Faculty Scholarly Publications
and
Research Grants
School of Engineering and Applied Sciences

UNIVERSITY OF THE DISTRICT OF COLUMBIA 1851

2014 – 2016

4200 Connecticut Avenue NW
Washington, D.C. 20008
www.udc.edu/seas
The School of Engineering and Applied Sciences (SEAS) offers nationally competitive and fully accredited professional programs at the baccalaureate and graduate levels.

**ACADEMIC PROGRAMS**

Bachelor of Science
- B.S. Biomedical Engineering (new)
- B.S. Civil Engineering
- B.S. Electrical Engineering
- B.S. Electrical Engineering with Computer Engineering
- B.S. Mechanical Engineering
- B.S. Computer Science
- B.S. Information Technology

Graduate Degrees
- M.S. Civil Engineering (new)
- M.S. Computer Science
- M.S. Electrical Engineering
- M.S. Mechanical Engineering (new)

**RESEARCH INITIATIVES AND CAPABILITIES**


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**School of Engineering and Applied Sciences**
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A Note from the Dean

Dr. Devdas Shetty  
School of Engineering and Applied Sciences (SEAS)  
University of the District of Columbia

It is with great pleasure that I introduce the report on the scholarly, creative and professional work by our faculty. In addition to excellent teaching, the School of Engineering and Applied Sciences (SEAS) at the University of the District of Columbia believes that scholarship and involvement in grantsmanship are important to sustain excellence in engineering and computer science education and research. These activities from the faculty have contributed to the recognition of the college at the national level.

During the year 2014-16, the contributions from the faculty are listed below

• 22 scholarly publications (journals)
• 92 peer-reviewed publications (conferences)
• 6 books (2 text books, and four book chapters)
• 40 grants received
• 9 other significant publications
• 4 National Awards

The scholarly activities at SEAS are uniquely focused on student experience and engagement. Several students have been awarded prestigious internships, including research at NASA, NIST, Naval Research Laboratory, Air Force Research Laboratory, Goddard National Laboratory and Intel, Boston Scientific, Boeing Co. etc. This past summer witnessed a flurry of research projects mentored by SEAS faculty. UDC is a vibrant place with faculty student teams working side by side on real-world projects as well as faculty teams collaborating on interdisciplinary grant proposals.
SEAS Scholarly Activities:

Books:

Textbooks and Book Chapters


Book Chapter:


Junwhan Kim, R. Palmieri, and B. Ravindran, Scheduling Nested Transactions on In-memory Data Grids, printed by CRC, entitled "Big Data Management, Architecture, and Processing", 2016 (Book chapter)

Peer-Reviewed Papers and Conference Presentations


Faculty Scholarly Publications and Research Grants, 2014-16


Mahmoud Elsayed, Paul Cotae and Ira S. Maskowitz “On the Performance of the Underwater Wireless Sensor Networks: An Experimental Approach” ASEE 2015 North-East Section Regional Conference, April 30 - May 2, 2015, Northeastern University, Boston, Massachusetts, USA, April 30 - May 2, pp.1-6, 2015


Raju Shrestha and Paul Cotae, On the Mutual Information of Sensor Networks in Underwater Wireless Communication: An Experimental Approach”, ASEE 2014 Zone I Conference, April 3-5, 2014, University of Bridgeport, Bridgeport, CT, USA.

Daniel Gebremicheal, Paul Cotae, “On the probability of Error of Threshold Devices” ASEE 2014 Zone I Conference, April 3-5, 2014, University of Bridgeport, Bridgeport, CT, USA.


Paul Cotae, Mahmoud Elsayed, and Ira S. Maskowitz “On the Performance of Underwater Acoustic Sensor Networks: An Experimental Approach” ASEE 2016 St. Lawrence Section at Cornell University, April 6-8, 2016.


“Wireless Sensor Networks for Environmental Monitoring”, by Ashkenazi Labiba and Sasan Haghani was presented at the 71st Joint Annual Meeting of the BKX/NIS in Houston, TX, March 2014, and won 3rd place in the category of Engineering and Technology.


Dong Hyun Jeong, Soo-Yeon Ji, Evan A Suma, Byunggu Yu and Remco Chang, Designing a collaborative visual analytics system to support users' continuous analytical processes, Human-centric Computing and Information Sciences, Volume 5, Issue 1, Springer, 2015


Donghyeok Shin, Junwhan Kim, Byunggu Yu and Dong H. Jeong, "On avoiding Moving Objects for indoor autonomous quadrotors," 2016 IEEE International Conference on Automation Science and Engineering (CASE), Fort Worth, TX, Aug, 2016 (IEEE RAS Travel Award)

Junwhan Kim, R. Palmieri, and B. Ravindran, Scheduling Nested Transactions on In-memory Data Grids, printed by CRC, entitled "Big Data Management, Architecture, and Processing", 2016 (Book chapter)

Kim, Junwhan. “Partial Rollback-based Scheduling on In-memory Transactional Data Grids” IEEE International Conference on Big Data (IEEE Big Data), Washington DC, October 2014

J. Kim, S. Lee, “Impact of Software Transactional Memory in Mobile Devices,” IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, January, 2014 (Best Poster Award)


S. Lakeou et al., Solar Powered, Controlled Irrigation System at the UDC Experimental Farm, 29th European Photovoltaic Conference and Exhibition (EUPVSEC) 2014 in Amsterdam, the Netherlands.


Shetty, Devdas, Campana, Claudio; Ghosh Suhas and Manzione, Lou “Strategy for developing a model for sustainable product design and manufacture” Proceedings of the ASME 2015 International Mechanical Engineering Congress & Exposition, IMECE 2015-52325, November 13-19, 2015, Houston, Texas, USA


Bradley D. Taylor, Office of Naval Research, Summer Faculty Research Program (SFRP) Fellowship and Travel, “Integrated Imagery & Intelligence (I3) Microservice Public Key Infrastructure (PKI) and Resource Monitoring Utilities Capability Package (CP),” SPAWAR Systems Center Pacific, Philadelphia, PA, and Award: $16,500. (July – August 2016)


Thompson LA, Haburcakova C, Lewis R. A platform-system to study the effects of vestibular dysfunction on rhesus monkey posture (Journal paper in review 2016).


Johnson P, Thompson LA. An Investigation on the Control of a Robotic, Prosthetic Hand. 2016 Annual Biomedical Research Conference for Minority Students (ABRCMS), Tampa, FL.


Naresh Poudel, Chuan Chen, Thanh Tran, Jiajun Xu, "Experimental Study of Thermal Transport in Nanoemulsion Heat Transfer Fluids" ASME 2016 HTFEICNMM conference, Accepted

Fangyu Cao, Ying Liu, Jiajun Xu, Yadong He, B. Hammouda, Rui Qiao, Bao Yang, "Probing Nanoscale Thermal Transport in Surfactant Solutions", Scientific Reports 5, Article number: 16040 (2015)


Jiajun Xu, Boualem Hammouda, Fangyu Cao, Bao Yang, "Experimental study of thermophysical properties and nanostructure of self-assembled water/polyalphaolefin nanoemulsion fluids," vol. 7 no. 4, Advances in Mechanical Engineering, April 2015


Invited Newsletter
Grants Awarded to SEAS

Co-PIs: Kate L. Klein, Tarak Bhar, Esther Ososanya - NSF Advanced Technological Education (ATE) Grant for project, entitled "Nanotechnology Education Workforce Development," Period: July 2014-June 2016, $200,000.

Kate L. Klein - National Institute of Standards and Technology SURF Fellowship Grant, 2013 Award: $5,800; 2014 Award: $11,600.


Briana L. Wellman - NSF, Robert Noyce Scholarship Program grant for “Project Firebirds Reinventing STEM Teaching (Project FRST),” PI: Lena Walton, Co-PIs: Briana L. Wellman and Tolessa Dekissa. $2,146,100 total, Sept 1, 2015-August 31, 2021.


Pradeep Behera - National Science Foundation, Project ID: NSF-1245883 “Integrating virtual 3-D lab modules for flood modeling studies in civil engineering curriculum: An Inter-university implementation and evaluation”, September 2013 – August 2014, Amount: $193,382 (UDC Portion $10,000), Collaborative PIs: Dr. C. Viswanathan, Calumet.


Pawan Tyagi and Kate Klein –Airforce Office of Sponsored Research Office of Naval Research Research on Nanotechnology Major Research Instrumentation Grant, $200,000, 2012-2014.

(Update) Kate L. Klein - National Institute of Standards and Technology SURF Fellowship Grant, 2013 Award: $5,800; 2014 Award: $11,600; 2015 Award $23; 2016 Award $17,560.

Kate Klein, Devdas Shetty, Abiose Adebayo “Strengthening STEM Education through Technology- STEM Workforce Education and Research Development,” Verizon Foundation Grant (Awarded $20k Fall 2015).
Dong Jeong – DOD Grant on “Designing Robust Closed Loop Intrusion Detection Predictive Model in Cloud Computing Environment “, Total Grant: $448,000, UDC portion $89,000.

Lara Thompson, Travel Award Grant Annual Biomedical Research Conference for Minority Students (ABRCMS) October 2014, $1,850.


Co-PI: Lily R. Liang, “Department of Education award: Pathways to a STEM Baccalaureate and Beyond (STEM Pathways) at the University of the District of Columbia”, $249,999, for the first year of a three year grant, 2011 ~ 2014.

Lily R. Liang, “PKAL Capital Region Network Workshop at UDC”, NSF grant, $49947.05, August 1, 2015-July 31, 2017

Kate L. Klein, Tarak Bhar, Esther Ososanya - NSF Advanced Technological Education (ATE) Grant for project, entitled "Nanotechnology Education Workforce Development," Period: July 2014-June 2016, $200,000

Bradley D. Taylor, Office of Naval Research, Summer Faculty Research Program (SFRP) Fellowship and Travel, “Integrated Imagery & Intelligence (I3) Microservice Public Key Infrastructure (PKI) and Resource Monitoring Utilities Capability Package (CP),” SPAWAR Systems Center Pacific, Philadelphia, PA, Award: $16,500. (July – August 2016)

Xu J (PI), Tyagi P, Thompson LA (Co-PI), Klein K, Shetty D ($496,442). Acquisition of a Laser Rapid Manufacturing System, BEAM: Broadening Education through Advanced Manufacturing at UDC. HBCU/MI Instrumentation Grant Application, Department of Defense (June 2016)


Thompson LA (PI), Haghani S, Zhang N ($399,991). Targeted Infusion Project: Integration, Cultivation, and Exposure to Biomedical Engineering at the University of the District of Columbia. Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (July 15, 2015- June 30, 2015)

Thompson LA. University of the District of Columbia Myrtilla Miner Faculty Fellow Recipient. Award: $1,500. (May 2015)
**Thompson LA.** Travel Award Grant *Annual Biomedical Research Conference for Minority Students (ABRCMS)* October 2014, **$1,850.**


**Jiajun Xu,** “Design and Development of Non-point Stormwater Runoff Collection and Treatment System,” Provost’s Title III Grant #P031B120519, $5,000, 6/1/2015-8/1/2015.

**Jiajun Xu,** Travel Award Grant for Railway Engineering Education Symposium (REES) sponsored by the AREMA (American Railway Engineering and Maintenance-of-Way Association) Educational Foundation. June 2014, $1,000.

**Jiajun Xu,** Travel Award Grant INCREASE Workshop at Brookhaven National Laboratory, July 2014, $1,000.

Lara Thompson, **Nian Zhang,** and Sasan Haghani, “Historically Black Colleges and Universities Undergraduate Program (HBCU-UP): Targeted Infusion Project (TIP): Integration, Cultivation, and Exposure to Biomedical Engineering at the University of the District of Columbia,” National Science Foundation, $399,991, 7/15/15 – 6/30/18.

**Nian Zhang,** “Research Initiation Award Grant: An Intelligent Optimization, Clustering and Classification Framework for High Dimensional, Overlapped Classes, and Imbalanced Data,” National Science Foundation HBCU-UP Program. 7/15/15 – 6/30/17. $199,999.

**Nian Zhang,** “Development of Innovative Feature Selection Algorithms on Imbalanced Class Data,” Provost’s Title III Grant #P031B120519, $5,000, 6/1/2015-8/1/2015.

**Nian Zhang,** “Development of a Hybrid Particle Swarm Optimization (PSO) and Evolutionary Algorithm (EA) Based Feature Selection Algorithm with LS-SVM Classifier,” UDC STEM Center Mini-Grant, $4,000, 06/01/2015 – 07/31/2015.


Other Significant Activities

Grant from American Society of Metals for training of High School and Middle School teachers in the area of material science at UDC (July/August 2015, July/August 2016)

XEROX Foundation Research Grant for Undergraduate students/faculty research (2015, 2016)

Lockheed Martin Grant for STEM area especially for student engagement (2017)

New SEAS Research Center for interaction with regional industries. (2016 Fall)
National Awards

- Dr. Ahmet Zeytinci - ASEE - American Society of Engineering Education, Mid Atlantic Section Distinguished Teaching Award, Hofstra University, New York, October 2016

- Dr. Ahmet Zeytinci - Professional Engineers in Higher Education/Sustaining University Program Excellence in Engineering Education Award-July 2015, Seattle, WA

- Dr. Devdas Shetty – IEOM Distinguished Service Award for lifelong service and dedication to Engineering Education, Industrial Engineering & Operation Management, Detroit, September 2016