthews, Prior Knowledge: the Concept and its Effects on Student Learning

65. Julia V. Jordan, Bridging the Gap at City Tech: Cognitive Research and Instructional Practice
66. Fangyang Shen, Andrew Douglas, Estela Rojas, and William Roberts, Noyce Explorers, Scholars, Teachers: Fostering Exceptional Computer and Mathematical Education Research in New York City
67. Kevin Rajaram, Julia Jordan, The Effect of Targeted Weekly E-Communication on Adjunct Faculty at City Tech
68. Zoya Vinokur, Inter Hospital Collaborative Project via Open Lab Fall 2013
69. M. Genevieve Hitchings, Design Students Promote a Community Project, a Case Study
70. Kara Pasner, Integrating the Narrative into Associate Level Technical Education
71. Celeste Waddy, Using Evaluation Tools to Demonstrate Training Effectiveness
72. Liana Tsenova, Urmi Ghosh-Dastidar, Arnavaz Taraporevala, and Pamela Brown, A Study on Healthcare-associated Infections and Multi-Drug Resistance, An Integrative Approach
73. Viviana Acquaviva, Ralph Alcendor, Reginald Blake, Justin Davis, Aida Egues, Pa Her, Elaine Leinung, Robert Leston, Janet Liou-Mark, Zory Marantz, Alberto Martinez, Marie Montes-Matias, Jonas Reitz, Jody Rosen, Diana Samaroo, Liana Tsenova, Justin Vazquez-Poritz, Selwyn Williams, Lin Zhou, Mentoring Initiatives at City Tech: A Mentoring Handbook for Faculty
74. Anne Leonard, Brooklyn's Waterfront as a Living Laboratory
75. Anthony DeVito and Jennett Ingrassia, Admission Criteria for Radiologic Technology Programs
76. Davida S. Smyth, Reading Effectively Across the Disciplines - Focus on Biology
77. Alexander Aptekar, Collaboration with New Tools and Building Information Modeling
78. Karen Goodlad, Jonas Reitz, Alexander Aptekar, Charlie Edwards, and Maura Smale, Engaged in a Living Laboratory: Revitalizing High Impact General Education at a 21st Century College of Technology
79. Nadia Benakli, Ashwin Satyanarayana, Satyanand Singh, Arnavaz Taraporevala, Learning by Visualizing

Mathematics

80. Ariane Masuda, Enumerating Acyclically Oriented Subgraphs
81. Corina Calinescu, Principal Subspaces of Standard Modules for Twisted Affine Lie Algebras
82. Lin Zhou, Pressure-Driven Oscillatory Flows of Wormlike Micellar Mixtures
83. Boyan Kostadinov, Simulation Insights Using R
84. Hans Schoutens, Fermat's Last Theorem, what is it good for?
85. Laura Ghezzi, Variation of Hilbert Coefficients
86. Marianna Bonanome, Introducing Interesting Groups in an Introductory Abstract Algebra Course
87. Thomas Johnstone, Resurrection Axioms and Uplifting Cardinals
88. Satyanand Singh, A Fifth Way to Skin a Definite Integral

Physics

89. Giovanni Ossola, NLO QCD Corrections to Higgs Boson Production at the LHC
90. Oleg Berman, Superfluidity and Collective Properties of Excitonic Polaritons in Gapped Graphene in a Microcavity
91. Andrea Ferroglia, Boosted Top Quark Pairs at the LHC
92. Darya Krym, M-Theory Solutions
93. Boris Gelman, Spin-Flavor Symmetry in Large Nc QCD
94. Ilya Grigorenko, The Electron-Hole Superfluidity in Two Coaxial Nanotubes
95. German V. Kolmakov, Long-lifetime Polariton BEC in a Microcavity with an Embedded Quantum Well and Graphene
96. Viviana Acquaviva, The Physical Nature of Distant Galaxies: Theoretical and Computational Challenges
97. Zhibai Zhang and Andrea Ferroglia, Contributions of the W-boson Propagator to the Muon and Tau Leptonic Decay Rates
98. Ariyeh Maller, A Comparison of Galaxy Formation Hydrodynamic Codes
99. Justin Vazquez-Poritz and Zhibai Zhang, Strings on Wormholes and Nonsingular Black Holes
100. Roman Kezerashvili, Research in Theoretical Physics at City Tech

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ABSTRACTS

Architectural and Graphic Arts Technology

Holz Haus at One Millimeter Equals One Foot

Kenneth Conzelmann
Architectural Technology Department

This poster represents an architectural research and conceptual design development project conducted in 2011 for the renovation and expansion of an existing hunting cabin in upstate New York. With a focus on passive house principles, it is a furtherance of research work begun in 2010 via a CUNY Research Foundation grant, and developed further with the emerging scholars program.

Contemporary Architecture in Cyprus 1990-Present

Harold Morales
Architectural Technology Department

Professor Lia Dikigoropoulou and I are conducting research on contemporary Architecture in Cyprus. We are researching projects that reflect architecture's resurgence in the country within the last decade to gain a better perspective on how the culture and architecture is changing. Not many scholarly data is available on Cyprus's architecture, so we strive to fill the void.

Designing for Disaster: Building Back Better

Illya Azaroff
Architectural Technology Department

Responding to recent events that have effected the region, communities are bouncing back through resilient building methods. How do we design for future disasters? Building back better rather than just building back is our exploration noting that a regional, cooperative effort is needed.

How to Create Similar Colors in All Media

Lloyd Carr
Department of Advertising Design and Graphic Arts

How can you create colors that will appear similar in all media: online, mobile, digital tablets and print using professional software. You can understand WHY target colors can be created and HOW you can design similar colors for all media. You can learn how to communicate with all media output, evaluate media output, and get a final approval with confidence.

Design and Development of the Computer Systems Technology Department Faculty Offices

Cindy Alonzo, Cynthia Alonzo, Micahel DiCarlo, Lia Dikigoropoulou, and Jill Bouratoglou
Architectural Technology Department

Design and development of the Computer Systems Technology Departments faculty offices. This will include meeting with the department to organize a program for the space and developing furniture types. Once the program is developed, students will measure the space and take an inventory of the furnishing and equipment. The existing conditions will be documented into Cad, and designs will be developed, including renderings and options for the faculty and Dean to review.

Biology and Health Sciences

Focused Practice Bridges the Gap Between Learning and Mastery of Dental Hygiene Instrumentation.

Maria-Elena Bilello and Susan Nilsen-Kupsch
Dental Hygiene Department

Dental hygiene instrumentation requires the acquisition of complex fine motor skills which are taught systematically, identifying and reinforcing each component skill. Extra time focusing on identification and breaking down of weak areas is the focused practice that will have a significant effect on performance. This poster will discuss the role of both student and expert instructor towards the attainment of mastery.

Sleep Duration and Reported Functional Capacity among Black and White US Adults

Peregrino Brimah
Department of Biological Sciences

Short and long sleep durations are associated with various chronic health conditions. However, there is limited evidence regarding relationships of sleep durations with functional capacity - an important clinical diagnostic and prognostic factor. Blacks, who have a higher prevalence of chronic health conditions as well as short and long sleep durations, may be at greatest risk of experiencing impaired functional capacity. This study found race and sleep duration as predictors of functional capacity.

A New Stage in the Malaria Parasite Life Cycle?

Tatiana Voza
Department of Biological Sciences

We show that a portion of the malaria parasites, injected by probing mosquitoes, can remain and develop in the skin for days, instead of reaching the host's liver. These skin stages may be a common property of plasmodia. Although susceptible to destruction in immunized mice, in contrast to their liver counterparts, skin stages are not susceptible to the drug primaquine.

Elucidating Cytokine Biomarkers in an Animal Model of Neuropsychiatric Disease

Jeremy Seto
Department of Biological Sciences

Human patients afflicted with neuropsychiatric illnesses have presented with significantly higher levels of circulating inflammatory cytokines independent of any infection. In a rodent model of schizophrenia, fetal mouse brains were analyzed to determine cytokine levels as a system of biomarkers for the disease state that may illuminate an underlying etiology from neurodevelopment alterations.

Role of Lymphocyte-derived Acetylcholine in Neuromodulation

Ghassan Yehia[1,2], Geber Peña[2], Rafael Torres[2] and Luis Ulloa[2]
[1]Department of Biological Sciences
[2]Center for Immunity and Inflammation, UMDNJ-New Jersey Medical School

The nervous system plays a critical role sensing the inflammatory responses and restraining cytokine production to prevent damaging inflammation. Acetylcholine-producing lymphocytes were shown to play an important role in mediating the anti-inflammatory effect of vagus nerve stimulation. Deploying a genetic approach in mice, our results suggest that lymphocyte-derived acetylcholine is not essential for the anti-inflammatory potential of the vagus nerve.

A Health Literacy Model for Patient Navigation

Christine W. Thorpe
Health and Human Services Department

Patient navigation in healthcare settings involves training individuals to guide and support patients from the point of diagnosis, and through the continuum of care to resolution. Critical to the navigation process is strengthening patient navigators' ability to help patients obtain, process and understand health information. This poster will present a model that exemplifies key steps for patient navigators to educate, navigate and empower patients to make health decisions with the context of the health care system.

NEH Comparative Perspectives On Health, Illness, and Healing

Barbara Grumet, Mary Sue Donsky, and NEH Group
Department of Law and Paralegal Studies

Our project explores the practice of medicine as expressions of cultural beliefs and value systems that differ widely across cultures. The project enables faculty from the departments of allied health, and consequently their students, to become more thoughtfully, culturally competent, and ethically aware practitioners by better understanding variables of philosophy, values, and culture that underlie medical practice in different societies.

Appreciative Inquiry to Transform Nursing Practice for Mentoring Children of Promise

Kathleen Falk
Nursing Department

An appreciative inquiry study was conducted with 12 nurse-mentors who worked with children of incarcerated parents. The aim was to generate best practice knowledge for working with these children. Through study methods, nurse mentors discovered what was effective as they created a collective vision for future practice. An action plan was implemented, evaluated and conclusions were drawn. Data from this study imply that nurse-mentoring can be used with other vulnerable populations. Nurses should use appreciative inquiry to transform healthcare, particularly in situations with seemingly intransigent solutions.

Inter-professional Collaboration for a Workforce Development Initiative Grant: Focus on Communication and Patient Safety

Joycelyn A. Dillon
Department of Dental Hygiene

Via a City University of New York Workforce Development Initiative Grant, faculty at the New York City College of Technology is piloting an interdisciplinary project for health and human services undergraduate students. The first part is based on Randy, a veteran's case under development by the National League for Nursing. It has been modified to address inter-professional communication targeted competencies established by the Inter-professional Education Collaborative - values/ethics for inter-professional practice, roles/responsibilities, inter-professional communication, and teams and teamwork.

The information reported on the poster is based on two simulation sessions which were conducted at the NY SIM Center involving several departments from the School of Professional Studies ,namely, (Nursing, Human Services, Health Services Administration Radiologic Technology and Dental Hygiene). Feedback and debriefing sessions were conducted immediately after the completion of the simulations. Preliminary findings indicate the value of inter-professional education and the need for proper communication among disciplines for promotion of patient safety.

Rapid Read Technology, Technology to Save Time and Lives

Andrew R. Bohm and Josef Bohm
Health Service Administration

Rapid read technology (RRT) provides information transfer mechanisms for quick acquisition of personal health information. The application of RRT holds promise for accelerated access to care with the accurate transfer of patients' medical histories and key co-morbidities. Its greatest potential lies in emergency care and other settings wherein patients may not be able to effectively communicate or provide accurate information. The presentation describes an RRT technological platform that is appropriate for Ambulance / Emergency room encounters and examines the sociological issues relevant to its uptake. Overall, the technology's ease of can provide improved health outcomes due to its ease of use, and rapid delivery of error free medical histories.

Business

Intellectual Property Law Basics

Timothy W. Reinig
Department of Business

A Lecture Presentation and Question and Answer Session on the basic forms of Intellectual Property Law for small business owners and entrepreneurs, including the laws of Copyrights, Trademarks, Trade Secrets, Right to Publicity and Patents. Special consideration was offered on the applicability of each form of Intellectual Property to various physical, as well as intangible, property ownership, as well as their application to the virtual environment on online commerce.

The Macroeconomics of Global Warming – an Update on the Oxford University Press Handbook I Am Editing

Lucas Bernard
Department of Business

The Oxford University Press Handbook on the Macroeconomics of Global Warming is a project I have been working on since 2011. This Handbook, which I am editing, analyzes the macroeconomics of global warming, especially the economics of possible preventative measures, various policy changes, and potential effects of climate change on developing and developed nations. It will be published this coming spring.

Pay to Protect the Environment: Two Consumer Issues—Pro and Con

Paul Salisbury
Department of Business

Who will pay more to save the environment?

- Liberal, educated people aged 46 plus are far more likely to support paying higher prices to (generally) protect the environment.
- Educated people *under* age 45 are more apt to support paying higher gasoline taxes (specific action).
- Ideology, education and age are influences of support for both issues, (CHAID analyses).

Small and Medium Sized Entities Management's Perspective on Principles-Based Accounting Standards on Lease Accounting

Jierong Cheng
Department of Business

Lease accounting is viewed as one of the top priorities for the International Financial Reporting Standards (IFRS) convergence. Small and medium sized entities are an important part of the economy, and this research investigates the management's perspective on the adoption of principles-based IFRS about lease accounting. This researcher interviewed four managers from three different small and medium sized entities, and found the management to be more concerned about their long-term business success than the change of accounting standards. Only when the entities have a loan with the bank, then the managements focus on the lease classification. The other aspect of focus for management of these firms is tax consequence of IFRS adoption. The research suggests other regulatory agencies, i.e., Internal Revenue Service, should also be involved in enhancing financial statement transparency and usefulness after the adoption of accounting standards.

Research in Business From Manufacturing to the Social Customer

Avis J. Smith
Department of Restorative Dentistry

Preliminary writings of an estimated ten part research into the concepts of business, with the introduction of new concepts focused on the societal relationships in the B2B process; from manufacturing to the social customer.

Chemistry

Resveratrol Analogues Chelate Cu(II) and Zn(II), Display Antioxidant Properties and Reduce in vitro Ab(1-40) Toxicity

Alberto Martinez
Department of Chemistry

Resveratrol is a natural compound with antioxidant properties. We have achieved the synthesis of a resveratrol analogue that possesses the added capability to chelate metal ions. We investigated its affinity to Cu^{II} and Zn^{II}, as well as its ability to inhibit Aβ metal induced aggregation and reactive oxygen species (ROS) formation within the framework of anti-Alzheimer's disease therapies.

Efficacy of Self-Organized Nanoparticles of Photodynamic Therapeutics & Theragnostics

Diana Samaroo[1], Charles Michael Drain[2], Xinbin Gu[2], Amit Aggarwal2 and Sunaina Singh[2]
[1]Department of Chemistry
[2]Hunter College

Click-type chemistry on a fluorous phthalocyanine and porphyrin, appended four or eight copies of specific targeting motifs. These amphipathic porphyrinoids form stable aggregates in cell culture media. These are dynamic organic nanoparticles because they are organized solely by intermolecular interactions between the active chromophores. The present porphyrinoid DONp incorporates the drug delivery system, cell recognition elements, reporter function, and therapeutic action into one self-organized theragnostic material.

Computer Engineering and Information Systems Technology

A Comparative Study of the Arduino and Pic Microcontroller Architectures

Renoldo Francis and Edward Morton
Computer Engineering Technology Department

We conducted Research of the Microchip PIC 16F690 family of Microcontrollers and compared its attributes (hardware and software) to the Atmel ATmega 328, Arduino Microcontroller system. He evaluated the hardware design aspects as well as the C/C++ software compiler and IDE (Integrated Development Environment) as it relates to Mechatronics /Robotic System designs.

Data Mining Visualization Tools

Ashwin Satyanarayana
Computer Systems Technology Department

We are in a new era in modern information technology - the “Big Data” era. In March, 2012, the U.S. Government announced a “Big Data Research and Development Initiative” - a $200 million dollar commitment. The career potential for our graduates continue to blossom in this field. Some of the challenges for faculty who teach data mining include: providing access to large real world data for students and the selection of tools. In this paper, we discuss a set of core topics that such a course should include. One of the best ways to incorporate technology in the classroom is as a tool to facilitate learning by using it as a visual aid. A set of practical, widely-accepted visualization tools and languages used for data mining are summarized.

Secured Web Services for Smart Homes Energy Management in a Smart Grid Environment

Adnan Khan
Computer Systems Technology Department

The research proposes an approach that uses secured web services to remotely (wirelessly) interact with smart home elements in a smart grid environment. These interactions include adjusting the temperature or reading energy consumption. There is a central computer that can communicate with all home elements. A novel algorithm to sell energy back to grid and to reduce cost is presented.

Raspberry Pi Microcontroller System and Python Programming

Erick Barros and Edward Morton
Computer Engineering Technology Department

We researched the hardware design aspects as well as the Python programming language and IDE of Raspberry Pi. He compared its attributes to the Atmel Atmega 328, Arduino Microcontroller system. The Raspberry Pi system research required a Linux distribution unlike the Arduino Microcontroller which uses C\C++ and either a Windows, Mac, or Linux Operating System.

Modeling Energy Efficient RAID Systems

Fangyang Shen
Computer Systems Technology Department

Conservation of energy in parallel disk systems has a strong impact on the cost of cooling equipment and backup power-generation. Most energy saving schemes have adverse impacts on the reliability of parallel disk systems. To address this deficiency, we must focus on reliability analysis for energy-efficient parallel disk systems. In this poster, we make use of a Markov process to develop a quantitative reliability model for energy-efficient RAID systems using data mirroring.

Face Recognition Using PCA Analysis

Marcos Pinto
Computer Systems Technology Department

Face Recognition concept is one of the successful and important applications of image analysis. The simple idea behind it is, given still or video images of a scene, to identify or verify one or more persons in the scene using a stored database of faces. It's a holistic approach and have potential applications in various areas such as image and film processing, human-computer interaction, criminal identification etc... This presentation provides an overview of real time application of Face Recognition concept by generating a Matlab code using image acquisition tool box. The basic approach used is Principal Component Analysis using Eigen faces.

A Cloud Robotics Architecture Using the Lego NXT Robot

José M. Reyes Álamo
Computer Engineering Technology Department

Cloud robotics is a paradigm where robots outsource their heavy computations and storage needs to the cloud. We propose several architectural models to allow a network of Lego NXT robots to perform simple tasks locally, while relying on a cloud computing infrastructure for more computationally expensive tasks. We believe this architecture will help undergraduate teaching and research in these topics.

Computer Clusters in Linux and the Possibility of a Cluster Farm

Kirk Lewis and Aparicio Carranza
Computer Engineering Technology Department

Computer Clusters are comprised of slave nodes and a master node. These nodes are connected together by a network switch in parallel. This connection makes up a high performance supercomputer. Most clusters are run in the Linux environment. Computer clusters are primarily used for task involving: big data, data intensive computing and data mining. The purpose of this paper is to introduce a concept called for now – processing farms and their applicability.

Temperature Sensing Using the Raspberry Pi

Anthony Armor, Kenny Cruz, Lateef Legrand, and Aparicio Carranza
Computer Engineering Technology Department

The Raspberry Pi is an innovative credit card sized computer that runs its own version of Linux. The creators of the Raspberry Pi designed it to be used for educational use and to help promote the fast demand of the need for programmers. The emergence of the Raspberry Pi brings various opportunities to test and build projects, and designs with the capability of having an interface to carry with you or even integrate on your project itself. Using the Raspberry Pi, we are going to test the reliability and capability of various sensors by taking the temperature of different elements.

Arduino & Android VAR Remote Control Wireless Telecom Systems

Jamaal Ward, Rahman Bakare, and Aparicio Carranza
Computer Engineering Technology Department

Wireless Telecommunications Systems Embedded and Implemented into Arduino & Android devices is an excellent emerging technology expected to become more popular in today's modern electronic automotive vehicles. We will present an introduction to the next evolution of the new emerging technology called VAR, (Vehicle Autonomous Response) that lays the foundation for advanced wireless telecommunications systems – an integration of Android Technology and Arduino Robotic Systems implemented for automotive vehicles.

Networking for Data Centers, Cloud Computing and the Wide Area Network

Carolyn Sher DeCusatis
Computer Engineering Technology Department

My research involves studying how Software Defined Networking affects the network performance in Data Centers, Clouds and the Wide Area Network. By modeling and measuring the transmission time of active virtual machines, we can optimize the performance of various use cases.

Information Design and Activism in a Mobile Age: A Redesign of IJDH.org

Dan Wong
Advertising Design and Graphic Arts Department

The visual representation of information appears simple when it is done effectively. Using web analytics—comparing changes in traffic— is a way to measure the effectiveness of design. Combining information, interface and usability design, mobile optimization, branding, the creation of taxonomies, an intuitive navigational structure, and the reorganization of data, demands a comprehension of visual language, technology and the content.

Engineering Technology

Improving Manufacturing through Feature-Based Recognition Software

Michael Johnson
Mechanical Engineering Technology Department

The purpose of this project is to investigate a method to reduce the cost and time spent to produce a single mechanical part on a Computer Numerical Control machine. My colleagues will do this by using a Computer-Aided Design software that has feature-based capabilities and comparing two Computer-Aided Manufacturing softwares to determine which one will generate NC code faster.

Improving Manufacturing through Feature-Based Recognition Software

Alejandro McNab-Segarra
Mechanical Engineering Technology Department

Two important areas in the manufacturing process are cost estimation and programming NC code for the CNC machine. The methods used today are time-consuming and inefficient. A newer method is available that can increase efficiency in cost-estimation and CNC programming. This method is a computer software tool called feature-based recognition. The poster being presented shows a comparison study between the current, conventional methods used for cost-estimation/CNC programming, against methods that use feature-based recognition.

Information Driven FEA Modeling for Highly Coupled Variable

Topology Multi-Body Problems

Angran Xiao
Department of Mechanical Engineering Technology

Manipulating geometry to prepare a CAD model for mesh generation is an important step in the FEA process. In this research, an automated geometric transformation method is developed within the context of information driven modeling for CAD-FEA integration. This method is capable of reducing the total FEA modeling time from days/hours to hours/minutes.

Hospitality

Tea and Shortbreads - The Historical and Social Implications of Women Training in Tea Room Management in Early 20th Century New York City

Elizabeth Schaible
Hospitality Management Department

Analysis of tea room management training in New York City based on course books titled “The Ware School of Tea Room Management: A Course in Tea Room, Cafeteria and Motor Inn Management” published in 1926. Using historical documents from the New York Public Library and the New York Historical Society collections, the research will focus on the significance of this training with the broader question of the woman’s role in early 20th century tea room management in a major urban setting. More specifically, who was Ada B. Watson, the original user of the booklets as noted in the inside cover of the set?

Business of Travel – Examining Safety Issues for LGBT Travelers within South / South East Asia

Amit Mehrotra
Hospitality Management Department

The business of travel and tourism bringsin valuable foreign exchange for many countries in South East Asia. While thereare many demographics to market a travel product, a number of tourismdestinations have courted the LGBT (Lesbian, Gay, Bisexual and Transgender) community,as travelers from these communities show an increase, both in disposable incomeand expenditure on travel related activities. Paramount to LGBT travel is alsosafety concerns, and policies and practices put in place for making travelsafer and fulfilling for such travelers. The study examines the business oftravel and tourism for LGBT travelers in South / South East Asia, along with reviewingsafety issues concerning LGBT travel in these areas. The study will make asignificant contribution to understanding tourism with regard to LGBTcommunities and may help tourism agencies, travel planners and businessorganizations plan and market their products and services efficiently totravelers from the LGBT community.

Sunny’s Renaissance: Raw Hospitality Along the Waterfront

James Robert Reid
Hospitality Management Department

This 38 minute videography captures the rich, diverse and dynamic history of Antonio “Sunny” Balzano whose family arrived in Red Hook, Brooklyn in 1890 from Italy and who owns and manages Sunny’s Bar on Conover Street. This establishment had survived though various periods of significant historical, economic and cultural transitions. None of these challenges however, were more profound than when on October 29, 2012, the flooding caused by Hurricane Sandy severely damaged – almost completely destroyed – this iconic establishment.
Note: This film just won ***“The Spirit of Red Hook”*** *award in October, 2013 at the* **Red Hook International Film Festival.**

Technology Revolutionizing the Hospitality Industry

Jovany Bravo
Computer Engineering Technology Department

Project will explore current and future trends in the hospitality industry in relationship to technology. Hotel management systems, social media, mobility, personalized systems, integration and globalization are areas that will be explored and evaluated. Study will research and review employee efficiency, customer/guest engagement and operational manpower costs.

Student Debt

Patrick O'Halloran-Faculty.
Hospitality Management Department

These are stories America's students and families. They come from all walks of life, all ages and across a range of life circumstances. While each has his or her own unique story, a common theme serves as the glue for this narrative: for far too many Americans, higher education is no longer affordable. We are a nation rich in opportunities yet saddled with mountains of debt, preventing us from realizing our full potential. Yes, the most egregious stories are those that make the headlines, but the reality is that today, too many of our students begin their post-educational lives already underwater. Yet without higher education, Americans are faced with a selection of low-wage jobs and high rates of unemployment.

Humanities, Social Sciences and English

Writing Booklyn/Brooklyn Writing

Mark Noonan
English Department

Over the last several years, I have participated in a number of NEH and CUNY Faculty Grants to study the Brooklyn Waterfront including "The Brooklyn Greenwalk" (2008); "Water and Work: The Ecology of Downtown Brooklyn" (2009) and "Along the Shore: The Landmarks of Brooklyn" (June 2010 and 2012). In 2011 and 2012, I served as a First Year Associate Fellow for the Title V Grant entitled, "A Living Laboratory: Revitalizing General Education for a 21st-Century College of Technology." Out of these grants and activities, I have incorporated many of my findings into my research and classroom coursework. In the latest edition of the composition anthology The Place Where We Dwell: Reading and Writing About New York City, for example, I developed an entire chapter on writing about and researching the Brooklyn shore. In my own research, I have presented talks such as "Water and Work in the Literature of Brooklyn" and "East River School: Artist and Writers of the Brooklyn Waterfront." I have also published several articles on Brooklyn history and culture including, most recently, "Brooklyn Accents and the Paradox of Ambition in the Lives and Early Works of Norman Mailer and Arthur Miller" (The Norman Mailer Review Fall 2013).

Word

Jane Mushabac
English Department

A single word may be the shortest form of a poem. With information overload, we often forget to honor the simplest unit of meaning, the word. Words are dynamic and iconic. In English 1141, Creative Writing, each of us has chosen an evocative word in a language long important to us, fourteen different languages in all.

Adella's Diary

Mary Nilles
English Department

Adella's Diary (illustrations by Anthony Accardo, Advertising Design & Graphic Arts) is an historical novella depicting the life of Madeline Marnach through pages of her 1894 diary. She is the daughter of Luxembourger immigrants, residing with her family in the home known today as the Marnach House (1857; Register of Historic Places), located in the Whitewater Valley of southeastern Minnesota.

Re-gendering Post-racial Fantasies: How Black Women Mix Media

Dionne Bennett
African American Studies Department

Popular discourse hosts numerous claims that America is a "post-racial" society as well as counter-claims that we have not yet achieved a post-racial state. Much of this discourse marginalizes gender, in general, and women of color, in particular. This presentation will explore how contemporary media representations of Black women engage race and gender politics of 21st century American culture.

Star Power: On the Impact of Branded Celebrity

Aaron Barlow
English Department

This two-volume cultural studies project, to be published by Praeger, includes essays by four City Tech professors: Aaron Barlow, Monique Ferrell, Laura Westengard and Julian Williams. The set explores what it means to be a star in today's media environment after a look at some of the problems and possibilities faced by stars of the past.

Traces of Communist Legacy in Post Socialist Hungary: The Kitsch-ifcation of Material Culture

Lisa Pope Fischer
Department of Social Sciences

Making former symbols of Communist strength "kitschy" creates a mockery of the past, and fodder for humor and "play," as illustrated in Bahktin's discussion of inverse of power. This work explores multiple symbolism of communist kitsch as illustrating a collective ambivalence towards the post-socialist condition.

Consolidating the Evidence on Income Mobility in the Western States of Germany and the U.S. from 1984-2006

Gulgun Bayaz-Ozturk
Department of Social Science

We argue that a great social transformation—German reunification—abruptly and permanently altered economic mobility. When we cut the data into moving five-year windows and compare mobility before and after German reunification, income mobility declines significantly over the years immediately following reunification in Germany but not in the U.S.

Celebrating *Works in the Works*

Victoria Lichterman and Shauna Vey
Humanities Department

Works in the Works celebrates the third anniversary of the Humanities Department's monthly conversations with both the City Tech faculty and our student body. *WiW* explores the connections between disciplines through an ongoing series of presentations sharing the creative efforts, scholarly writing, research, poetry, prose, and music of our collective full time and adjunct faculty.

Heroes: Who Are They and Do They Make a Difference?

Martin Garfinkle
Department of Health and Human Services

This study explores the relationship between one's choice of a hero and its relationship to resilience, psychological wellbeing and other personality factors. Responses from 130 students from a commuter college in New York City were analyzed. Using regression analysis, significant relationships between one's primary hero and resilience were determined. The implications of this research are discussed.

Using Web Analytics to Develop a Mobile Interface

Junior Tidal
Library

Libraries are developing mobile Web sites to keep up with the dynamic landscape of emerging technologies, however the development of a mobile Web site is not as simple as serving the existing desktop Web site on a handheld device. Library developers can use analytics software to better understand users and to develop a user-centered mobile Web site. This case study explores the use of a library's traditional desktop Web site's analytics information in creating a mobile interface.

Immersive Virtual Worlds For Everyone

Damon Baker
Emerging Media Technologies Department

With recent advances in technology the equipment necessary for creating immersive virtual and augmented reality simulations has moved from laboratories to living rooms. My students and I have spent the last semester integrating commodity gaming interfaces and open source software to explore the possibilities this opens to the world at large.

Exploring an Ethic of Service in Professional Communication

Patrick Corbett
English Department

A personal investigation into the rewards and difficulties of pro bono exhibit design for a rural military history museum as they prepared to host the Heinz Foundation's Pennsylvania Civil War 150 travelling exhibit. This story involves navigating family disagreements, discovering the power of bartering, and learning how to provide pro bono service to the community in a practical way.

Documenting New York's Copper-Sulfuric Acid-Petroleum Triangle with Geo-referenced Historic Fire Insurance Maps

Anne Leonard[1] and Peter Spellane[2]
[1]Library
[2]Department of Chemical Technology

Several of the country's largest commercial-industrial enterprises began operations in the 19th century along Newtown Creek. Sulfuric acid, produced at Newtown Creek, was consumed in the refining of petroleum. One mineral source provided sulfur for the production the acid and copper ore for the production of high-purity metal. Historic maps, superimposed on satellite images, illustrate the site's economic geography.

Education

Guiding Nursing Adjuncts

Lisette Santisteban and Aida Egues
Department of Nursing

Across the United States, struggle to manage increasing rates of student enrollment due to a lack of full-time nurse educators. Adjunct faculty play a necessary and vital role in educating increasing numbers of students, particularly in the clinical area. However, the nursing literature reflects an overall lack of orientation to teaching for nursing adjuncts. Orientation itself is not an answer to the nurse educator shortage, but a bridge to mentorship that supports and nurtures a successful career for a nurse educator. This paper addresses an approach to orientation that may be beneficial to nursing departments seeking to demonstrate support of and value in maintaining adjunct faculty as critically important nurse educators.

Teaching the Skills to Question:

A Credit-Course Approach to Critical Information Literacy

Ian Beilin and Anne E. Leonard
Library

Critical Information Literacy teaches the 'rules' of research and documentation, but places them within larger frameworks of critical dialogue, creative thinking, and political and historical inquiry. We describe the ways in which LIB 1201, the library's critical information literacy course, teaches students the skills to succeed in the world, and fosters a deeper understanding of how information functions in the world.

Academic Service Learning Project: Use of a High Impact Educational Practice in Human Biology Course

Andleeb Zameer
Department of Biological Sciences

One of the major objectives of the Living Lab Project at City Tech is to help faculty members include High Impact Educational Practices (HIP) into their curriculum. This poster describes incorporation and execution of Academic service learning projects, a HIP, as a teaching and learning tool in a first year course, Human Biology BIO 1100.

Association Bring Simulation

Rosalyn Forbes
Nursing Department

Since the late 19th century, life-size dolls and mannequins have evolved into simulators that have revolutionized the way we teach and learn. For a number of years Human Patient simulators have been used in nursing as a training tool and method to assess performance. Simulators are a state of the art teaching tool that is changing the health care system around the world.

How Students Achieve Mastery of Course Content

Virginia Curran, Emma Kontzamanis, and Bridget Maley
Nursing Department

Participation in CUNY Bridging the Gap: Cognitive Research and Instructional Practice prompted the question: How can faculty help students achieve mastery of course content? In Spring of 2014 an informal, self-assessment survey will be given to our lecture classes at the beginning and end of the semester. Throughout the semester educational strategies to help students achieve mastery will be used. Results will be shared with department faculty in Fall of 2014.

Student Self-Assessment of Prior Knowledge to Foster Active Learning

Barbara Smith Mishara
Department of Architectural Technology

Technology and software change rapidly. A successful practitioner is constantly evaluating and improving knowledge and skills. In this study, students assess their knowledge and skills of a computer program, AutoCAD, which is used widely in the field of architecture. During the semester, students learn to use their performance baseline to focus on areas needing improvement.

Using Field-Based Undergraduate Research in Chemistry and Biology at City Tech

Diana Samaroo[1] and Ralph Alcendor[2]
[1]Department of Chemical Thechnology
[2]Department of Biological Sciences

Two Living Lab fellows integrated high-impact research activities into existing courses in the Chemistry and Biology Departments at New York City College of Technology. In chemistry, these activites include field-based research, case studies and undergraduate research. In biology, they includes field-based research, where learning occurs inside and outside the classroom.

Prior Knowledge: the Concept and its Effects on Student Learning

Anna Matthews
Dental Hygiene Department

Prior knowledge can be valuable or detrimental in acquisition of new information. In the “True or False?” assignment for Pharmacology, Dental Hygiene students investigate the validity of their own and their patients’ prior knowledge on selected dental health-related topics and practice effective communication of their findings. OpenLab provides a supportive online course environment that increases students’ participation and stimulates discussion, promoting student learning.

Bridging the Gap at City Tech: Cognitive Research and Instructional Practice

Julia V. Jordan
Faculty Commons

In over seven meetings during the spring 2013 semester, 35 City Tech faculty members explored key aspects of learning and the research that supports them, including: 1) the role of prior knowledge and misconceptions; 2) deep versus surface learning and the transition from novice to expert learner; and 3) the role of practice and feedback. This poster discusses the learning principles that participating faculty plan to apply to their teaching practice.

Noyce Explorers, Scholars, Teachers: Fostering Exceptional Computer and Mathematical Education Research in New York City

Fangyang Shen[1], Andrew Douglas[2], Estela Rojas[2], and William Roberts[3]
[1]Computer Systems Technology Department
[2]Mathematics Department
[3]Borough of Manhattan Community College

City Tech, collaborating with BMCC, will implement a Noyce Phase I scholarship program that increases the number of highly qualified STEM teachers in high need school districts in Brooklyn and the New York metropolitan area. Computer Education research, Math Education Research and Teacher Education Research will be conducted with the project activities.

The Effect of Targeted Weekly E-Communication on Adjunct Faculty at City Tech

Kevin Rajaram[1], Julia Jordan[2]
[1]Computer Systems Technology Department
[2]Faculty Commons

Adjunct faculty at New York City College of Technology have traditionally not responded to college-wide announcements due to either a lack of targeted communication addressing the needs to this specific group or a lack of participation. Faculty who were made aware of weekly email announcements in spring 2013 increased the amount of traffic to the website, thereby improving the College's ability to communicate with these faculty members.

Inter Hospital Collaborative Project via Open Lab Fall 2013

Zoya Vinokur
Department of Radiologic Technology and Medical Imaging

The Inter Hospital Collaborative Project allows students to work together in groups and research disease with imaging technology. We hope that our Inter Hospital Collaborative effort will educate, inform, and serve as a useful model for future open lab projects.

Design Students Promote a Community Project, a Case Study

M. Genevieve Hitchings
Department of Advertising Design and Graphic Arts

Design education at the college level can provide students with opportunities to work in collaboration with faculty on projects for actual clients that deal with pressing social issues. *You Are Never Alone* (YANA), a worker training center located in Rockaway Park, Queens, was in need of an identity design. The project turned out to be an ideal service-learning challenge for design students taking *Advanced Vector Art*.

Integrating the Narrative into Associate Level Technical Education

Kara Pasner
Department of Vision Care Technology

Literature, theatrical performance, film and the arts can be used to enhance empathy among students of health professions at the associate level. The use of these media enables students to learn how feelings are expressed and also gain new insights into their own emotional responses to illness and suffering as well as into the moral and ethical issues posed by medical practice. Analysis of written assignments indicates that this may trigger attitude change, foster understanding of the illness experience and enhance empathy for the patients.

Using Evaluation Tools to Demonstrate Training Effectiveness

Celeste Waddy
Nursing Department

The use of evaluation tools can help trainers to develop more effective teaching practices. Discussion of these tools and processes can help participants to apply new knowledge and skills, and demonstrate the practical results of training. Different modes of evaluation and surveys aid in determining the tangible results of training.

A Study on Healthcare-associated Infections and Multi-Drug Resistance, An Integrative Approach

Liana Tsenova[1], Urmi Ghosh-Dastidar[2], Arnavaz Taraporevala[2] and Pamela Brown[3]
[1]Biological Sciences Department
[2]Department of Mathematics
[3]Chemistry Department

This is a collaborative interdisciplinary project for undergraduate students at the NYC College of Technology that addresses the need for public education and awareness of (1) healthcare-associated infections (HAIs), and (2) multi-drug resistance. These studies provided students in Microbiology and Statistics with the opportunity to conduct research, perform scientific and mathematical analyses, discuss issues and exchange opinions.

Mentoring Initiatives at City Tech: A Mentoring Handbook for Faculty

Viviana Acquaviva, Ralph Alcendor, Reginald Blake, Justin Davis, Aida Egues, Pa Her, Elaine Leinung, Robert Leston, Janet Liou-Mark, Zory Marantz, Alberto Martinez, Marie Montes-Matias, Jonas Reitz, Jody Rosen, Diana Samaroo, Liana Tsenova, Justin Vazquez-Poritz, Selwyn Williams, Lin Zhou
Undergraduate Research Committee School of Art and Sciences

The Undergraduate Research Committee has developed a mentoring handbook to guide faculty across disciplines at City Tech through the mentoring process. This handbook addresses the benefits of becoming a mentor, includes narratives and case studies relating to different mentoring styles to highlight how to navigate the mentor-mentee relationship, and shares approaches to undergraduate research.

Brooklyn's Waterfront as a Living Laboratory

Anne Leonard
Library

Fellows in the college's Living Lab seminar develop general education learning outcomes using high-impact learning practices, especially place-based learning. Capitalizing on City Tech's proximity to Brooklyn's historic post-industrial waterfront, fellows participate in a walking tour, enhanced by a mobile website on the Open-Lab. As this activity is integrated into coursework, students use the site to assess their learning.

Admission Criteria for Radiologic Technology Programs

Anthony DeVito and Jennett Ingrassia
Department of Radiologic Technology & Medical Imaging

Radiologic Technology Programs assess prospective students in an effort to predict who will successfully complete the program. This research covers some of the criteria that are employed by radiography and Allied Health care programs across the US in predicting student success. By noting predictive criteria of all Allied Health programs, some may be applied to the radiologic technology admission process to facilitate student success.

Reading Effectively Across the Disciplines - Focus on Biology

Davida S. Smyth
Department of Biological Sciences

I am the biology liaison for READ - Reading Effectively Across the Disciplines. Our goal is to improve pass-rates and learning outcomes in biology by teaching the student readings skills through the use of strategies and assignments. I will present the ongoing project that we are implementing in BIO1101 involving seven faculty and six undergraduate peer-leaders.

Collaboration with New Tools and Building Information Modeling

Alexander Aptekar
Department of Architectural Technology

Cloud-based collaboration tools have been transforming the nature of collaboration. Over the course of three semesters, these new collaboration methods have been tested and explored within the context of building information modeling [BIM] student projects. Lateral collaboration describes the integration between different classes and departments, while horizontal collaboration refers to the integration within each individual classroom.

Engaged in a Living Laboratory: Revitalizing High Impact General Education at a 21st Century College of Technology

Karen Goodlad[1], Jonas Reitz[2], Alexander Aptekar[3], Charlie Edwards[4], and Maura Smale[5]
[1]Hospitality Management Department
[2]Mathematics Department
[3]Department of Architectural Technology
[5]Library

Engaging faculty in general education reform requires innovative measures to evolve existing structures and cultivate new ways for faculty to develop their teaching and learning practices. The Grant's leadership has developed a robust series of programs to explore strategies for engaging our students. Through the use of high-impact practices and encompassing our Brooklyn waterfront location as a living laboratory, faculty are revitalizing general education at City Tech.

Learning by Visualizing

Nadia Benakli[1], Ashwin Satyanarayana[2], Satyanand Singh[1], Arnavaz Taraporevala[1].
[1]Mathematics Department
[2]Computer Information Systems Department

This paper discusses some of the tools used to enhance classroom instruction. Emphasis is placed on ways in which the use of technology in Mathematics and Computer science elevates learning.

Mathematics

Enumerating Acyclically Oriented Subgraphs

Ariane Masuda
Department of Mathematics

We obtained closed formulas for the number of acyclically oriented induced subgraphs of certain families of graphs. This problem arises from an algebraic interpretation of generalization of the Tsetlin library Markov chain. This is joint work with Hol Seo.

Principal Subspaces of Standard Modules for Twisted Affine Lie Algebras

Corina Calinescu
Department of Mathematics

Principal subspaces of standard modules have been widely studied from different standpoints. In this joint work with Lepowsky and Milas, we prove all the important algebraic and combinatorial properties of principalsubspaces in the twisted case by using vertex operator algebras. Vertex operator algebra theory is a relatively new theory, which has many applications in representation theory, number theory, combinatorics, group theory, string theory etc.

Pressure-Driven Oscillatory Flows of Wormlike Micellar Mixtures

Lin Zhou
Department of Mathematics

Recently, experimental results have been reported on oscillatory forced tube flow of wormlike micellar mixtures. Resonance and inhomogeneities were observed in the velocity profiles. In this poster, we study pressure-driven oscillatory flows in a rectangular channel, simulating and comparing results of the quasi-linear model and of a nonlinear PEC model.

Simulation Insights Using R

Boyan Kostadinov
Department of Mathematics

We promote computational thinking and solving of real-world problems involving randomness within a pedagogical framework based on computer simulations. We hope that this simulation framework based on using R, the free open source computational software, may prove to be a valuable learning tool for students of math and science.

Fermat's Last Theorem, what is it good for?

Hans Schoutens
Department of Mathematics

Fermat's Last Theorem has intrigued mathematicians for centuries, since it defied any proof method. Building upon the work of countlessly many great mathematicians, Andrew Wiles gave a conclusive proof in 1995. However, this result always remained a mathematical puzzle, without any real applications. Together with Russell Miller, we now have found one non-trivial application regarding the encoding of a random sequence of real numbers.

Variation of Hilbert Coefficients

Laura Ghezzi
Department of Mathematics

In this work, recently published in the Proceedings of the American Mathematical Society, we study how Hilbert coefficients of parameter ideals in a Noetherian local ring can vary. In particular we give estimations for the first Hilbert coefficients when an ideal is enlarged in the same integral closure class.

Introducing Interesting Groups in an Introductory Abstract Algebra Course.

Marianna Bonanome
Department of Mathematics

Most introductory abstract algebra courses at the undergraduate level will spend a fair amount of time on group theory. Isomorphism theorems, theory of abelian groups, and theory of finite groups may be covered in some detail. The common nonabelian groups provided as examples include dihedral symmetry groups, permutation groups and matrix groups. It can be challenging to provide further interesting infinite groups that can be explored and understood in some detail. In our work we propose several interesting groups, such as Thompson's group $*F*$, the Lamplighter group $*L*_{2}$, and self-similar groups, which can be made accessible to an undergraduate audience.

Resurrection Axioms and Uplifting Cardinals

Thomas Johnstone
Department of Mathematics

We introduce the resurrection axioms, a new class of forcing axioms, and the uplifting cardinals, a new large cardinal notion, and prove that various instances of the resurrection axioms are equiconsistent over ZFC with the existence of an uplifting cardinal. This is joint work with Joel David Hamkins.

A Fifth Way to Skin a Definite Integral

Satyanand Singh
Mathematics Department

We use a novel approach to evaluate the indefinite integral of 1/(1 + x4) and use this to evaluate the improper integral of this integrand from 0 to infinity. Our method has advantages over other methods in ease of implementation and accessibility.

Physics

NLO QCD Corrections to Higgs Boson Production at the LHC

Giovanni Ossola
Physics Department

The results reported by experimental collaborations at the Large Hadron Collider have confirmed the existence of Higgs boson, thus confirming the validity of the electroweak symmetry breaking mechanism. By means of a new automated tool for computation of one-loop scattering amplitudes, we studied the production of Higgs boson plus jets in gluon fusion, which is the main production channel at the LHC, and the production rate for a Higgs boson associated with a top quark pair and a jet, which is directly proportional to the coupling of the Higgs boson to the top quark.

Superfluidity and Collective Properties of Excitonic Polaritons in Gapped Graphene in a Microcavity

Oleg Berman
Physics Department

We predict the superfluidity of polaritons in an optical microcavity formed by excitons in gapped graphene embedded there and microcavity photons. The Rabi splitting related to the creation of an exciton in a gapped graphene layer is obtained. We show that the superfluid density and the phase transition temperature are decreasing functions of the energy gap.

Boosted Top Quark Pairs at the LHC

Andrea Ferroglia
Physics Department

We present recent studies of the production of highly energetic top-quark pairs at the Large Hadron Collider. We derive factorization formulas for the partonic cross section which allow us to obtain precise predictions for some differential distributions at approximate next-to-next-to-leading order or, alternatively, to implement the resummation of logarithmic corrections up to next-to-next-leading logarithmic accuracy.

M-Theory Solutions

C. Bachas,[1] E. D'Hoker,[2] J. Estes[3] R. Feldman, M. Gutperle,[4] D. Krym[5]
[1]aLPTENS Paris, [2],[4]UCLA, [3]Imperial College London, [5]Physics Department, NYC College of Technology

M-Theory is an 11-dimensional supersymmetric gauge and gravity theory which is the low energy approximation for string theory at strong coupling. We study consistent geometries and their basic constituents, M2 and M5 branes, which carry mass and charge. Via the gauge/gravity correspondence, the solutions also describe strongly interacting field theories with defects.

Spin-Flavor Symmetry in Large Nc QCD

Boris Gelman
Physics Department

Nucleon-nucleon interaction is discussed in the framework of large Nc QCD. The baryon spectrum in the large Nc limit exhibits contracted SU(2Nf) spin-flavor symmetry. This symmetry is used to derive model-independent relations between proton-proton and proton-neutron total cross sections which are valid when the relative momentum of two nucleons is of order of Nc. In this kinematic regime the nucleon-nucleon scattering can be described using the time-dependent mean field approximation. These model-independent relations are in good correspondents with the experimental data for spin-independent and polarized total nucleon-nucleon cross sections.

The Electron-Hole Superfluidity in Two Coaxial Nanotubes

Ilya Grigorenko
Physics Department

The superfluid phase and Coulomb drag effect caused by the pairing in the system of spatially separated electrons and holes in two coaxial cylindrical nanotubes are predicted. It is found that the drag resistance as a function of temperature experiences a jump at the critical temperature and can be used for the manifestation of the superfluid transition.

Long-lifetime Polariton BEC in a Microcavity with an Embedded Quantum Well and Graphene

German V. Kolmakov
Physics Department

We study the propagation of a Bose-Einstein condensate (BEC) of long-lifetime exciton polaritons in a microcavity with an embedded semiconductor quantum well or a graphene layer using the Gross-Pitaevskii equation. We found that the polariton propagation in a microcavity with graphene is dynamically tunable by changing the gap energy that makes it useful for applications in integrated optical circuits.

The Physical Nature of Distant Galaxies: Theoretical and Computational Challenges

Viviana Acquaviva
Physics Department

My research aims to improve our understanding of galaxy evolution by answering questions such as: How far away are galaxies? How do galaxies form their stars? I develop new computational techniques for data modeling and analysis that can help investigate these issues efficiently and accurately. These qualities are essential to the exciting "big data" revolution happening in Astronomy.

Contributions of the W-boson Propagator to the Muon and Tau Leptonic Decay Rates

Zhibai Zhang and Andrea Ferroglia
Physics Department

We study the contributions of the tree-level W-boson propagator to the muon and tau leptonic decay rates, and to the measurement of the Fermi constant. We give a general expression of the contribution in closed form and also useful expansion. A possible explanation is presented for the discrepancy between the coefficient of our subleading contribution and that in the literature.

A Comparison of Galaxy Formation Hydrodynamic Codes

Ariyeh Maller
Physics Department

Many codes have been developed to simulate the formation of galaxies, but it is unclear to what extent they converge on a single answer. In this project we look at 6 popular codes using three different methods of implementing hydrodynamics to ascertain the degree of agreement between different methods.

Strings on Wormholes and Nonsingular Black Holes

Justin Vazquez-Poritz and Zhibai Zhang
Physics Department

We study the behavior of open strings on wormhole and black hole backgrounds with two asymptotically AdS regions. The black holes are unusual since they have no curvature singularities. We apply the AdS/CFT Correspondence to extract various features of the quarks in the dual field theories, including how the quark-antiquark screening length depends on temperature and chemical potential.

Research in Theoretical Physics at City Tech

Roman Kezerashvili
Physics Department

The review of research in theoretical physics in the fields of condensed matter theory and quantum nanophysics, high energy physics and quantum chromodynamics, and astrodynamics is presented. The review is focused on the recent publications of the members of the Center for Theoretical Physics with emphasis on the main results, achievements and accomplishments of the faculty.

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Open Pedagogies on the OpenLab

Jody Rosen[1], Jenna Spevack[2], Charlie Edwards[3], and Maura A. Smale[4]
[1]English Department
[2]Department of Advertising Design and Graphic Arts
[3]Project Manager
[4]Library

Since Fall 2011 City Tech's OpenLab has grown into a vibrant community of over 8,000 students, faculty, and staff using the platform for teaching, learning, and collaboration. Many faculty members have created assignments that take full advantage of this open digital platform to increase student engagement. We will report on compelling pedagogies on the OpenLab from a variety of disciplines.

Mary Lee Taylor: Homemaker or Business Woman?

Claire Stewart
Hospitality Management Department

Mary Lee Taylor founded a long- running radio cooking show, specializing in recipes "guaranteed to have man appeal." Mary Lee Taylor was a pseudonym for Erma Proetz, an influential advertising magnate. I am researching how Taylor's contrasting identities intersect, and what this duality (of the compliant housewife versus the powerful business woman) reveals about Americans in the era of World War II.

Reading Effectively Across the Disciplines

Juanita But
English Department

The main objective of the Reading effectively Across the Disciplines (READ) initiative is help improve student performance in the content areas by equipping faculty to use reading strategies a means to facilitate teaching and learning across the disciplines. Current participating departments in this pilot initiative include Biological Sciences, Business, and Computer Engineering Technology. Peer-mentoring is also implemented in some cases to develop students' active reading and study skills to achieve their learning goals.

Fabrication and Mechanical Characterization of Tissue Engineered Scaffolds with Polydimethylsiloxane and Polyethylene glycol diacrylate

Ozlem Yasar
Department of Mechanical Engineering Technology

Tissue engineering is a promising field which creates engineered scaffolds as an alternative approach for prostheses implants. Scaffolds need to be generated precisely to get decisive results for deficiency organ treatments. In the Laboratory for Engineering Tissue Systems, Polyethylene Glycol Diacrylate and Polydimethylsiloxane are used to fabricate the scaffolds and mechanical characterization tests are done to examine the scaffolds.

Organizing Committee

Roman Kezerashvili, Chair
Renata Budny
Candido Cabo
Bronwen Densmore
Andrea Ferroglia
Ilya Grigorenko
Delaram Kahrobaei
German Kolmakov
Darya Krym
Alexander Rozenblyum
Stephen Soiffer

The 11th Annual City Tech Poster Session exhibits the research of faculty and students. The Poster Session creates a spirit of College community, honors its intellectual achievements, and inspires its members. Over the past decade the Poster Session has grown, diversified, and evolved into a well-known and cherished tradition at the College. By promoting faculty and student research, the Poster Session initiative has added a new dimension to life at our College. This dimension has continued to grow as the success and popularity of the original Poster Session spurred the creation of the Honors and Emerging Scholars Poster Presentation by students which focuses on student research.

The Poster Session is generously supported by
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