2020 Second International Conference on Transdisciplinary AI (TransAI 2020)

Irvine, California, USA 21 – 23 September 2020



IEEE Catalog Number: CFP20S76-POD **ISBN:**

978-1-7281-8700-6

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:	CFP20S76-POD
ISBN (Print-On-Demand):	978-1-7281-8700-6
ISBN (Online):	978-1-7281-8699-3

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



2020 Second International Conference on Transdisciplinary AI (TransAI) **TransAI 2020**

Table of Contents

Message from the General Chairs .	ix
Message from the Program Chairs	x

Regular Papers

Artifact Detection in Endoscopic Video with Deep Convolutional Neural Networks .1 Chenxi Zhang (University of Massachusetts Lowell), Ning Zhang (University of Massachusetts Lowell), Dechun Wang (University of Massachusetts Lowell), Yu Cao (University of Massachusetts Lowell), and Benyuan Liu (University of Massachusetts Lowell)
Play it Again IMuCo! Music Composition to Match Your Mood 9. <i>Tsung-Min Huang (San Jose State University), Hunter Hsieh (San Jose</i> <i>State University), Jiaqi Qin (San Jose State University), Hsien-Fung</i> <i>Liu (San Jose State University), and Magdalini Eirinaki (San Jose</i> <i>State University)</i>
Modeling Survival in Model-Based Reinforcement Learning .17 Saeed Moazami (Lamar University) and Peggy Doerschuk (Lamar University)
End-to-End Learning of Speech 2D Feature-Trajectory for Prosthetic Hands .25 Mohsen Jafarzadeh (The University of Texas at Dallas) and Yonas Tadesse (The University of Texas at Dallas)
Object Detection and Segmentation in Chest X-Rays for Tuberculosis Screening .34 Terence Griffin (University of Massachusetts), Yu Cao (University of Massachusetts), Benyuan Liu (University of Massachusetts), and Maria J. Brunette (The Ohio State University)
Artificial Intelligence Aided Training in Ping Pong Sport Education .43 Kevin Ma (Oak Park Unified School District)
Design and Analysis of Mobile App for Large-Scale Cyber-Argumentation .50 Najla Althuniyan (University of Arkansas), Joseph W Sirrianni (University of Arkansas), Md Mahfuzer Rahman (University of Arkansas), and Xiaoqing "Frank" Liu (Southern Illinois University)

Online Local Communities with Motifs .59 Mrudula Murali (San Jose State University), Katerina Potika (San Jose
State University), and Chris Pollett (San Jose State University)
A Unified Framework on Node Classification using Graph Convolutional Networks .67 Saurabh Mithe (San Jose State University) and Katerina Potika (San Jose State University)
Short Papers
A-HRNet: Attention Based High Resolution Network for Human Pose Estimation .75 Ying Li (University of Massachusetts Lowell), Chenxi Wang (University

Ying Li (University of Massachusetts Lowell), Chenxi Wang (University of Massachusetts Lowell), Yu Cao (University of Massachusetts Lowell), Benyuan Liu (University of Massachusetts Lowell), Yan Luo (University of Massachusetts Lowell), and Honggang Zhang (University of Massachusetts Lowell)	
Combinatorial Code Classification & Vulnerability Rating .80 Joseph R. Barr (Acronis SCS), Peter Shaw (Nanjing University of Information Sci and Technology), Faisal N. Abu-Khzam (Lebanese American Univ.), Sheng Yu (Univ. of California, Riverside), Heng Yin (Univ. of California, Riverside), and Tyler Thatcher (Acronis SCS)	
Regions Discovery Algorithm for Pathfinding in Grid Based Maps .84 Ying Fung Yiu (Texas A&M University) and Rabi Mahapatra (Texas A&M University)	
Towards Passive Authentication using Inertia Variations: An Experimental Study on Smartphones .88 James Brown (North Carolina A&T State University), Aaditya Raval (North Carolina A&T State University), and Mohd Anwar (North Carolina A&T State University)	••••
Return to Bali .92 Marc Böhlen (University at Buffalo) and Wawan Sujarwo (Indonesian Institute of Sciences)	
Semi-Exact Exponential-Time Algorithms: an Experimental Study .96 Mohamed Mahmoud Abd El-Wahab (Charles Darwin University), Faisal N. Abu-Khzam (Lebanese American University), Kai Wang (Charles Darwin University), and Peter Shaw (Nanjing Univ. of Information Science and Technology)	
Optimally Balanced Orientation of Graphs .100. Joseph R. Barr (Acronis SCS), Peter Shaw (Nanjing University of Information Science and Technology), and Faisal N. Abu-Khzam (Lebanese American University)	••
Edge Betweenness Centrality on Trees .104. Julian Vu (San Jose State University) and Katerina Potika (San Jose State University)	

Posters

Precision HIV Health App, Positive Peers, Powered by Data Harnessing, AI, and Learning .108..... Golnoush Asaeikheybari (Case Western Reserve University), Cory Hughart (Blackbird Digital Inc.), Devansh Gupta (Case Western Reserve University), Ann Avery (Metrohealth Medical Center), Mary M Step (Kent State University), Jennifer McMillen Smith (Metrohealth Medical Center), Joshua Kratz (Moffitt Cancer Center), Julia Briggs (Blue Star Design), and Ming-Chun Huang (Case Western Reserve University)

Graph Theory – The Case for Investigating Corruption and Modern Slavery through Suspicious

Employment Data .113.... Felicity Gerry (Deakin University), Joseph R. Barr (Acronis SCS), and Peter Shaw (Nanjing Univiversity)

Invited Papers

Group-Specific Models of Healthcare Workers' Well-Being using Iterative Participant Clustering .115.
Vinesh Ravuri (Texas A&M University), Projna Paromita (Texas A&M University), Karel Mundnich (University of Southern California), Amrutha Nadarajan (University of Southern California), Brandon M. Booth (University of Southern California), Shrikanth S. Narayanan (University of Southern California), and Theodora Chaspari (Texas A&M University)
NPDSLINKS: Nexus-PORTAL-DOORS-Scribe Learning Intelligence and Knowledge System .1.19 Shreya Choksi (Brain Health Alliance), Peter Hong (Brain Health Alliance), Sohyb Mashkoor (Brain Health Alliance), and Carl Taswell (Brain Health Alliance)
Essential Question: 'Equal or Equivalent Entities?' About Two Things as Same, Similar, or Different .123 Anousha Athreya (Brain Health Alliance), S. Koby Taswell (Brain Health Alliance), Sohyb Mashkoor (Brain Health Alliance), and Carl Taswell (Brain Health Alliance)
Financial Crime & Fraud Detection Using Graph Computing: Application Considerations & Outlook .125 Eren Kurshan (Columbia University), Hongda Shen (University of Alabama in Huntsville), and Haojie Yu (Georgia Institute of Technology)
 Skeleton-Based Detection of Abnormalities in Human Actions Using Graph Convolutional Networks .131. Bruce X.B. Yu (The Hong Kong Polytechnic University), Yan Liu (The Hong Kong Polytechnic University), and Keith C. C. Chan (The Hong Kong Polytechnic University)
Applications of AI in Cybersecurity .138 Matthias Hofstetter (Berner Fachhochschule), Reinhard Riedl (Berner Fachhochschule), Thomas Gees (Berner Fachhochschule), Adamantios Koumpis (Berner Fachhochschule), and Thomas Schaberreiter (University of Vienna)

 Learning and Intelligence in Human-Cyber-Physical Systems: Framework and Perspective .142.....
 Baicun Wang (University of Michigan), Xingyu Li (Ford Motor Company), Theodor Freiheit (University of Michigan), and Bogdan I. Epureanu (University of Michigan)
 Spatial Data Management in IoT Systems: A Study of Available Storage and Indexing

Solutions .146..... Maria Krommyda (NTUA) and Verena Kantere (NTUA)

Author Index 155