2018 IEEE DSW PROGRAM

MONDAY JUNE 4th

9.00
Keynote
Gil McVean
Oxford University, UK
The genomic analysis of biomedical big data

10.00
Coffee break

10.30
Lecture
Learning
Session Chair: Visa Koivunen
1: SEMI-SUPERVISED TRANSFER LEARNING USING MARGINAL PREDICTORS
Aniket Deshmukh; University of Michigan, United States
Emil Laftchiev; Mitsubishi Electric Research Labs, United States
2: SEMI-BLIND INFERENCE OF TOPO-LOGIES AND SIGNALS OVER GRAPHS
Vassilis N. Ioannidis
Yanning Shen
Georgios B. Giannakis;
University of Minnesota, United States
3: DIVIDE-AND-CONQUER TOMOGRA-PHY FOR LARGE-SCALE NETWORKS
Ali H. Sayed
Augusto Santos;
École Polytechnique Fédérale de Lausanne, Switzerland
Vincenzo Matta;
University of Salerno, Italy
4: COMPUTATIONAL STRATEGIES FOR STATISTICAL INFERENCE BASED ON EMPIRICAL OPTIMAL TRANSPORT
Carla Tameling
Axel Munk;
University of Goettingen, Germany
5: SPARSE SUBSPACE CLUSTERING WITH MISSING AND CORRUPTED DATA
Zachary Charles

Amin Jalali
Rebecca Willett;
University of Wisconsin-Madison, United States
6: AN EXPONENTIALLY CONVERGENT ALGORITHM FOR LEARNING UNDER DISTRIBUTED FEATURES
Bicheng Ying
Yuan Kun;
Ali H. Sayed; École Polytechnique Fédérale de Lausanne, Switzerland

12.30
Industry Outlook
1: Opportunities for machine learning in the manufacturing Industry
Srikrishna Chaitanya Konduru, Data Scientist, Bühler Group
2: AutoML for Text Classification
Claudiu Musat, Research Director, Artificial Intelligence & Machine Learning Group, Swisscom

13.00
Lunch break

14.00
Keynote
Volker Markl
Technische Universität Berlin, Germany
Big Data Management and Apache Flink: Key Challenges and (Some) Solutions

15.00
Coffee break

15.30
Data Science 1
1: SPECTRAL STATISTICS OF DIREC-TED NETWORKS WITH RANDOM LINK MODEL TRANSPOSE-ASYMMETRY
Stephen Kruzick
Jose M. F. Moura;
Carnegie Mellon University, United States

2: A NOVEL BACKBONE NETWORK ANOMALY DETECTOR VIA CLUSTERING IN SKETCH SPACE
Yating Liu
Yuantao Gu;
Tsinghua University, China
3: UNCERTAINTY QUANTIFICATION IN SUNSPOT COUNTS
Sophie Mathieu
Rainer von Sachs;
Université Catholique de Louvain, Belgium
Véronique Delouille
Laure Lefèvre;
Royal Observatory of Belgium, Belgium
4: OPTIMIZING THERMAL COMFORT AND ENERGY CONSUMPTION IN A LARGE BUILDING WITHOUT RENOVATION WORK
Sylvain Le Corff; CNRS, Université Paris-Sud, Université Paris Saclay, France
Alain Champagne
Maurice Charbit
Gilles Nozière;
Oze-Energies, France
Eric Moulines; Centre de Mathématiques Appliquées, France
5: ROBUST AND CONSISTENT CLUSTERING RECOVERY VIA SDP APPROACHES
Victor O.K. Li
Chenxi Sun;
The University of Hong Kong, China
Tongxin Li; California Institute of Technology, United States
6: LEARNING FROM SIGNALS DE-FINED OVER SIMPLICIAL COMPLEXES
Sergio Barbarossa
Stefania Sardellitti
Elena Ceci;
University of Rome, Italy
7: DISTRIBUTED NONPARAMETRIC DETECTION USING ONE-SAMPLE ANDERSON-DARLING TEST AND P-VALUE FUSION
Topi Halme
Visa Koivunen;

Aalto University, Finland
8: LEARNING FLEXIBLE REPRESENTATIONS OF STOCHASTIC PROCESSES ON GRAPHS
Addison Bohannon
Brian Sadler;
US Army Research Laboratory, United States
Radu Balan; University of Maryland, United States
9: PREDICTIVE MAINTENANCE OF PHOTOVOLTAIC PANELS VIA DEEP LEARNING
Timo Huuhtanen
Alexander Jung;
Aalto University, Espoo, Finland
10: ENDMEMBER EXTRACTION ON THE GRASSMANNIAN
Elin Farnell
Henry Kvinge
Michael Kirby
Chris Peterson;
Colorado State University, United States
11: FALSE DISCOVERY RATE CONTROL WITH CONCAVE PENALTIES USING STABILITY SELECTION
Bhanukiran Vinzamuri
Kush R. Varshney;
IBM Research, United States
12: NEARLY OPTIMAL ROBUST SUBSPACE TRACKING: A UNIFIED APPROACH
Praneeth Narayanamurthy
Namrata Vaswani
Iowa State University, United States
13: RESTRICTED ISOMETRY PROPERTY FOR LOW-DIMENSIONAL SUBSPACES AND ITS APPLICATION IN COMPRESSED SUBSPACE CLUSTERING
Gen Li
Qinghua Liu
Yuantao Gu;
Tsinghua University, China

LATE BREAKING RESULTS SESSION
14: FEATURE LEARNING OF VIRUS GENOME EVOLUTION WITH THE NUCLEOTIDE SKIP-GRAM NEURAL NETWORK
Hyunjin Shim; École Polytechnique Fédérale de Lausanne, Switzerland
15: DATA SCIENCE FOR ON-THE-GO PREDICTION OF STUDENT PERFORMANCE
Herman Dempere
Eloi Puertas
Laura Igual;
Universidad de Barcelona
16: JOINT ESTIMATION OF LOW-RANK COMPONENTS AND GRAPH IN GROSSLY-CORRUPTED DATA
Rui Liu; Singapore University Technology and Design
17: FROST — FAST ROW-STOCHASTIC OPTIMIZATION WITH UNCOORDINATED STEP-SIZES
Ran Xin, Tufts University

16.30
Lecture
Scalability in Data Sciences Analysis
Session Chair: Axel Munk
1: MULTI-SCALE ALGORITHMS FOR OPTIMAL TRANSPORT
Bernhard Schmitzer;
WWU Münster, Germany
2: CAUSALITY FROM A DISTRIBUTIO-NAL ROBUSTNESS POINT OF VIEW
Nicolai Meinshausen;
ETH Zurich, Switzerland
3: HIGH DIMENSIONAL CHANGE POINT ESTIMATION VIA SPARSE PROJECTION
Tengyao Wang
Richard J. Samworth;
University of Cambridge

17.30
Welcome reception
SwissTech Convention Center
In partnership with Bühler Group
BÜHLER

TUESDAY JUNE 5th

9.00
Keynote
Surajit Chaudhuri
Microsoft Research, Redmond, USA
What Data Platforms can do to support Data Scientists?

10.00
Coffee break

10.30
Special Session Lecture
Network Topology Inference
Session Chairs: Antonio G. Marques and Sundeep Chepuri
1: ONLINE GRAPH LEARNING FROM SEQUENTIAL DATA
Stefan Vlaski
Hermina Maretic
Roula Nassif
Pascal Frossard
Ali Sayed; École Polytechnique Fédérale de Lausanne, Switzerland
2: ONLINE IDENTIFICATION OF DIRECTIONAL GRAPH TOPOLOGIES CAPTURING DYNAMIC AND NONLINEAR DEPENDENCIES
Yanning Shen
Georgios B. Giannakis;
University of Minnesota, United States
3: SPARSEST NETWORK SUPPORT ESTIMATION: A SUBMODULAR APPROACH
Mario Coutino
Sundeep Prabhakar Chepuri
Geert Leus;
TU Delft, Netherlands
4: ON LEARNING LAPLACIANS OF TREE STRUCTURED GRAPHS
Keng-Shih Lu
Eduardo Pavez
Antonio Ortega;
University of Southern California, United States

IEEE
IEEE Signal Processing Society

5: DIRECTED NETWORK TOPOLOGY INFERENCE VIA GRAPH FILTER IDENTIFICATION
Gonzalo Mateos
Rasoul Shafipour;
University of Rochester, United States
Santiago Segarra; Massachusetts Institute of Technology, United States
Antonio Garcia Marques; King Juan Carlos University, Spain

6: LEARNING TO INFER POWER GRID TOPOLOGIES: PERFORMANCE AND SCALABILITY
Yue Zhao; Stony Brook University, United States
Jianshu Chen; Tencent AI Lab, United States
H. Vincent Poor; Princeton University, United States

12.30
Industry Outlook
1: Large-scale recommendations based on matrix factorization
Marios Anthimopoulos, Senior Researcher, Frontiers
2: Expedia Sort Algorithm
Phong Nguyen, Senior Data Scientist, Expedia

13.00
Lunch break

14.00
Keynote
Andreas Krause
ETH Zurich, Switzerland
Towards Safe Reinforcement Learning

15.00
Coffee break

15.30
Data Science 2
1: SUBSAMPLING LEAST SQUARES AND ELEMENTAL ESTIMATION
Keith Knight; University of Toronto, Canada

2: DEEP CNN SPARSE CODING ANALYSIS: TOWARDS AVERAGE CASE
Michael Murray
Jared Tanner;
The Alan Turing Institute and The University of Oxford, United Kingdom

3: NON-NEGATIVE SUPER-RESOLUTION IS STABLE
Armin Eftekhari; Alan Turing Institute, United Kingdom
Jared Tanner
Andrew Thompson
Bogdan Toader
Hemant Tyagi;
University of Oxford, United Kingdom

4: SUBGRADIENT PROJECTION OVER DIRECTED GRAPHS USING SURPLUS CONSENSUS
Ran Xin
Chenguang Xi
Usman Khan;
Tufts University, United States

5: VECTOR COMPRESSION FOR SIMILARITY SEARCH USING MULTI-LAYER SPARSE TERNARY CODES
Sohrab Ferdowsi
Slava Voloshynovskiy
Dimche Kostadinov;
University of Geneva, Switzerland

6: SUBSPACE PRINCIPAL ANGLE PRESERVING PROPERTY OF GAUSSIAN RANDOM PROJECTION
Yuchen Jiao
Xinyue Shen
Gen Li
Yuantao Gu;
Tsinghua University, China

7: THE MICHIGAN DATA SCIENCE TEAM: A DATA SCIENCE EDUCATION PROGRAM WITH SIGNIFICANT SOCIAL IMPACT
Arya Farahi
Jonathan Stroud; University of Michigan – Ann Arbor, United States

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8: PROFIT MAXIMIZING LOGISTIC REGRESSION MODELING FOR CREDIT SCORING
Gaurav Sukhatme
Arnout Devos;
University of Southern California, United States
Jakob Dhondt; Switch, Switzerland
Eugen Stripling
Bart Baesens
Seppe vanden Broucke;
KU Leuven, Belgium

9: ALTERNATING AUTOENCODERS FOR MATRIX COMPLETION
Kiwon Lee
Yong H. Lee
Changho Suh;
Korea Advanced Institute of Science and Technology (KAIST), Korea (South)

10: AN EFFICIENT RECOMMENDER SYSTEM BY INTEGRATING NON-NEGATIVE MATRIX FACTORIZATION WITH TRUST AND DISTRUST RELATIONSHIPS
Hashem Parvin
Parham Moradi
Shahrokh Esmaeili;
University of Kurdistan, Iran
Mahdi Jalili; RMIT University, Australia

11: SPARSE ANOMALY REPRESENTATIONS IN VERY HIGH-DIMENSIONAL BRAIN SIGNALS
Catherine Stamoulis;
Harvard Medical School, United States

12: PREDICTING ELECTRICITY OUTAGES CAUSED BY CONVECTIVE STORMS
Roope Tervo
Joonas Karjalainen;
Finnish Meteorological Institute, Finland
Alexander Jung; Aalto University, Finland

13: AIM: AN ABSTRACTION FOR IMPROVING MACHINE LEARNING PREDICTION
Victoria Stodden
Xiaomian Wu; University of Illinois Urbana-Champaign, United States

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Vanessa Sochat; Stanford University, United States

14: NETWORK INFERENCE FROM COMPLEX SYSTEMS STEADY STATES OBSERVATIONS: THEORY AND METHODS
Hoi-To Wai
Anna Scaglione;
Arizona State University, United States
Baruch Barzel
Amir Leshem;
Bar-Ilan University, Israel

16.30
Lecture
Data Science Theory
Session Chair: Waheed U. Bajwa
1: SAVE – SPACE ALTERNATING VARIATIONAL ESTIMATION FOR SPARSE BAYESIAN LEARNING
Christo Kurisummoottil Thomas
Dirk Slock; Eurecom, France
2: SUBSPACE DATA VISUALIZATION WITH DISSIMILARITY BASED ON PRINCIPAL ANGLE
Xinyue Shen
Yuchen Jiao
Yuantao Gu;
Tsinghua University, China
3: BYRDIE: A BYZANTINE-RESILIENT DISTRIBUTED LEARNING ALGORITHM
Zhixiong Yang
Waheed Bajwa;
Rutgers University, United States

18.00
Olympic Museum Visit and Cocktail
22.00

WEDNESDAY JUNE 6th

9.00
Keynote
Lisa Amini
Director, IBM Research, USA
Why AI needs even more Data Science, and vice versa

10.00
Coffee break

10.30
Special Session Lecture
CNNs for Graph Data
Session Chairs: Antonio G. Marques, Geert Leus, and Alejandro Ribeiro
1: CONVOLUTIONAL NEURAL NETWORKS VIA NODE-VARYING GRAPH FILTERS
Fernando Gama
Alejandro Ribeiro;
University of Pennsylvania, United States
Geert Leus; Delft University of Technology, Netherlands
Antonio Marques; King Juan Carlos University, Spain
2: MOTIFNET A MOTIF-BASED GRAPH CONVOLUTIONAL NETWORK FOR DIRECTED GRAPHS
Federico Monti
Michael Bronstein;
Università della Svizzera italiana, Switzerland
Karl Otness; Harvard University, United States
3: REVISED NOTE ON LEARNING QUADRATIC ASSIGNMENT WITH GRAPH NEURAL NETWORKS
Alex Nowak; INRIA, Ecole Normale Superieure, France
Soledad Villar
Afonso Bandeira
Joan Bruna;
New York University, United States
4: MATCHING CONVOLUTIONAL NEURAL NETWORKS WITHOUT PRIORS ABOUT DATA
Carlos Eduardo Rosar Kos Lassance

Vincent Gripon;
IMT Atlantique, France
Jean-Charles Vialatte; IMT Atlantique / Cityzen Data, France

5: ON GRAPH CONVOLUTION FOR GRAPH CNNS
Jian Du
John Shi
Soummya Kar
Jose Moura;
Carnegie Mellon University, United States

6: TOWARDS A SPECTRUM OF GRAPH CONVOLUTIONAL NETWORKS
Mathias Niepert
Alberto Garcia-Duran;
NEC Labs Europe, Germany

12.30
Industry Outlook
1: Building machine learning products: from the whiteboard to the field
Gregory Mermoud, Senior Technical Leader, Cisco
2: Applied Reinforcement Learning: challenges and open problems
Hugo Penedones, Research Engineer, Google DeepMind

13.00
Lunch break

14.00
Keynote
Victoria Stodden
UIUC, USA
Reproducibility and Generalizability in Data-enabled Discovery

15.00
Coffee break

15.30
Grand Challenge:
Investment Ranking Challenge
P Principal
17.00