

**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
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The School of Engineering and Applied Sciences (SEAS) offers nationally competitive and fully accredited professional programs at the baccalaureate and graduate levels.

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- 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)

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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)
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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.

SCHOOL OF ENGINEERING AND APPLIED SCIENCES, UDC (2014-2016)

SEAS Scholarly Activities:

Books:

Textbooks and Book Chapters

Chen, Li. *Digital and Discrete Geometry: Theory and algorithms*, Springer, 2014, Released on Feb 11, 2015. (<http://www.springer.com/computer/image+processing/book/978-3-319-12098-0>)

Shetty, D. *Product Design for Engineers, 2016*. ISBN: 978-1-133-96204-5. A new textbook released by Cengage Learning Publications, 20, Channel Center Street, Boston, USA.

Solutions and Learning Strategies on Product Design 2017. ISBN: 978-1-133-96204-5. Cengage Learning Publications, (Accompanying manual) 20, Channel Center Street, Boston, USA.

Book Chapter:

Bao Yang, **Jiajun Xu**, “*Thermophysical Properties and SANS studies of Nanoemulsion Heat Transfer Fluids*”, InTech "Neutron Scattering", ISBN 978-953-51-4618-6 2016

Jiajun Xu, Fangyu Cao, Bao Yang, “*Phase Change Material Particles and Their Application in Heat Transfer Fluids*”, *Springer's Green Energy and Technology Series*. Edited by Dr. Zhiqun Lin and Jun Wang, Low Cost Nanomaterials: Toward Greener and More Efficient Energy Application, 2014

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, Roberto Palmieri, Bnoy Ravindran, *On Scheduling in Distributed Transactional Memory: Techniques and Tradeoffs*, Printed by Springer, Handbook on Data Centers, ISBN (978-1-4939-2092-1), 2015

Peer-Reviewed Papers and Conference Presentations

B Panigrahi, Alan Hall and Pradeep K. Behera, “Reevaluation of the C-51 Basin Rules” *Proceedings, Civil Engineering Conference in the Asian Region, 2016*, Honolulu, HI, Aug. 30 to Sept. 02, 2016.

Pradeep K. Behera, and Brahim Sidi Mhamed, “Analysis of External and Internal Storm Event Characteristics for Mid-Atlantic Region”, *World Environmental & Water Resources Congress, 2016, West Palm Beach, FL, May 22-26, 2016*.

Pradeep K. Behera, Ramesh Teegavarapu, Chandramauli V Chandramauli, Brahim Sidi Mhamed, “Tracking Changes and Trends in the Potomac River Stream flow Extremes and Characteristics”, *World Environmental & Water Resources Congress, 2016, West Palm Beach, FL, May 22-26, 2016*.

C,V,Chandramouli, E.Hixon, C. Zhou, J. Moreland, J.Wang, Z. Xiong, R.Teegavarappu, **P. Behera**, J.Fox (2016). *Evaluating the usefulness of Virtual 3D lab modules developed for a flooding system in student learning*. ASEE, 123rd Annual Conference & Exposition. New Orleans, LA.

Chandramouli, C.V, Ziong, Z., Wang, M., Moreland, J., Zhou, C., Teegavarappu, R., Fox, J., **Behera, P.**, and Hixon, E (2016). *Virtual 3D Modeling for Little Calumet River Flood Inundation Studies*. ASCE EWRI World Environmental and Water Resources Congress 2016. West Palm Beach, FL.

Behera P.K., and Ramesh Teegavarapu, “*Optimization of Storm water Quality Management Pond System*”, International Journal: Water Resources Management, DOI 10.1007/s11269-014-0862-1, 2014

Nian Zhang, Tilaye Alemayehu, **Pradeep Behera**, " *Nonlinear Autoregressive (NAR) Forecasting Model for Potomac River Stage using Least Squares Support Vector Machines (LS-SVM)*,"International Journal of Innovative Technology and Exploring Engineering (IJITEE)', ISSN: 2278–3075 (Online), Volume-4 Issue-9, Page No. 47-51, February 2015

Tolessa Deksissa, Lily R Liang, **Pradeep K Behera**, Susan Harknesss, “*Fostering Significant Learning in Sciences*”, International Journal for the Scholarship of Teaching and Learning, Vol. 2, No. 8, 2014.

L. Chen, Z. Su, B. Jiang, *Mathematical Problems in Data Science: Theoretical and Practical Methods*, Springer, Dec. 2015, <http://www.springer.com/in/book/9783319251257>.

L. Chen, Conference Chair of *Mathematical Foundation of Modern Data Sciences: Computing, Logic, and Education*, Jul. 27– Aug. 1, Dalian Maritime University (China), Satellite Conference of International Congress of Mathematicians (ICM2014, Seoul, Korea).
<http://www.icm2014.org/en/program/satellite/satellites>.

Mahmoud Elsayed and **Paul Cotaе**, “On The Performance and Modulation Techniques of Underwater Acoustic Sensors Network: Work in Progress”, *Proceedings of the ASEE Gulf-Southwest Annual Conference*, the University of Texas at San Antonio, San Antonio, Texas, USA, pp.1-10. March 25-27, 2015.

Mahmoud Elsayed, **Paul Cotaе** 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

Paul Cotaе, Suresh Regmi and Ira S. Moskowitz, “Non-Data Aided Doppler Shift Estimation for Underwater Acoustic Communication” (invited paper), *IEEE 10th International Conference on Communication (COMM)*, May 29-31, Bucharest Romania, pp.1-6, 2014.

Mahmoud Elsayed and **Paul Cotaе**, “On the Performance of the Underwater Wireless Communication Sensor Networks: Work in Progress” *ASEE Mid-Atlantic Fall 2014 Conference, Swarthmore College, Swarthmore, PA, USA, November 14- 15, 2014*.

Hadis Dashtestani, **Paul Cotaе**, Ira S. Moskowitz, “, *Proceedings of the IEEE 48th Annual Conference on Information Sciences and Systems* “- CISS 2014, Princeton University, March 19 – 21, pp. 1-6, March 2014.

Raju Shrestha and **Paul Cotaе**, 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 Cotaе**, “On the probability of Error of Threshold Devices” *ASEE 2014 Zone I Conference*, April 3-5, 2014, University of Bridgeport, Bridgeport, CT, USA

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E. Ososanya, S. Haghani, W. Mahmoud, S. Lakeou and S. Diarra, Design and Implementation of a Solar-Powered Smart Irrigation System, *Proc. of 2015 ASEE Annual Conference*, Seattle, WA, June 14-17 2015, pp. 1-15.

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A. Labiba **and S. Haghani**, “A Wireless Sensor Network for Environmental Monitoring of Greenhouse Gases”, *Proceedings of the ASEE 2014 Zone I Conference*, April 3-5, 2014 , Bridgeport, CT, USA, pp. 1-4.

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S.Y. Ji, S. Choi, **D.H. Jeong**, Designing an Internet Traffic Predictive Model by Applying a Signal Processing Method, *Journal of Network and Systems Management*, Springer, October 2015, Volume 23, Issue 4, pp 998–1015.

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Dong Hyun Jeong, Soo-Yeon Ji, Tera Greensmith, **Byunggu Yu** and Remco Chang: *Understanding Implicit and Explicit Interface Tools to Perform Visual Analytics Tasks*, To Appear, *IEEE 15th International Conference on Information Reuse & Integration (IRI) 2014*.

Soo-Yeon Ji, Seonho Choi, and **Dong Hyun Jeong**: *Designing a Two-Level Monitoring Method to Detect Network Abnormal Behaviors*, *IEEE 15th International Conference on Information Reuse & Integration*, 2014

Thabet Kacem, Duminda Wijesekera, Paulo Costa and Alexandre Barreto, "Secure ADS-B Framework "ADS-Bsec", 2016 IEEE 19th International Conference on Intelligent Transportation Systems (ITSC 2016), Rio di Janeiro, Brazil (to appear soon).

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K. Doudrick, S. Liu,† E.M. Mutunga, **K.L. Klein**, V. Damle, K.K. Varanasi, and K. Rykaczewski. *Different Shades of Oxide: From Nanoscale Wetting Mechanisms to Contact Printing of Gallium-Based Liquid Metals*. LANGMUIR 30 (23): 6867–6877 (doi: 10.1021/la5012023), May 2014.

R. Pearce, T. McKnight, **K.L. Klein**, I.N. Ivanov, D.K. Hensley, H.M. Meyer III, and A.V. Melechko. *Synthesis and properties of SiN coatings as stable fluorescent markers on vertically aligned carbon nanofibers*. AIMS MATERIALS SCIENCE 1(2): 87-102 (doi:10.3934/matserci.2014.1.87), April 2014.

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H. Wu, L.A. Stern, D. Xia, D. Ferranti, B. Thompson, **K.L. Klein**, C.M. Gonzalez, P.D. Rack. *Focused helium ion beam deposited low resistivity cobalt metal lines with 10 nm resolution: implications for advanced circuit editing*. JOURNAL OF MATERIALS SCIENCE: MATERIALS IN ELECTRONICS 25(2): 587-595, February 2014.

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Madeline J. Dukes, Albert D. Dukes, III, **Kate L. Klein**, Rebecca Thomas, Deborah F. Kelly, and John Damiano. "Applications and Design of Reinforced Silicon Nitride Windows for In Situ Liquid Transmission Electron Microscopy," Microscopy & Microanalysis Conference, Hartford, Connecticut, August 2014.

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Shida Tan, **Kate Klein**, Darryl Shima, Rick Livengood, Eva Mutunga, and András Vladár. "Mechanism and Applications of Helium Transmission Milling in Thin Membranes," EIPBN Conference, Washington D.C., May 2014.

S. Tan, **K. Klein**, D. Shima, R. Livengood, E. Mutunga, and A. Vladár. *Mechanism and applications of helium transmission milling in thin membranes*. Journal of Vacuum Science & Technology B 32, 06FA01 (doi: 10.1116/1.4900728), October 2014.

E.M. Mutunga, S. Tan, A.E. Vladár, and **K.L. Klein**. "Progression of Focused Helium Ion Beam Milling in Gold Substrates," Microscopy & Microanalysis Conference, Portland, Oregon, August 2015.

S. Lakeou et al., *Mobile Solar Power Delivery System for Rural Applications*, Africa Photovoltaic Solar Energy Conference and Exhibition 2014, in Durban, South Africa.

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.

Tolessa Deksissa, **Lily Liang, Pradeep Behera** and Suzan Harkness. "Fostering Significant Learning in Sciences", International Journal for the Scholarship of Teaching and Learning, Vol. 8, No. 2, 2014.

N. Kumar, **S. Haghani and D. Shetty**, "Wearable Wireless Inertial Sensors for Estimation of Gait Parameters and Its integration with Portable Harness Ambulatory System for Rehabilitation", to be presented at the IMECE 2014, Nov. 2014, Montreal Canada.

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P. Tyagi, "Teaching a course with active learning approaches and training other teachers about deep learning strategies," *IJIER*, vol. 2, p. 14, 2014.

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Briana L. Wellman, Dawson, Shameka, Anderson, Monica. "Multi-robot Coverage Using Observation-based Cooperation with Backtracking." Proceedings of the FLAIRS 26 Conference, St. Pete Beach, FL., May, 2013.

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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)

Naresh Poudel, **Jiajun Xu**, "Experimental and Numerical Study of Nanoemulsion Heat Transfer Fluid ", 26th NASA TFAWS, Washington D.C., Aug. 3-7, 2015

Devdas Shetty, Naresh Poudel, **Jiajun Xu**, "A New Technique For Evaluating Disassembly And Maintenance Using An Example Of Underground Escalator", ASME 2015 International Mechanical Engineering Congress and Exposition, November 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

Liangbin Hu, Hongli Xu, **Jiajun Xu**, Bao Yang, "Highly Thermally Conductive Papers with Percolative Layered Boron Nitride Nanosheets", ACS Nano, March 2014

Jiajun Xu, Fangyu Cao, Bao Yang, B. Hammouda, "Experimental Study of Phase-Changeable Water/Polyalphaolefin Nanoemulsion Fluids", IMECE2014-36533, Proceeding of IMECE 2014.

Yu, Y. and R.B. Machemehl, "Real Time Optimization of Passenger Collection for Commuter Rail Systems" Canadian Society for Civil Engineering, the 10th International Specialty Conference on Transportation, Halifax, May 2014.

Roussel Kamaha and **Nian Zhang**, "Investigation of Fault-Tolerant Adaptive Filtering for Noisy ECG Signals," *2014 Annual Biomedical Research Conference for Minority Students (ABRCMS)*, San Antonio, Texas, November 12-15, 2014.

Nian Zhang, Charles Williams, Pradeep Behera, "Water Quantity Prediction Using Least Squares Support Vector Machines (LS-SVM) Method", *Journal on Systemics, Cybernetics and Informatics (JSCI)*, vol. 12. no. 4, pp. 53-58, October 2014.

Nian Zhang, Charles Williams, and Pradeep Behera, "Water Quantity Prediction Using Least Squares Support Vector Machines (LS-SVM) Method," *The 18th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2014)*, Orlando, Florida, July 15-18, 2014.

Nian Zhang, Juan F.R. Rochac, Esther T. Ososanya, Wagdy H. Mahmoud, and Samuel Lakeou, "VLSI Design and Verification of a CMOS Inverter Using the Tanner EDA: A Case Study," *The 7th International Multi-Conference on Engineering and Technological Innovation (IMETI 2014)*, Orlando, Florida, July 15-18, 2014.

Nian Zhang, Tilaye Alemayehu, Pradeep Behera, "Nonlinear Autoregressive (NAR) Forecasting Model for Potomac River Stage Using Least Squares Support Vector Machines (LS-SVM)", *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, vol. 4, no. 9, pp. 1-9, February 2015.

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Francisco Lourenco, **Nian Zhang** and Sasan Haghani, "Prediction of Surface Water Supply Sources for the District of Columbia Using Neural Networks Methods," *ASEE Zone III Meeting 2015*, Springfield, MO, September 23-25, 2015.

Tilaye Alemayehu, **Nian Zhang**, and Pradeep K. Behera, "Water Quality Classification of Potomac River Using Principal Component Analysis Method," *National Capital Region Water Resources Symposium*, Washington D.C., April 10, 2015.

Roussel Kamaha and **Nian Zhang**, "Amelioration of an ECG Signal Using Noise Neutralizer Adaptive Filtering Algorithms," *The 72nd Joint Meeting BKX and NIS*, Jackson, Mississippi, March 11-14, 2015.

Roussel Kamaha and **Nian Zhang**, "Performance Study of Adaptive Filtering Algorithms for Noise Cancellation of ECG Signal," *2015 Emerging Researchers National (ERN) Conference in STEM*, Washington, D.C., February 19-21, 2015.

Nian Zhang and Devdas Shetty, "An Effective LS-SVM Based Approach for Surface Roughness Prediction in Machined Surfaces," vol. 198, pp. 35-39, *Neurocomputing*, July 2016.

Nian Zhang and Lara A. Thompson, "An Intelligent Clustering Algorithm for High Dimensional and Highly Overlapped Photo-Thermal Infrared Imaging Data," *Fall 2016 ASEE Mid-Atlantic Regional Conference*, Hofstra University, Hempstead, NY, October 21-22, 2016.

Lara A. Thompson, A. Segun Adebayo, Nian Zhang, Sasan Haghani, Kathleen Dowell, and Devdas Shetty, “Building a More Diverse Biomedical Engineering Workforce: Biomedical Engineering at the University of the District of Columbia,” *38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society of the IEEE Engineering in Medicine and Biology Society (EMBC'16)*, Orlando, Florida, August 17-20, 2016.

Sasan Haghani, Daniel Albano, Wagdy H. Mahmoud, **Nian Zhang**, and Esther T. Ososanya, “Development of a Wearable Sensor Platform Powered by Harvested Energy,” *ASEE’s 123rd Annual Conference & Exposition*, New Orleans, LA, June 26-29, 2016.

Juan F. Ramirez Rochac, **Nian Zhang**, and Pradeep Behera, “Design of Adaptive Feature Extraction Algorithm Based on Fuzzy Classifier in Hyperspectral Imagery Classification for Big Data Analysis,” *The 12th World Congress on Intelligent Control and Automation (WCICA 2016)*, Guilin, China, 2016.

Nian Zhang, “Cost-Sensitive Spectral Clustering for Photo-Thermal Infrared Imaging Data,” *2016 Sixth International Conference on Information Science and Technology (ICIST)*, Dalian, China, 2016.

Juan F. Ramirez Rochac and **Nian Zhang**, “Reference Clusters Based Feature Extraction Approach for Mixed Spectral Signatures with Dimensionality Disparity,” *10th Annual IEEE International Systems Conference (IEEE SysCon 2016)*, Orlando, Florida, 2016.

Juan F. Ramirez Rochac and **Nian Zhang**, “Feature Extraction in Hyperspectral Imaging Using Adaptive Feature Selection Approach,” *The Eighth International Conference on Advanced Computational Intelligence (ICACI2016)*, Chiang Mai, Thailand, pp. 36-40, 2016.

Invited Newsletter

Zeytinci. A., ASCE National Capital Section, News Letter, Monthly articles since October 2014, <http://www.asce-ncs.org/index.php/special-features/dr-z-s-corner>

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 - *NASA, District of Columbia Space Grant Consortium, "Adaptive Cooperation and Communication Paradigms in Multi-robot Systems,"* \$49,042, May 1, 2013-August 25, 2014.

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.

Briana L. Wellman - *NASA, District of Columbia Space Grant Consortium, "Title: Undergraduate Research Experiences for DC Space Grant Consortium,"* \$49,997, May 1, 2014-August 25, 2015.

Briana L. Wellman - *NASA, District of Columbia Space Grant Consortium, "Title: Space Grant Summer Research and Programming Workshops,"* \$48,000, May 1, 2015-August 25, 2016.

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.

Paul Cotae - (MBCU/MSI) –Award No. W911NF-15-1-0481: "Performance Data-Driven Methods and Tools for Computer Network Defense through Network Science", Period: August 21, 2015- August 21, 2018 (**\$594,755.00**).

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.

Samuel Lakeou – *US State Department, Bahir Dar University/University of the District of Columbia* – Research Partnership on Renewable Energy, October 2011-September 2015, \$15,000.

Samuel Lakeou - *NIFA – National Institute of Food and Agriculture* Solar Wells as Alternative Source of Water Supply for Sustainable Food Production, March 2014- February 2015, \$60,000.

Co-PI: Lily R. Liang, “Targeted Infusion: Enhancing Undergraduate Programs in Environmental Science and Sustainability”, NSF award, \$298,421. September 1st, 2011 ~ August 31st, 2014.

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) (\$7,500). *Investigating Forceplate-based Measures in Non-Athlete and Athlete Populations*. University of the District of Columbia Faculty Incentive Research Grant (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.**

PI: **Jiajun Xu**, Co-PI: Tolessa Deksissa– NIFA – National Institute of Food and Agriculture, “Development of a Novel Stormwater Runoff Collection and Treatment System for Urban Agriculture and Food Security”, August 2015- July 2018, \$60,000

PI: **Jiajun Xu**, Co-PI: Xueqing Song– United States Geological Survey (USGS)/DCWRRI, Project ID: 2015DC171B, Title: “A Novel Water Treatment Solution Using Hybrid Mesoporous Materials Embedded with Metallic Oxide Nanoparticle”, March 2015- February 2016, \$ 10,000

PI: **Jiajun Xu**, Co-PI: Xueqing Song– United States Geological Survey (USGS)/DCWRRI, Project ID: 2015DC172B, Title: “Water Pollution Prevention and Removal Using Nanostructured Smart Fluid with Switchable Surfactants”, March 2015- February 2016, \$ 10,000

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.

Nian Zhang and Pradeep Behera, “Potomac River Stage Forecasting Using a Hybrid Particle Swarm Optimization and Evolutionary Algorithm (PSO-EA) Algorithm with LS-SVM,” USGS Grant under DC Water Resources Research Institute (DCWRRI) Seed Grant, 3/1/2015 – 2/28/2016. \$33,217.

Nian Zhang and Pradeep Behera, “Prediction of Water Supply Sources for the District of Columbia Using the Least Squares Support Vector Machine (LS-SVM) Method,” USGS Grant under DC Water Resources Research Institute (DCWRRI) Seed Grant, 3/1/2014 – 2/28/2015. \$28,800.

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
- Dr Lara Thompson - Diverse: Issues in Higher Education Emerging Scholar Award for 2017.