

2020 Information Theory and Applications Workshop (ITA 2020)

**San Diego, California, USA
2 – 7 February 2020**



**IEEE Catalog Number: CFP2032C-POD
ISBN: 978-1-7281-8825-6**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2032C-POD
ISBN (Print-On-Demand):	978-1-7281-8825-6
ISBN (Online):	978-1-7281-4190-9
ISSN:	2641-8150

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

RESIDUAL BASED SAMPLING FOR ONLINE LOW RANK APPROXIMATION	1
<i>Aditya Bhaskara; Silvio Lattanzi; Sergei Vassilvitskii; Morteza Zadimoghaddam</i>	
MASSIVE MIMO IS VERY USEFUL FOR PILOT-FREE UPLINK COMMUNICATIONS	20
<i>Namyoon Lee</i>	
UNIVERSAL BAYES CONSISTENCY IN METRIC SPACES	26
<i>Steve Hanneke; Aryeh Kontorovich; Sivan Sabato; Roi Weiss</i>	
SAFE TESTING	59
<i>Peter Grünwald; Rianne De Heide; Wouter M. Koolen</i>	
AGE OF INFORMATION IN MULTIPLE SENSING	113
<i>Alireza Javani; Marwen Zorgui; Zhiying Wang</i>	
WORST-CASE SATISFACTION OF STL SPECIFICATIONS USING FEEDFORWARD NEURAL NETWORK CONTROLLERS: A LAGRANGE MULTIPLIERS APPROACH	123
<i>Shakiba Yaghoubi; Georgios Fainekos</i>	
RESEARCH STATEMENT	143
<i>Anirbit</i>	
EFFICIENT NESTED KEY EQUATION SOLVER ARCHITECTURES FOR GENERALIZED INTEGRATED INTERLEAVED CODES	150
<i>Xinmiao Zhang</i>	
TENSOR COMPLETION THROUGH TOTAL VARIATION WITH INITIALIZATION FROM WEIGHTED HOSVD	156
<i>Zehan Chao; Longxiu Huang; Deanna Needell</i>	
RANDOM ACCESS CHANNEL ASSIGNMENT ON A COLLISION ERASURE CHANNEL	164
<i>Abhinanda Dutta; Steven Weber</i>	
A BRAIN-INSPIRED FRAMEWORK FOR EVOLUTIONARY ARTIFICIAL GENERAL INTELLIGENCE	175
<i>Mohammad Nadji-Tehrani; Ali Eslami</i>	
ACTIVE EMBEDDING SEARCH VIA NOISY PAIRED COMPARISONS	193
<i>Gregory H. Canal; Andrew K. Massimino; Mark A. Davenport; Christopher J. Rozell</i>	
EFFICIENT MATRIX MULTIPLICATION: THE SPARSE POWER-OF-2 FACTORIZATION	194
<i>Ralf R. Müller; Bernhard Gäde; Ali Bereyhi</i>	
COMMUNICATION-EFFICIENT AND BYZANTINE-ROBUST DISTRIBUTED LEARNING	200
<i>Avishek Ghosh; Raj Kumar Maity; Swanand Kadhe; Arya Mazumdar; Kannan Ramchandran</i>	
STOCHASTIC ITERATIVE HARD THRESHOLDING FOR LOW-TUCKER-RANK TENSOR RECOVERY	228
<i>Rachel Grotheer; Shuang Li; Anna Ma; Deanna Needell; Jing Qin</i>	
POINT CLOUD SEGMENTATION BASED ON HYPERGRAPH SPECTRAL CLUSTERING	233
<i>Songyang Zhang; Shuguang Cui; Zhi Ding</i>	
LEARNING WHENEVER LEARNING IS POSSIBLE: UNIVERSAL LEARNING UNDER GENERAL STOCHASTIC PROCESSES	234
<i>Steve Hanneke</i>	
MINIMUM UNCERTAINTY BASED DETECTION OF ADVERSARIES IN DEEP NEURAL NETWORKS	329
<i>Fatemeh Sheikholeslami; Swayambhoo Jain; Georgios B. Giannakis</i>	
SIMPLIFIED RAY TRACING FOR THE MILLIMETER WAVE CHANNEL: A PERFORMANCE EVALUATION	345
<i>Mattia Lecci; Paolo Testolina; Marco Giordani; Michele Polese; Tanguy Ropitault; Camillo Gentile; Neeraj Varshney; Anuraag Bodi; Michele Zorzi</i>	
GAUSSIAN MULTIPLE AND RANDOM ACCESS IN THE FINITE BLOCKLENGTH REGIME	351
<i>Recep Can Yavas; Victoria Kostina; Michelle Effros</i>	
NATURAL LANGUAGE ANALYSIS AND GENERATION BY DEEP LEARNING AND THE BIAS PROBLEM	376
<i>Seung-Shik Kang; Wonsup Jung</i>	
OPTIMAL LEARNING OF JOINT ALIGNMENTS WITH A FAULTY ORACLE	392
<i>Kasper Green Larsen; Michael Mitzenmacher; Charalampos E. Tsourakakis</i>	

AN INTERFERENCE-RESILIENT RELAY BEAMFORMING SCHEME INSPIRED BY BACK-PROPAGATION ALGORITHM	403
<i>Rui Wang; Yi Jiang</i>	
IDENTIFYING UNPREDICTABLE TEST EXAMPLES WITH WORST-CASE GUARANTEES	409
<i>Shafi Goldwasser; Adam Tauman Kalai; Yael Tauman Kalai; Omar Montasser</i>	
A DUAL APPROACH FOR OPTIMAL ALGORITHMS IN DISTRIBUTED OPTIMIZATION OVER NETWORKS	423
<i>César A. Uribe; Soomin Lee; Alexander Gasnikov; Angelia Nedic</i>	
NEW RESULTS ON THE RATE-EQUIVOCATION REGION OF THE OPTICAL WIRETAP CHANNEL WITH INPUT-DEPENDENT GAUSSIAN NOISE WITH AN AVERAGE-INTENSITY CONSTRAINT	460
<i>Morteza Soltani; Zouheir Rezki</i>	
THEORY FOR TERAHERTZ COMMUNICATIONS	466
<i>Hadi Sardeddeen; Mohamed-Slim Alouini; Tareq Y. Al-Naffouri</i>	
NEW PERSPECTIVES ON MAC FEEDBACK CAPACITY USING DECENTRALIZED SEQUENTIAL ACTIVE HYPOTHESIS TESTING PARADIGM	467
<i>Achilleas Anastasopoulos; Sandeep Pradhan</i>	
CODED CACHING WITH PRIVATE DEMANDS	489
<i>Kai Wan; Giuseppe Caire</i>	
NON-NEGATIVE MATRIX FACTORIZATION VIA LOW-RANK STOCHASTIC MANIFOLD OPTIMIZATION	495
<i>Ahmed Douik; Babak Hassibi</i>	
COST-AWARE LEARNING AND OPTIMIZATION FOR OPPORTUNISTIC SPECTRUM ACCESS	500
<i>Chao Gan; Ruida Zhou; Jing Yang; Cong Shen</i>	
SPATIAL CORRELATION IN SINGLE-CARRIER MASSIVE MIMO SYSTEMS	512
<i>Nader Beigiparast; Gokhan M. Guvensen; Ender Ayanoglu</i>	
STRUCTURE THEORY FOR ENSEMBLE CONTROLLABILITY, OBSERVABILITY, AND DUALITY	524
<i>Xudong Chen</i>	
ON MARTON'S ACHIEVABLE REGION: LOCAL TENSORIZATION FOR PRODUCT CHANNELS WITH A BINARY COMPONENT	564
<i>Chandra Nair</i>	
ON-THE-FLY UPLINK TRAINING AND PILOT CODE DESIGN FOR MASSIVE MIMO CELLULAR NETWORKS	571
<i>Chenwei Wang; Zekun Zhang; Haralabos Papadopoulos</i>	
A METHOD TO FIND THE VOLUME OF A SPHERE IN THE LEE METRIC, AND ITS APPLICATIONS	577
<i>Sagnik Bhattacharya; Adrish Banerjee</i>	
LIMITS OF DETECTING TEXT GENERATED BY LARGE-SCALE LANGUAGE MODELS	582
<i>Lav R. Varshney; Nitish Shirish Keskar; Richard Socher</i>	
ON NONNEGATIVE CP TENSOR DECOMPOSITION ROBUSTNESS TO NOISE	587
<i>Jamie Haddock; Lara Kassab; Alona Kryshchenko; Deanna Needell</i>	
APPLICATIONS OF ONLINE NONNEGATIVE MATRIX FACTORIZATION TO IMAGE AND TIME-SERIES DATA	594
<i>Hanbaek Lyu; Georg Menz; Deanna Needell; Christopher Strohmeier</i>	
BROADCAST APPROACH UNDER INFORMATION BOTTLENECK CAPACITY UNCERTAINTY	603
<i>Avi Steiner; Shlomo Shamai Shitz</i>	
GENERALIZED LIST DECODING	606
<i>Yihan Zhang; Amitalok J. Budkuley; Sidharth Jaggi</i>	
DYNAMIC INTERROGATION OF STOCHASTIC TRANSCRIPTOME TRAJECTORIES (DIST²)	689
<i>Elizabeth B. Torres; Simon Schafer; Fred Gage; Terry Sejnowski</i>	
AGENT LEARNING AND AUTOREGRESSIVE MODELING	690
<i>Jerry D. Gibson</i>	
IMPROVE ROBUSTNESS OF DEEP NEURAL NETWORKS BY CODING	695
<i>Kunping Huang; Netanel Raviv; Siddharth Jain; Pulakesh Upadhyaya; Jehoshua Bruck; Paul H. Siegel; Anxiao Andrew Jiang</i>	
DIFFERENTIALLY PRIVATE ALGORITHMS FOR LEARNING MIXTURES OF SEPARATED GAUSSIANS	702
<i>Gautam Kamath; Or Sheffet; Vikrant Singhal; Jonathan Ullman</i>	

COMMON INFORMATION COMPONENTS ANALYSIS 764

M. Gastpar; E. Sula

Author Index