



2016 IEEE Computational Intelligence Society (CIS) Winter School on *Big Data in Computational Intelligence: From Fundamental Principles to Complex Applications*

February 19-21, 2016, University of the District of Columbia (UDC), Washington, D. C.

Link: http://www.udc.edu/winter_school/IEEE_Cis_winter_school.htm

Organization Committee

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Department of Electrical and
Computer Engineering
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Columbia, DC



Dr. Zhen Ni
Department of Electrical and
Computer Engineering
South Dakota State University,
SD

Honorary Chair

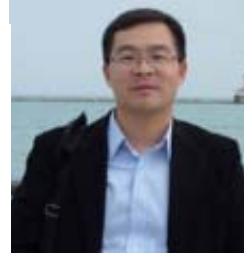


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Columbia, DC

Advisory Chair



Dr. Samuel Lakeou
Chair and Acting Assistant Dean
Department of Electrical and
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University of Rhode Island, RI

Our SEAS has hosted the 2016 IEEE Computational Intelligence Society (CIS) Winter School on Big Data in Computational Intelligence during February 19-21, 2016 at the University of the District of Columbia.

5 IEEE Fellows, 4 INNS Fellows, and 2 AIMBE Fellows has given a plenary talk. The Editor-in-Chief of the IEEE Transactions on Neural Networks and Learning Systems (TNNLS) has also come to support the winter school. There are 180 registrants.

With the recent development of modern technologies, computational intelligence (CI) has demonstrated tremendous successful results in big data era, and the potential capacities for complex real-world applications. The ultimate objective for this winter school is to deliver the state-of-the-art technique of new computational intelligence methodologies for the big data issues from fundamental principles to complex applications. It includes deep learning, evolutionary computation, self-organizing swarm robots, ensemble learning, imbalance learning and many others. The lectures will not only bring the essential concepts of learning, adaptation and optimization for the engineering students, but also introduce the cutting-edge techniques and applications for the young researchers. The ice-cream social discussion between the invited speakers and students will focus on the education development and career planning related issues for the students as well.

The 2016 IEEE CIS Winter School invites many IEEE CIS distinguished lecturers and world-renowned university experts to give plenary talks, lectures and courses. In addition to this, it also features student oral and poster presentations from the D.C. Metropolitan area, lab tours, and demo. Furthermore, this winter school is planned in conjunction with UDC SEAS's annual Discover Innovation Day event.

I. Winter School Highlights

At this IEEE Computational Intelligence Society (CIS) winter school, eight pioneers in the CI field will present and discuss the latest research developments and applications of CI across different domains. The distinguished invited speakers include: **Paul Werbos**, Fellows IEEE and INNS, adjunct professor in department of mathematics at University of Memphis and co-director of the Center for Large-Scale Intelligent Optimization and Networks (CLION); **Donald C. Wunsch**, Fellows IEEE and INNS, Mary K. Finley Missouri Distinguished Professor at Missouri University of Science and Technology; **Robert Kozma**, Fellows IEEE and INNS, Dunavant University Professor at University of Memphis; **Harold Szu**, Fellows IEEE, AIMBE, INNS,

OSA, SPIE, & Foreign Academician of RAS, research ordinary professor, The Catholic University of America; **Robi Polikar**, professor and department head of electrical and computer engineering at Rowan University; **Nitesh Chawala**, the Frank Freimann Collegiate Chair of Engineering and professor of computer science and engineering at University of Notre Dame; **Luis Kun**, Lifetime Fellow IEEE, Fellow AIMBE; and **Diego Loyola**, senior scientist and project manager at the Deutsches Zentrum für Luft- und Raumfahrt (DLR).

II. Registration & Check-in

The winter school is *FREE* to anyone who is interested to attend it, but the registration is required for logistic arrangement purpose. A workshop program book, name badge and souvenirs with the IEEE CIS logo are available for those who have registered. Online registration form is available at: <https://www.surveymonkey.com/r/2F2N8X7>

III. Hotel Reservation

The IEEE CIS Winter School recommends the Days Inn Hotel (4400 Connecticut Avenue, Washington, D.C., 20008 USA) for out-of-state attendances which is located within 5–minutes walking distance from UDC. The closest metro station from this hotel is Van Ness - UDC Metro Station, Red Line which is 0.3 mile away. Visitors may also reserve Washington Marriott Wardman Park (2660 Woodley Road NW, Washington, D.C., 20008 USA). The closest metro station is Woodley Park-Zoo/Adams Morgan Metro Station, Red Line which is 0.1 mile away.

IV. Transportation and Parking

The address of the University of the District of Columbia (UDC) is: **4200 Connecticut Ave, NW, Washington D.C. 20008**. For Metro Rail, take the Red Line to Van Ness-UDC station. And if you will be flying to the winter school, there are 3 major airports to choose from within an hour drive: (a) Washington National Airport (DCA) (Metro Rail Access), (b) Dulles International Airport (IAD) and (c) Baltimore- Washington International Airport (BWI).

V. Program

2016 Computational Intelligence Society (CIS) Winter School on Big Data in Computational Intelligence			
Time	Day 1 (<i>Ballroom, UDC student center</i>) (Friday 2/19/2016)	Day 2 (<i>UDC Building 42, Room A09</i>) (Saturday 2/20/2016)	Day 3 (Sunday 2/21/2016)
8:30 – 9:00	Registration and Breakfast		

9:00 – 9:05	Welcome and Opening Remarks Dr. Rachel Petty Provost and Vice President for Academic Affairs, UDC	Registration and Breakfast	Registration and Breakfast
9:05 – 9:10	Welcome and Opening Remarks Dr. Devdas Shetty Dean of College of Engineering and Applied Sciences, UDC		
9:10 – 9:15	Opening Remarks Dr. Samuel Lakeou Chair and Acting Assistant Dean, UDC		
9:15 – 9:20	Opening Remarks Dr. Nian Zhang General Chair of the IEEE CIS Winter School		
9:30 – 11:00	Plenary Speaker Dr. Paul Werbos Fellows IEEE and INNS Chair: Dr. Paul Cotae	Plenary Speaker Dr. Donald Wunsch II Fellows IEEE and INNS Missouri University of Science and Technology Chair: Dr. Esther Ososanya	Student Oral Presentations (10 minutes each + Q & A)
11:00 – 12:30	Plenary Speaker Dr. Nitesh Chawla University of Notre Dame Chair: Dr. Lily Liang	Plenary Speaker Dr. Robi Polikar Rowan University Chair: Dr. Tarak Bhar	
12:30 – 14:00	Group Picture Lab Tours and Demos Nanotechnology Clean Room, Director: Dr. Tyagi Pawan BME Laboratory, Director: Dr. Lara Thompson & Catered Lunch for all attendees	Catered Lunch for all attendees	Departure
14:00 – 15:30	Plenary Speaker Dr. Harold Szu Fellows IEEE, AIMBE, INNS, OSA, SPIE, & Foreign Academician of	Plenary Speaker Dr. Robert Kozma Fellows IEEE and INNS University of Memphis Chair: Dr. Bradley Taylor	

	<p>RAS Chair: Dr. A. Segun Adebayo</p>		
<p>15:30 – 17:00</p>	<p>Plenary Speaker Dr. Luis Kun Lifetime Fellow IEEE, Fellow AIMBE Chair: Dr. Pradeep Behera</p>	<p>Icecream Social with Students Chair: Dr. Zhen Ni</p>	
<p>17:00 – 17:45</p>	<p>Lecture Speaker Dr. Diego Loyola German Aerospace Center (DLR) Chair: Dr. Lara Thompson</p>		

VI. Speakers and Abstracts

Day #1 (Friday, February 19, 2016)

Conference Room: Ballroom, UDC Student Center
4200 Connecticut Ave., NW, Washington, D.C. 20008

Plenary Speakers:

✿ **Dr. Paul Werbos**, Fellow of the IEEE and INNS

Topic: Data Mining to Support Human Intelligence

✿ **Dr. Nitesh Chawla**, Frank Freimann Collegiate Chair of Engineering, University of Notre Dame

Topic: Being a Dataologist: From Personalized to Population Healthcare

✿ **Dr. Harold Szu**, Fellows IEEE, AIMBE, INNS, OSA, SPIE, & Foreign Academician of RAS

Topic: BDA Nowcast for Earthquakes defining Animals Natural Intelligence

✿ **Dr. Luis Kun**, Fellow AIMBE, Lifetime Fellow IEEE

Topic: Healthcare Transformation through Science and Technology Convergence: An Interoperable Holistic Vision

Lecture Speaker:

✿ **Dr. Diego Loyola**, German Aerospace Center

Topic: Smart Sampling Techniques in Big Data

Day #2 (Saturday, February 20, 2016)

Conference Room: UDC Building 42, Room A09
4200 Connecticut Ave., NW, Washington, D.C. 20008

✿ **Dr. Donald C. Wunsch II**, Fellow of the IEEE and INNS, IEEE Distinguished Lecturer, Mary K. Finley Missouri Distinguished Professor of Computer Engineering, Missouri University of Science and Technology

Topic: Fundamentals and Future Possibilities in Hybrid Learning

✿ **Dr. Robi Polikar**, Professor and Head of ECE, Rowan University

Topic: Semi-Supervised & Active Learning in Initially Labeled Nonstationary & Evolving Environments

✳ **Dr. Robert Kozma**, Fellows IEEE and INNS, University of Memphis

Topic: Big Data Challenges in Large-Scale Networks - From Brains to Stars

VII. VII. Ice Cream Social with Students

Dr. Zhen Ni gave a presentation introduce his Ph.D. study and experience of publishing papers and apply for tenure-track faculty jobs. The invited speakers also gave a lot of invaluable advices to the students about studies and professional career.

VIII. Student Oral Presentation Competition

The aim of the competition is for the undergraduate and graduate students to present their research findings about Computational Intelligence on Big Data, discuss the research methods and results with the attendees, and receive the suggestions from the review committee members to improve their presentation skills. 2 Ph.D. students, 1 Master student, and several undergraduate students gave the presentations. Among them, three are female students. The review committee member are Drs. Harold Szu, Esther Ososanya, Nian Zhang, and Lin-Ching Chang.

The winners of the oral presentation competition and the title are listed in the following table.

Award	Student Speaker	Title	Institution
1st Place	<u>Vy Bui</u> , Lin-Ching Chang (Mentor)	Explore Real-time Big Data Processing with Apache Storm using Twitter Public Stream Data	The Catholic University of America
2nd Place	<u>Sesegma Rygzydmaeva</u> , Esther Ososanya (Mentor)	Biomass energy	University of the District of Columbia
2nd Place	<u>Xiaomeng Liang</u> , Nanxi Lu, Mahdi Maghrebi, Helen Thahn Nguyen Lin-Ching Chang (Mentor), Arash Massoudieh	A Copula-based Model to Identify the Parameters of Run and Tumble Bacterial Motility	The Catholic University of America
3rd Place	John Pratt, <u>Munkhdul Tumurbaatar</u> , Dong H Jeong (Mentor)	Using MapReduce and K-Means Distance Measures to Identify Anomalies in Network Traffic Data	University of the District of Columbia
3rd Place	<u>Quoc Nguyen</u>	Vibrating Sample	University of the District

		Magnetometer and Faraday Balance measurements of YBa2Cu3O7	of Columbia
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Participants:

The total attendance was 180, including invited speakers and organizers.

Children's National Health System
 Children's National Medical Center
 UDC
 UDC
 Drabant Group LLC
 Montgomery college
 Marymount University
 Montgomery College
 University of the District of Columbia
 University of Maryland Baltimore County
 George Washington University
 Cisco Systems - retired
 Zikara Systems
 Bowie State University
 NIST
 Rowan University
 George Washington University
 Rowan University
 Rowan University
 Rowan University
 Rowan University
 Rowan University
 IEEE
 Department of Veterans Affairs
 U. S. Naval Research Laboratory
 Montgomery College
 University of the District of Columbia, Washington Dc
 The Geroge Washington University
 UDC
 STEM Center
 Capitol Technology University
 SDSU
 SDSU
 SDSU
 SDSU
 Naval Research Laboratory
 GWU
 The Geroge Washington University
 Department of Defense
 University of the District of Columbia

Montgomery College
GWU
Soft Tech Consulting, Inc.
The University of the District of Columbia
University of the District of Columbia
The George Washington University
the George Washington University
UDC
University of the District of Columbia
Wade Enterprises Inc
NIST CNST
George Mason University
Drabant Group LLC
Borochoff Research
NIST
Educational Institutions
University of The District of Columbia
Government, Army Night Vision Lab
Capitol Technology University
Montgomery College
Virginia State University
Montgomery College
montgmery college
Self-Employed
University of the district of columbia
Eastern Michigan University
University of the District of Columbia
University of Rhode Island
IDA
NOAA
University of the District of Columbia
Montgomery College
Montgomery College
Montgomery College
Montgomery college
IEEE
Montgomery College
Montgomery College
MONTGOMERY COLLEGE
Educational institution
Montgomery college
Rowan University
Rowan University
NERC
Montgomery college
Montgomery College
Montgomery college
US Army
Montgomery College (Rockville)

Hood College
Montgomery College
The George Washington University
Montgomery College
Montgomery College
STSi
Marriott International
Montgomery college
Montgomery college
Montgomery College
UDC-CSIT Graduate School
University of the District of Columbia
Virginia Tech
The Catholic University of America
Bowie State University
Synthesis Partners, LLC
EBIZ LABS
Exponent, Inc.
George Mason University
Virginia Tech
Stat Tech Inc
JHU
IEEE
Amazon Web Services, Inc.
US Customs and Border Protection
Waverley Labs
self
Ebiz Labs, Inc
Symbeii Corporation
Bowie State University
Virginia Tech
Virginia Tech
Kwatt
JHU
Noerthcentral University
Catholic University of America
Florida Institute of Technology
MorphoTrust USA
School of Engineering and Applied Science, Department of Computer Science & Information
Technology, The University of the District of Columbia
University of Massachusetts Lowell
Pulitzer Center
UDC
National Science Foundation
University of Maryland, College Park
Towson university
Towson University
UDC
UDC

University of District of Columbia
UDC
UMD
University of Maryland
University of North Carolina at Charlotte
IEEE Fellow
DEPARTMENT OF ELECTRONICS, POLITECNICO DI TORINO
University of the District of Columbia
DC Water
NASA / UDC
Joint Educational Facilities
UDC
Northeastern University
UDC
Northeastern University
IT-University of Copenhagen
University of the District of Columbia
George Washington University
Virginia Tech University
University of the District of Columbia
NIH
University of Notre Dame
Missouri University of the District of Columbia
Rowan University
University of the District of Columbia
National Defense University
University of Memphis.edu
German Aerospace Center (DLR)
University of the District of Columbia
Towson University
University of the District of Columbia
University of the District of Columbia
Pepcoholdings Corp
University of Houston
George Mason University
University of the District of Columbia
University of the District of Columbia
University of the District of Columbia
University of the District of Columbia
Howard University
Children's National Health System
Children's National Health System
Montgomery College
University of the District of Columbia
IEEE
ARA, Inc. – Antenna Research

Participants per day

Day	Participants
Friday February 19th	156
Saturday February 20th	132
Sunday February 21th	51

IX. Conclusions

The CIS Winter School was well attended, organized very well, and was a very successful event. The participants from both UDC and outside are very impressed with the new Student Center. The discussions and interactions between the students and the invited speakers, and among the invited speakers themselves made the plenary sessions very interesting and exciting! The participants also enjoyed the student social with invited speakers session on Saturday, and the student oral presentation session on Sunday.

X. Acknowledgement

We would like to thank the IEEE CIS, Universidad of the District of Columbia, and the Lockheed Martin for supporting the event. We also would like to thank all the professors and students whose participation made this winter school successful.

XI. Pictures









