2020 IEEE 14th International Conference on Semantic Computing (ICSC 2020)

San Diego, California, USA 3 – 5 February 2020



IEEE Catalog Number: CFP20SEA-POD ISBN:

978-1-7281-6333-8

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:
 CFP20SEA-POD

 ISBN (Print-On-Demand):
 978-1-7281-6333-8

 ISBN (Online):
 978-1-7281-6332-1

ISSN: 2325-6516

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 IEEE 14th International Conference on Semantic Computing (ICSC) ICSC 2020

Table of Contents

Message from the General Co-chairs xvi		
Message from the Program Chairs xvii		
Organizing Committee xix		
2020 IEEE 14th International Conference on Semantic Computing (ICSC)		
Session 1: Machine Learning		
Adversarial Analysis of Natural Language Inference Systems .1		
Calibrated Web Personalization with Adaptive Recurrent Computing 9. Ryosuke Konishi (Generic Solution Corporation, Japan), Fumito Nakamura (Generic Solution Corporation, Japan), and Yasushi Kiyoki (Keio University, Japan)		
Automating Deep-Sea Video Annotation Using Machine Learning 17		
Managing Machine Learning Workflow Components .25 Marcio Moreno (IBM Research, Brazil), Vítor Lourenço (IBM Research, Brazil), Sandro Fiorini (IBM Research, Brazil), Polyana Costa (IBM Research, Brazil), Rafael Brandão (IBM Research, Brazil), Daniel Civitarese (IBM Research, Brazil), and Renato Cerqueira (IBM Research, Brazil)		
A Class-Incremental Classification Method Based on Support Vector Machine 3.1. Praneet Prabhakar Sherki (Samsung R&D Institute Bangalore) and Vanraj Vala (Samsung R&D Institute Bangalore)		

Session 2: Best Paper (I)

Augmenting Visual Question Answering with Semantic Frame Information in a Multitask Learning Approach 37.
Mehrdad Alizadeh (University of Illinois at Chicago) and Barbara Di Eugenio (University of Illinois at Chicago)
Attentional Adversarial Variational Video Generation via Decomposing Motion and Content 45
DeepContext: Parameterized Compatibility-Based Attention CNN for Human Context Recognition .53
Ensemble Learning on Deep Neural Networks for Image Caption Generation .6.1. Harshitha Katpally (Arizona State University) and Ajay Bansal (Arizona State University)
Session 3: Best Paper (II)
Augmenting and Automating Corpus Enrichment 69
Early Forecasting of Text Classification Accuracy and F-Measure with Active Learning .77. Thomas Orth (The College of New Jersey) and Michael Bloodgood (The College of New Jersey)
Conversational Structure Aware and Context Sensitive Topic Model for Online Discussions .85
Roger that! Learning How Laypersons Teach New Functions to Intelligent Systems .93. Sebastian Weigelt (Karlsruhe Institute of Technology, Germany), Vanessa Steurer (Karlsruhe Institute of Technology, Germany), Tobias Hey (Karlsruhe Institute of Technology, Germany), and Walter F. Tichy (Karlsruhe Institute of Technology)
Poster Session I
Session 4: Social network and Text Mining
A Statistical Method for Constructing Tang Poet Social Networks .101

Eliminating Search Intent Bias in Learning to Rank .108.
Yingcheng Sun (Case Western Reserve University), Richard Kolacinski
(Case Western Reserve University), and Kenneth Loparo (Case Western Reserve University)
A Context-Sensitive Real-Time Spell Checker with Language Adaptability .1.16
SeMemNN: A Semantic Matrix-Based Memory Neural Network for Text Classification .123
Yuichiro Yoshikawa (Osaka University), and Hiroshi Ishiguro (Osaka University)
Continuous Melody Generation via Disentangled Short-Term Representations and Structural Conditions .128 Ke Chen (University of California San Diego, USA), Gus Xia (New York University Shanghai, China), and Shlomo Dubnov (University of California San Diego, USA)
Session 5: Semantic Computing and Semantic Inconsistencies for Autonomous Service Robots
Handling Semantic Inconsistencies in Commonsense Knowledge for Autonomous Service Robots .136 Stefan Jakob (University of Kassel), Stephan Opfer (University of Kassel), Alexander Jahl (University of Kassel), Harun Baraki
(University of Kassel), and Kurt Geihs (University of Kassel)
Accessing Provenance Records in Semantic Web Services .141
SmartScore-Short Answer Scoring Made Easy Using Sem-LSH .145
Automating web Table Columns to Knowledge Base Mapping using Translation Embedding .150
Session 6: Neural Nework and Internet of Things
Semantic Segmentation of Multispectral Images using Res-Seg-net Model 154. Nidhi Saxena (Indian Institute of Technology, Roorkee, Uttarakhand, India), Kishore Babu N. (Indian Institute of Technology, Roorkee, Uttarakhand, India), and Balasubramanian Raman (Indian Institute of Technology, Roorkee, Uttarakhand, India)

ICAN: Introspective Convolutional Attention Network for Semantic Text Classification .158
Two-Phase Multimodal Neural Network for App Categorization using APK Resources .162
IoT-Enabled Smart Child Safety Digital System Architecture 166
Session 7: Deep learning and human computer interaction
A Refined Neural Network Recognition Architecture for Blurred Image Semantic Generalization 170
An Efficient Architecture for Predicting the Case of Characters using Sequence Models .1.7.4
On-Device Information Extraction from SMS using Hybrid Hierarchical Classification .1.78
Automatic Image Recommendation for Economic Topics using Visual and Semantic Information 182
Context Classification in Dialog-Based Interaction .185

Session 8: Knowledge representation and Semantic Textual Similarity

On Visual-Textual-Knowledge Entity Linking 190. Shahi Dost (University of Padova and Fondazione Bruno Kessler, Italy), Luciano Serafini (Fondazione Bruno Kessler, Italy), Marco Rospocher (University of Verona, Italy), Lamberto Ballan (University of Padova, Italy), and Alessandro Sperduti (University of Padova, Italy)
Multilingual Semantic Textual Similarity using Multilingual Word Representations .194. Mahtab Ahmed (University of Western Ontario), Chahna Dixit (Messagepoint Inc.), Robert E. Mercer (University of Western Ontario), Atif Khan (Messagepoint Inc.), Muhammad Rifayat Samee (University of Western Ontario), and Felipe Urra (University of Western Ontario)
Evaluating Semantic Feature Representations to Efficiently Detect Hate Intent on Social Media .199
OntoQSAR: an Ontology for Interpreting Chemical and Biological Data in Quantitative Structure-Activity Relationship Studies .203
SOAS 3.0: Semantically Enriched OpenAPI 3.0 Descriptions and Ontology for REST Services .207
Session 9: Prediction and detection
DREAM Principles from the PORTAL-DOORS Project and NPDS Cyberinfrastructure .211. Shiladitya Dutta (Brain Health Alliance), Kelechi Uhegbu (Brain Health Alliance), Sathvik Nori (Brain Health Alliance), Sohyb Mashkoor (Brain Health Alliance), S. Koby Taswell (Brain Health Alliance), and Carl Taswell (Brain Health Alliance)
Parallel Intent and Slot Prediction using MLB Fusion 217. Anmol Bhasin (Samsung R&D Institute India - Bangalore), Bharatram Natarajan (Samsung R&D Institute India - Bangalore), Gaurav Mathur (Samsung R&D Institute India - Bangalore), and Himanshu Mangla (Samsung R&D Institute India - Bangalore)
Off-Topic Essay Detection Using C-BGRU Siamese 221. Tsegaye Misikir Tashu (Eotvos Lorand University)

Session 10: Machine learning techniques and multimedia

RDoCer: Information Retrieval and Sentence Extraction for Mental Health using Research Domain Criteria 226. Daniel Laden (Montana State University Bozeman), Shyaman Jayasundara (University of Peradeniya), and Indika Kahanda (Montana State University Bozeman)
Learning a Lightweight Representation: First Step Towards Automatic Detection of Multidimensional Relationships between Ideas 230
Towards a Face Recognition Model Analyzer 234. Matthew Johnson (Rensselaer Polytechnic Institute), John Angel (Rensselaer Polytechnic Institute), and Deborah McGuinness (Rensselaer Polytechnic Institute)
Improving Learning System Performance with Multimedia Semantics .238. Fabio Persia (Free University of Bozen-Bolzano, Italy), Daniela D'Auria (Free University of Bozen-Bolzano, Italy), and Mouzhi Ge (Masaryk University, Czech Republic)
Session 11: Natural language processing
Exploring Paraphrasing Techniques on Formal Language for Generating Semantics Preserving Source Code Transformations 242. Aviel J. Stein (Drexel University), Aviel Kapllani (Drexel University), Spiros Mancoridis (New York University), and Rachel Greenstadt (New York University)
DoSSAD - Leveraging Domain Specific Semantics in Aspect Detection for Product Design .249
Deep Neural Attention-Based Model for the Evaluation of Italian Sentences Complexity .253
A Compositional Semantics for a Wide-Coverage Natural-Language Query Interface to a Semantic Web Triplestore 257. Shane Peelar (University of Windsor) and Richard Frost (University of Windsor)
Session 12: Prediction activity
Predicting Personal Attitudes Using Contextual Microblog Activity Logs .263

Partial Decision Overrides in a Declarative Policy Framework 271. Karsten Martiny (SRI International) and Grit Denker (SRI International)
Language Detection Engine for Multilingual Texting on Mobile Devices .279. Sourabh Vasant Gothe (Samsung R&D Institute Bangalore, India), Sourav Ghosh (Samsung R&D Institute Bangalore, India), Sharmila Mani (Samsung R&D Institute Bangalore, India), Bhanodai Guggilla (Samsung R&D Institute Bangalore, India), Ankur Agarwal (Samsung R&D Institute Bangalore, India), and Chandramouli Sanchi (Samsung R&D Institute Bangalore, India)
An Overview of Video Surveillance Approaches .287
Ontology-Based Data Integration for Semantic Interoperability in Air Traffic Management .295
(National Institute of Maritime, Port and Aviation Technology, Japan)
(National Institute of Maritime, Port and Aviation Technology, Japan) Session 13: Sentiment analysis and neural network
Session 13: Sentiment analysis and neural network A Multi-channel BiLSTM-CNN Model for Multilabel Emotion Classification of Informal Text .3.03 Zahra Rajabi (George Mason University, USA), Amarda Shehu (George Mason University, USA), and Ozlem Uzuner (George Mason University,
Session 13: Sentiment analysis and neural network A Multi-channel BiLSTM-CNN Model for Multilabel Emotion Classification of Informal Text .303 Zahra Rajabi (George Mason University, USA), Amarda Shehu (George Mason University, USA), and Ozlem Uzuner (George Mason University, USA) Do Words Matter: Predicting IPO Performance from Prospectus Sentiment .307 Tuan Hao (Howard) Ly (Courant Institute of Mathematical Sciences New

Poster Session II

Workshops

5th International Workshop on Semantic Computing and Knowledge Creation Based on Needs Engineering (SCKNE 2020)

	-Cost Software and Hardware Architecture of a Supervisory System for Monitoring and Control of amic Systems 321
L	uciano Anacker Leston (Federal University of Pelotas), Bruno Ramos
U	Vahl (Federal University of Pelotas), Sigmar de Lima (Federal University of Pelotas), and Elmer Alexis Gamboa Penaloza (Federal University of Pelotas)
State	Observer Embedded in a Digital Processor for DC Motor Velocity Estimation .326
G	Gustavo Luiz Heck (Federal University of Pelotas), Elmer Alexis Gamboa
P	Penaloza (Elmer A. G. Penaloza), Sigmar de Lima (Federal University of
P	Pelotas), and Luciano Anacker Leston (Federal University of Pelotas)
	llel Computational Structure and Semantics for Soil Quality Analysis Based on LoRa and Apache k .332
N.	Maurício F. Lima Pereira (Embrapa Instrumentation and Federal
L	University of Mato Grosso – Computer Science Institute), Paulo E.
C	Cruvinel (Embrapa Instrumentation and Federal University of Sao Carlos
_	- Post Graduation Program in Computer Science), Gabriel M. Alves
(1	Embrapa Instrumentation, Federal University of Sao Carlos – Post
G	Graduation Program in Computer Science, and Federal Institute of Sao
	Paulo), and José Marcos G. Beraldo (Embrapa Instrumentation and Federal Institute of Sao Paulo)
R C	el for Semantic Base Structuring of Digital Data to Support Agricultural Management .337
A S	ographic Image Segmentation Model for Features Extraction of Oilseeds Based on Graph Theory .341 André R. de Brito (Embrapa Instrumentation and Federal University of Gao Carlos, Brazil) and Paulo E. Cruvinel (Embrapa Instrumentation and Gederal University of Sao Carlos, Brazil)
P S	plexity and Collective Intelligence on Demand for a Sustainable Future .347. Paulo Camargo (Federal University of Sao Carlos/UFSCAR, Brazil), Sergio Mattos (Federal University of Sao Carlos/ UFSCAR, Brazil), and Carlos Goldenberg (State University of Sao Paulo-USP/Brazil)
J: K	leep Activity Detecting Algorithm for Sleepcare System 350 Yunguk Ahn (Gachon University), Sanghun Lee (Nayuntech Co.), Sungyun Kang (Nayuntech Co.), Hyegyung Han (Gachon University), and Byung Mun Lee (Gachon University)
N	Based University Garbage Monitoring System for Healthy Environment for Students .354

Selection of Network Protocols for Internet of Things Applications: A Review .359. Hasnain Kashif (The University of Lahore), Muhammad Nasir Khan (The University of Lahore, Pakistan), and Qasim Awais (Chenab College of *Engineering and Technology*) 8th IEEE International Workshop on Semantic Computing for Social **Networks and Organization Sciences (SCSN 2020)** Zaheer Abbass (University of Lahore Gujrat Campus, Pakistan), Zain Ali (University of Lahore Gujrat Campus, Pakistan), Mubashir Ali (University of Lahore Gujrat Campus, Pakistan), Bilal Akbar (Mirpur University of Science and Technology, AJK, Pakistan), and Ahsan Saleem (COMSATS University Islamabad, Wah Campus) Using Computational Linguistics to Extract Semantic Patterns from Trolling Data 369. Sayef Iqbal (St. John's University, USA), Soon Ae Chun (City University of New York, USA), and Fazel Keshtkar (St. John's University, USA) Melanie Swartz (George Mason University, USA) and Andrew Crooks (George Mason University, USA) Similarity of Speech Emotion in Different Languages Revealed by a Neural Network with Attention .381...... Changzeng Fu (Osaka University), Thilina Dissanayake (Osaka University), Kazufumi Hosoda (Osaka University), Takuya Maekawa (Osaka University), and Hiroshi Ishiguro (Osaka University) Understanding Usage of Memes over Social Medias through Semantics: A Survey .387..... Sung Kyun Park (Big Red Data, Cornell University) **Resource Track** VoColReg: A Registry for Supporting Distributed Ontology Development using Version Control Systems .393. Abderrahmane Khiat (Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS, EIS Department, Germany), Lavdim Halilaj (Robert Bosch, Corporate Research, Germany), Ahmad Hemid (Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS, EIS Department, Germany), and Steffen Lohmann (Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS, EIS Department, Germany) DISE: A Distributed in-Memory SPARQL Processing Engine over Tensor Data 400. Hajira Jabeen (University of Bonn), Eskender Haziiev (University of Bonn), Gezim Sejdiu (University of Bonn), and Jens Lehmann (University of Bonn) Let's build Bridges, not Walls: SPARQL Querying of TinkerPop Graph Databases with Sparql-Gremlin .408... Harsh Thakkar (OSTHUS GmbH, Germany), Renzo Angles (University of Talca, Chile), Marko Rodriguez (Apache TinkerPop, USA), Stephen Mallette (Apache TinkerPop, USA), and Jens Lehmann (University of Bonn, Germany)

ProPheno 1.0: An Online Dataset for Accelerating the Complete Characterization of the Human Protein-Phenotype Landscape in Biomedical Literature .416. Morteza Pourreza Shahri (Montana State University, USA) and Indika Kahanda (Montana State University, USA) 4th International Workshop on Semantic Multimedia Computing (SMC 2020) A Semantic Segmentation Approach to Recognize Assault Rifles in ISIS Propaganda Images .424..... Bhashithe Abevsinghe (Georgia State University), Yannick Veilleux-Lepage (Institute of Security and Global Affairs, Leiden University), Mia M. Bloom (Georgia State University), and Rajshekhar Sunderraman (Georgia State University) Conversation Moderator: A Mobile App for Tracking Individual Speaking in Group Conversations 430...... Ting Xiao (University of North Texas), Thasina Tabashum (University of North Texas), Bassam Metwally (University of North Texas), Mark Albert (University of North Texas), Albert Du (Loyola University Chicago), Rejoice Jebamalaidass (Loyola University Chicago), Marcos Leal (Loyola University Chicago), and Edgard Oliviera (Loyola University Chicago) 3rd International Workshop on Semantic Data Integration (SDI 2020) Analyzing Manufacturing Data in a Digital Control Room Making Use of Semantic Annotations .434..... Jessica Rubart (Ostwestfalen-Lippe University of Applied Sciences and Arts), Benjamin Lietzau (Ostwestfalen-Lippe University of Applied Sciences and Arts), and Patrick Söhlke (Next Vision GmbH) Intelligent Active and Passive Learning for Integrated Semantic Computing for Vision Data Annotation 439.... Irene Erlyn Wina Rachmawan (Keio University), Yasushi Kiyoki (Keio University), and Xing Chen (Kanagawa Institute of Technology) Mold - A Framework for Entity Extraction and Summarization .445. Sarthak Tiwari (Arizona State University), Bharat Goel (Arizona State University), and Srividya Bansal (Arizona State University) 6th International Workshop on Semantic Machine Learning (SML 2020) Maintaining Topic Models for Growing Corpora 451. Felix Kuhr (University of Lübeck), Magnus Bender (University of Lübeck), Tanya Braun (University of Lübeck), and Ralf Möller (University of Lübeck) Assessment of Iterative Semi-Supervised Feature Selection Learning for Sentiment Analyses: Digital Currency Markets 459 Firat Akba (Ankara University, Turkey), Ihsan Tolga Medeni (Ankara Yildirim Beyazit University, Turkey), Mehmet Serdar Guzel (Ankara *University, Turkey), and Iman Askerzade (Ankara University, Turkey)*

Understanding Legal Documents: Classification of Rhetorical Role of Sentences Using Deep Learning
and Natural Language Processing 464.
Syed Rameel Ahmad (IBM, Pakistan), Deborah Harris (Elmhurst College,
USA), and Ibrahim Sahibzada (IBM, Pakistan)
Author Indox 460