Columbia University
The Fu Foundation School of Engineering and Applied Science

Two Thousand Fourteen

Celebrating Faculty Excellence

Acclaiming the awards, honors, and recognitions that our faculty received during the past year

Excellence
“We are in a Renaissance period for Engineering—a period of great research, great creativity and invention, great innovation, and incredible translation of these innovations to solutions that impact every aspect of society.”

—Mary C. Boyce
As we pause today to celebrate the significant accomplishments of our faculty during the past academic year, we recognize that our honorees are part of the lineage of faculty excellence that began at Columbia even before our School was founded. Early engineering inventors and entrepreneurs paved the way for the establishment of our School in 1864 as the School of Mines. Just as the School of Mines was at the forefront of technological breakthroughs of its time, our School today continues this 150-year tradition of excellence in education, research, and innovation.

We are in an Engineering Renaissance that is worldwide but is nowhere seen more clearly than at Columbia Engineering. The pathbreaking research of our faculty, together with their students, acts to define and push disciplinary frontiers that will impact our lives in ways we can only begin to imagine; their research also directly confronts the complexities of the grand challenges facing our world with engineering solutions that transform our future. Today, our faculty actively work to translate their research into practical innovations, capitalizing on our expanding avenues for entrepreneurship and engagement with industry. Through our teaching, mentoring, and example, we are preparing our students to use their intellect, their diverse talents, their creativity and passion to impact our world and to make the lives of future generations better.

Faculty who are cited here signal the continuation of our School’s impressive tradition of outstanding research and scholarship. This year we are pleased to celebrate the exceptional scholarship of Gordana Vunjak-Novakovic, newly elected to the Institute of Medicine of the National Academies, seven professors who have received named chairs—Steven M. Bellovin, Maria Chudnovsky, Qiang Du, James C. Hone, Kam W. Leong, Kenneth L. Shepard, and Yannis P. Tsividis—and all faculty who have received recognitions this past year. Congratulations!

Mary C. Boyce
Dean of Engineering
Morris A. and Alma Schapiro Professor
GORDANA VUNJAK-NOVAKOVIC

Mikati Foundation Professor of Biomedical Engineering and Professor of Medical Sciences (in Medicine)

INSTITUTE OF MEDICINE

elected a member of the Institute of Medicine of the National Academies in recognition of her outstanding professional achievement in the fields of health and medicine
Named Professors

STEVEN M. BELLOVIN
Percy K. and Vida L. W. Hudson Professor of Computer Science
Computer Science

MARIA CHUDNOVSKY
Liu Family Professor of Industrial Engineering and Operations Research and Professor of Mathematics
Industrial Engineering and Operations Research
Mathematics

QIANG DU
The Fu Foundation Professor of Applied Mathematics
Applied Physics and Applied Mathematics

JAMES C. HONE
Wang Fong-Jen Professor of Mechanical Engineering
Mechanical Engineering
Named Professors

Kam W. Leong
Samuel Y. Sheng Professor of Biomedical Engineering
Biomedical Engineering

Kenneth L. Shepard
Lau Family Professor of Electrical Engineering and Professor of Biomedical Engineering
Electrical Engineering
Biomedical Engineering

Yannis P. Tsividis
Edwin Howard Armstrong Professor of Electrical Engineering
Electrical Engineering
Singular Honors

Van C. Mow

Stanley Dicker Professor of Biomedical Engineering in the Faculty of Engineering and Applied Science and Professor of Orthopaedic Engineering in Orthopaedic Surgery

2014 ASME Medal
awarded by the American Society of Mechanical Engineers (ASME) in recognition of eminently distinguished engineering achievement

Masanobu Shinozuka

Professor of Civil Engineering and Engineering Mechanics

ASCE Medal Named in Honor of Professor Shinozuka
American Society of Civil Engineers (ASCE) established the Masanobu Shinozuka Medal, awarded biannually to an individual in recognition of outstanding research contributions in stochastic systems with applications to several branches of civil engineering

Hojjat Adeli Award for Innovation in Computing
for his paper “A Stochastic Computational Framework to Investigate the Initial Stage of Corrosion in Reinforced Concrete Superstructures,” coauthored with B. Shafei and A. Alipour
Matei Ciocarlie
Assistant Professor of Mechanical Engineering

Early Career Award
awarded by the Institute of Electrical and Electronics Engineers for major contributions to robotic manipulation research, released as open-source, and widely adopted and used in both academia and industry

Roxana Geambasu
Assistant Professor of Computer Science

NSF CAREER Award
for her proposal to create new data protection abstractions for modern operating systems

Microsoft Research Faculty Fellow
given to early career scholars who are engaged in state-of-the-art computing research and have the potential to make significant advances in the field

Pierre Gentine
Assistant Professor of Earth and Environmental Engineering

NASA New Investigator Program (NIP) in Earth Science
to study turbulence in Earth’s atmosphere and develop new models that can predict climate more effectively. The NIP is designed to support outstanding scientific research and career development of scientists and engineers at the early stage of their professional careers.
Faculty Early Career Development Awards

Vineet Goyal
Assistant Professor of Industrial Engineering and Operations Research

NSF CAREER Award
for his research on designing data-driven tractable and robust approaches for large-scale dynamic optimization under uncertainty

IBM Faculty Award
given to outstanding researchers at leading universities worldwide to foster collaboration with those in IBM research

Christine Hendon
Assistant Professor of Electrical Engineering

NIH New Innovator Award
for her proposal, “High resolution imaging of the myocardium”; awarded to creative, new investigators who propose exceptionally innovative research ideas that have the potential for high impact

Harish Krishnaswamy
Assistant Professor of Electrical Engineering

2014 IBM Faculty Award
given to outstanding researchers at leading universities worldwide to foster collaboration with those in IBM research
JAVID LAVAEEI

Assistant Professor of Electrical Engineering

NSF CAREER AWARD
for his research on electrical power networks

YOUNG INVESTIGATOR AWARD, OFFICE OF NAVAL RESEARCH (ONR)
for his work in upgrading today’s power grid into a smart grid that
can maintain a reliable and secure electricity infrastructure to meet
future demand growth

QI WANG

Assistant Professor of Biomedical Engineering

2014 EARLY CAREER ACHIEVEMENT AWARD FROM THE IEEE
ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY (EMBS)
for his contribution to neural engineering and biomedical
instrumentation, including measuring biomechanical properties of
skin and tissue, building a tactile display for a virtual Braille system,
and discovery of a neural basis for sensory adaptation in behavior
Election to Professional Societies

**Dimitris Anastassiou**
*Charles Batchelor Professor of Electrical Engineering*

**Fellow, National Academy of Inventors**
a high professional distinction accorded to academic inventors who have demonstrated a spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society

**Steven Bellovin**
*Percy K. and Vida L. W. Hudson Professor of Computer Science*

**National Cyber Security Hall of Fame**
honoring innovative individuals and organizations who have demonstrated vision and leadership in creating the foundational building blocks for the cybersecurity industry

**Simon Billinge**
*Professor of Materials Science and Applied Physics and Applied Mathematics*

**Fellow, Neutron Scattering Society of America**
in recognition of his “seminal contributions to the field of local structure and nanostructure studies using atomic pair distribution function methods and impact on the field of neutron diffraction”

**Xi Chen**
*Associate Professor of Earth and Environmental Engineering*

**Fellow, American Society of Mechanical Engineers (ASME)**
in recognition of outstanding engineering achievements
Election to Professional Societies

George Deodatis
Santiago and Robertina Calatrava Family Professor of Civil Engineering; Chair, Department of Civil Engineering and Engineering Mechanics

Fellow, Engineering Mechanics Institute of the American Society of Civil Engineers (ASCE)
which serves the engineering community through the development and application of engineering mechanics and seeks to establish a presence at the forefront of new thrusts of mechanics by promoting innovative developments in the field

Julia Hirschberg
Percy K. and Vida L. W. Hudson Professor of Computer Science; Chair, Department of Computer Science

Elected Member, American Philosophical Society
in recognition of her contributions to spoken language processing

Honorary Member, Association for Laboratory Phonology

Christopher Jacobs
Professor of Biomedical Engineering

Fellow, American Institute for Medical and Biological Engineering (AIMBE)
for fundamental advances in cellular biomechanics and mechanosensing, and for the training and mentoring of leaders in biomechanics
Election to Professional Societies

**Elisa Konofagou**

*Professor of Biomedical Engineering and of Radiology*

**Fellow, American Institute for Medical and Biological Engineering (AIMBE)**

for outstanding contributions to the field of biomedical ultrasound imaging and therapeutics, and advancing the field of elasticity imaging

**Biomedical Wellness Pioneer Award**

awarded by the International Society for Optics and Photonics at its Defense, Security, and Sensing (DSS) meeting

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**Michael Massimino**

*Professor of Professional Practice, Mechanical Engineering*

**Fellow, Explorers Club**

the international multidisciplinary professional society dedicated to the advancement of field research and the ideal that it is vital to preserve the instinct to explore

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**Lorenzo Polvani**

*Professor of Applied Physics and Applied Mathematics and of Earth and Environmental Sciences*

**Fellow, American Meteorological Society**

for outstanding contributions to the atmospheric or related oceanic or hydrologic sciences
Election to Professional Societies

Mihalis Yannakakis

Percy K. and Vida L. W. Hudson Professor of Computer Science

Elected Member, Academia Europaea

A functioning European Academy of Humanities, Letters, and Sciences, composed of members chosen through peer group nomination, scrutiny, and confirmation as to the scholarship and eminence of the individual in their chosen field.

Michael Weinstein

Professor of Applied Mathematics and Professor of Mathematics

Fellow, American Mathematical Society

For contributions to existence and stability of solitary waves, and nonlinear dispersive wave propagation.
Recognition/Achievement Awards

DAVID BLEI

Professor of Computer Science and of Statistics

Blavatnik Award for Young Scientists: Faculty Winner, 2013
Awarded by the New York Academy of Sciences to recognize outstanding scientists and engineers by encouraging and accelerating innovation through unrestricted funding and by recognizing their extraordinary achievements as vital contributions to science and society.

2013 ACM–Infosys Foundation Award for the Computing Sciences
Recognizes personal contributions by young scientists and system developers to a contemporary innovation that, through its depth, fundamental impact, and broad implications, exemplifies the greatest achievements in the discipline.

AUGUSTIN CHAINTREAU

Assistant Professor of Computer Science

2013 Association for Computing Machinery (ACM) SIGMETRICS Rising Star Researcher Award
For his significant contributions to the analysis of emerging distributed digital and social networking systems.

JINGGUANG CHEN

Thayer Lindsley Professor of Chemical Engineering

George Olah Award, American Chemical Society
Awarded to recognize, encourage, and stimulate outstanding research achievements in hydrocarbon or petroleum chemistry.
Recognition/Achievement Awards

STEVEN FEINER

Professor of Computer Science

IEEE VGTC 2014 Virtual Reality Career Award
in recognition of his lifetime contributions to augmented reality and virtual reality, including seminal research on mobile augmented reality, automated design and layout, and applications to task assistance and navigation

Keynote Speaker, 15th International Conference on Human-Computer Interaction with Mobile Devices and Services

ROXANA GEAMBUȘU

Assistant Professor of Computer Science

Popular Science’s “Brilliant 10”
named to the annual list of the brightest young minds in science and engineering, for her research that “teaches the cloud to forget personal data” and software that allows the public to see where their personal information is shared

DONALD GOLDFARB

Alexander and Hermine Avanessians Professor of Industrial Engineering and Operations Research

Selectee, World’s Most Influential Scientific Minds 2014
designating his work as among the top one percent most cited for the subject field and year of publication, earning the mark of exceptional impact
Recognition/Achievement Awards

**Elizabeth M. C. Hillman**

*Associate Professor of Biomedical Engineering and of Radiology*

**Rising Star, Optical Society of America (OSA)**

in recognition of research contributions on optics in the brain

**Associate Editor, Optical Society of America (OSA) Optica**

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**Christopher Jacobs**

*Professor of Biomedical Engineering*

**2014 Van C. Mow Medal, American Society of Mechanical Engineers (ASME)**

bestowed upon an individual who has demonstrated meritorious contributions to the field of bioengineering through research, education, professional development, and leadership, specifically for his exemplary research in bone cellular mechanotransduction and computational biomechanics

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**Ioannis A. Kougioumtzoglou**

*Assistant Professor of Civil Engineering and Engineering Mechanics*

**2014 Junior Research Prize, European Association of Structural Dynamics (EASD)**

for his innovative influence on the field of nonlinear stochastic dynamics

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**Upmanu Lall**

*Alan and Carol Silberstein Professor of Earth and Environmental Engineering and Professor of Civil Engineering and Engineering Mechanics*

**2014 Henry Darcy Medal from the European Geosciences Union**

recognizing outstanding scientific contributions in water resources research and water resources engineering and management
Recognition/Achievement Awards

**Javad Lavaei**

*Assistant Professor of Electrical Engineering*

2014 **Resonate Award, Resnick Sustainability Institute**
for his research on building a computational backbone to transform
the power grid into one that is flexible, smart, and dynamic

2013 **Google Faculty Research Award**
given to support the work of world-class full-time faculty members
at top universities around the world

**Invited Participant, National Academy of Engineering 2014**
**US Frontiers of Engineering Symposium**
for exceptional engineering research and technical work in a variety of
disciplines, including next-generation robotics; frontiers of materials
for batteries, shale gas, and oil; and technologies for the heart

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**Allison Lewko**

*Assistant Professor of Computer Science*

**Forbes “30 Under 30,” Science and Healthcare Category**
for her work on designing encryption algorithms and keeping data
secure

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**Hoe Ling**

*Professor of Civil Engineering and Engineering Mechanics*

**IGS Award, International Geosynthetics Society**
for outstanding contribution to the development and use of
geotextiles, geomembranes, related products, or associated
technologies through their scientific and technological achievements

**Honorary Professor, Shijiazhuang Railway University, China**
Recognition/Achievement Awards

Vishal Misra
Associate Professor of Computer Science

2014 U. Mass Amherst College of Engineering Outstanding Junior Alumni Award
for exemplary accomplishments, epitomizing the potential of a U. Mass Amherst College of Engineering education

Shree Nayar
T. C. Chang Professor of Computer Science

Letter of Appreciation from Sony Corporation
for his seminal contributions to computational imaging

Jason Nieh
Professor of Computer Science

Google Research Award
given to support the work of world-class full-time faculty members at top universities around the world

Kenneth C. Sevck Outstanding Student Paper Award
for “A Measurement Study of Google Play,” coauthored with Nicolas Viennot
Recognition/Achievement Awards

ADAM SOBEL

Professor of Applied Physics and Applied Mathematics and of Earth and Environmental Sciences

Ascent Award, Atmospheric Sciences Section of the American Geophysical Union
recognizing exceptional mid-career academic, government, and private sector scientists who demonstrate excellence in research and leadership in the fields of the atmospheric and climate sciences

AXA Award in Climate and Extreme Weather
to support research in the relationship between extreme weather events and the climate

PONISSERIL SOMASUNDARAN

LaVon Duddleson Krumb Professor of Mineral Engineering in the Department of Earth and Environmental Engineering

Appointed as Adviser/Consultant to China Waste Water Treatment Program, Nanjing

Member, Environmental Protection Agency Board of Scientific Counselors and Executive Committee

Chair, Combined BOSC Subcommittees for Chemical Safety for Sustainability and Human Health Risk Assessment Research Program

Chair, American Chemical Society Unilever Award
Recognition/Achievement Awards

GORDANA VUNJAK-NOVAKOVIC

Mikati Foundation Professor of Biomedical Engineering and Professor of Medical Sciences (in Medicine)

Advisory Board, City College New York, Department of Biomedical Engineering

Scientific Advisory Board, Advanced Cell Technology, Marlborough, MA

Scientific Advisory Board, UK Centers for Tissue Engineering/Regenerative Medicine, Imperial College, London

Scientific Advisory Panel, Strategic Plan for New York State Stem Cell Science

Advisory Council, Rensselaer Polytechnic Institute, Department of Biomedical Engineering

Editorial Board Member, Regenerative Engineering; Current Opinion in Chemical Engineering; Journal of Experimental Biology and Medicine; Journal of Experimental Orthopaedics; Organogenesis

Standing Member, Research Executive Agency of the European Commission

Member, Fritz J. and Dolores H. Russ Prize Committee of the National Academy of Engineering

Council Member, Tissue Engineering and Regenerative Medicine International Society (TERMIS) America
Recognition/Achievement Awards

**Haim Waisman**

*Associate Professor of Civil Engineering and Engineering Mechanics*

2014 EMI Leonardo da Vinci (Young Investigator) Award awarded by the Engineering Mechanics Institute, American Society of Civil Engineers (ASCE), for his outstanding contribution to computational fracture and damage mechanics by developing novel computational methods that advance the understanding, modeling capabilities, and applications of fracture mechanics to engineering mechanics problems at diverse length and time scales.

**Alan West**

*Samuel Ruben–Peter G. Viele Professor of Electrochemistry*

Electrodeposition Research Award of the Electrochemical Society (ECS) recognizing recent outstanding achievement or contribution in the field of electrodeposition.

**Chris Wiggins**

*Associate Professor of Applied Mathematics*

Appointed Chief Data Scientist, *The New York Times*
Recognition/Achievement Awards

Y. LAWRENCE YAO

Professor of Mechanical Engineering

Dedicated Service Award, American Society of Mechanical Engineers (ASME)

honoring unusual dedicated voluntary service to the Society marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm, and faithfulness

GIL ZUSSMAN

Associate Professor of Electrical Engineering

Marie Curie International Incoming Fellowship

awarded by the European Commission 7th Framework Program (FP7), to support research during a long-term visit to the School of Computer Science in Tel Aviv University, Israel, in the area of design and performance evaluation of resource allocation algorithms for energy harvesting networks
Scholarly Achievement and Leadership

**SUNIL AGRAWAL**

*Professor of Mechanical Engineering and of Rehabilitation and Regenerative Medicine*

Chair, ASME Design Engineering Division

Keynote Speaker, IEEE Life Sciences Grand Challenges Conference, Plenary Lecture, Singapore Robotics Games

Honorary Professor of Robotics, Computer Science Research Institute, School of Computing and Intelligent Systems, University of Ulster, Magee Campus

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**WILLIAM BAILEY**

*Associate Professor of Materials Science and Engineering in the Department of Applied Physics and Applied Mathematics*

2013 Nanosciences Foundation Chaire d’Excellence, Grenoble, France

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**KATAYUN BARMAK**

*Philips Electronics Professor of Applied Physics and Applied Mathematics*

Book published


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**RAIMONDO BETTI**

*Professor of Civil Engineering and Engineering Mechanics*

Member, Board of Governors of the International Association of Structural Control and Monitoring

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Columbia Engineering Faculty Excellence Celebration
Scholarly Achievement and Leadership

**Daniel Bienstock**  
*Professor of Industrial Engineering and Operations Research and of Applied Physics and Applied Mathematics*  
*Editor in Chief, Mathematical Programming Computation*

**Kartik Chandran**  
*Associate Professor of Earth and Environmental Engineering*  
*Guest Professor, Royal Dutch Academy of Arts and Sciences*

**Shih-Fu Chang**  
*Richard Dicker Professor of Telecommunications and Professor of Computer Science; Senior Vice Dean, The Fu Foundation School of Engineering and Applied Science*  
*First Prize Award, Grand Challenge Program of the 2013 ACM Multimedia Conference*  

*Best Paper Award, 2014 ACM Conference on Multimedia Retrieval*  
for “Minimally Needed Evidence for Complex Event Recognition in Unconstrained Videos,” coauthored with Subhabrata Bhattacharya and Felix X. Yu
Scholarly Achievement and Leadership

X. Edward Guo  
Professor of Biomedical Engineering  
1000Plan Professorship, West China College of Stomatology of Sichuan University

Tony Jebara  
Associate Professor of Computer Science  
Neural and Cognitive Computation Chair Professor, Tsinghua University

Martha Kim  
Assistant Professor of Computer Science

Kenneth A. Ross  
Professor of Computer Science  

Peter Kinget  
Professor of Electrical Engineering  
Member, Administrative Committee of the IEEE Solid-State Circuits Society  
Keynote Speaker, European Solid-State Conference in September 2013
Scholarly Achievement and Leadership

Peter Kinget
Professor of Electrical Engineering

IOANNIS KYMISISS
Associate Professor of Electrical Engineering

Best Poster Award, 2013 Global Interposer Technology (GIT) Workshop
for “Excimer Laser Crystallized Silicon for BEOL 3D Integration,” coauthored with Fabio Carta

Elisa Konofagou
Professor of Biomedical Engineering and of Radiology (Physics)

Significant Paper, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control

IOANNIS KYMISISS
Associate Professor of Electrical Engineering

Speaker, Indo-American Frontiers of Engineering
Scholarly Achievement and Leadership

JEFFREY W. KYSAR
Professor and Chair of Mechanical Engineering
Keynote Speaker, Plasticity 2014

ANDREW LAINÉ
Percy K. and Vida L. W. Hudson Professor of Biomedical Engineering and Professor of Radiology (Physics); Chair, Department of Biomedical Engineering
President, IEEE Engineering in Biology and Medicine Society (EMBS)

QIAO LIN
Associate Professor of Mechanical Engineering
Keynote Speaker, 24th Anniversary World Conference on Biosensors

RICHARD LONGMAN
Professor of Mechanical Engineering and of Civil Engineering and Engineering Mechanics
Distinguished Romberg Guest Professor, University of Heidelberg
Scholarly Achievement and Leadership

MASANOBU SHINOZUKA
Professor of Civil Engineering and Engineering Mechanics

Invited Participant, US/Japan Information Exchange on the Progress of Natural Hazard Resilient Structures

Editor’s Choice Best Paper, Journal of Structure and Infrastructure
for “Capacity Loss Evaluation of Reinforced Concrete Bridges Located in Extreme Chloride-Laden Environments,” coauthored with Alice Alipour and Behrouz Shafei

ADAM SOBEL
Professor of Applied Physics and Applied Mathematics and of Earth and Environmental Sciences

Book Published
Storm Surge: Hurricane Sandy, Our Changing Climate, and Extreme Weather of the Past and Future (HarperWave, October 2014)

PONISSERIL SOMASUNDARAN
LaVon Duddleson Krumb Professor of Mineral Engineering in the Department of Earth and Environmental Engineering

Book Published
Oil Spill Remediation: Colloid Chemistry-Based Principles and Solutions

WAICHING “STEVE” SUN
Assistant Professor of Civil Engineering and Engineering Mechanics

Caterpillar Best Paper Prize
for “A Multiscale DEM-LBM Analysis on Permeability Evolutions inside a Dilatant Shear Band,” coauthored with Matthew Kuhn and John Rudnicki in Acta Geotechnica
Scholarly Achievement and Leadership

Gordana Vunjak-Novakovic

Mikati Foundation Professor of Biomedical Engineering and Professor of Medical Sciences (in Medicine)

Keynote Speaker, Advances in Tissue Engineering

Distinguished Speaker, University of Miami


Editor’s Choice, Science Translational Medicine for “Bioengineered Human Tumor within a Bone Niche,” coauthored with A. Villasante and A. Marturano

Most Cited Paper, Journal of Orthopaedic Research “Bioreactor Cultivation Conditions Modulate the Composition and Mechanical Properties of Tissue-Engineered Cartilage” by Vunjak-Novakovic et al. was one of the top 10 most cited articles in the 30-year history of the Journal.

Gil Zussman

Associate Professor of Electrical Engineering

Member, IFIP Working Group 7.3 on Computer Systems Modeling

Keynote Speaker, “IEEE Global Conference on Signal and Information Processing (GlobalSIP 2013) Symposium on Energy Harvesting and Green Wireless Communications”