HCT
2.0

كلّيــات التقنيــة العليــا
HIGHER COLLEGES OF TECHNOLOGY

EIDWT - Emerging Internet, Data & Web Technologies

EIDWT

7th International Conference on Emerging Internet, Data & Web Technologies

EIDWT 2019

February 26-28, 2019
HCT-Fujairah campuses
United Arab Emirates

PROGRAM

CONTENTS

EIDWT 2019 Organizing Committees

Honorary Co-Chairs

Khaled Alhammadi, Higher Colleges of Technology, UAE
Makoto Takizawa, Hosei University, Japan
Hamad Odhabi, Higher Colleges of Technology, UAE

General Co-Chairs

Nasser Nassiri, Higher Colleges of Technology, UAE
Tomoya Enokido, Rissho University, Japan
Zahoor Khan, Higher Colleges of Technology, UAE

Program Co-Chairs

Saif Alqaydi, Higher Colleges of Technology, UAE
Juggapong Natwichai, Chiang Mai University, Thailand
Nadeem Javaid, COMSATS Institute of IT, Pakistan

International Advisory Committee

Adel Zairi, Higher Colleges of Technology, UAE
Janusz Kacprzyk, Polish Academy of Sciences, Poland
Vincenzo Loia, University of Salerno, Italy
Arjan Durresi, IUPUI, USA
Hiroaki Nishino, Oita University, Japan

Publicity Co-Chairs

Santi Caballé, Open University of Catalonia, Spain
Pruet Boonma, Chiang Mai University, Thailand
Elis Kulla, Okayama University of Science, Japan
Farookh Hussain, Univ. of Technology Sydney, Australia

International Liaison Co-Chairs

Ossama Embarak, Higher Colleges of Technology, UAE
Flora Amato, Naples University Frederico II, Italy
Admir Barolli, Alexander Moisiu Univ. of Durres, Albania
Omar Hussain, University of New South Wales, Australia
Akio Koyama, Yamagata University, Japan

Local Organizing Co-Chairs

Mona Almteiri, Higher Colleges of Technology, UAE
Ivana Ercegovac, Higher Colleges of Technology, UAE

Web Administrators

Donald Elmazi, Fukuoka Institute of Technology (FIT), Japan
Yi Liu, Fukuoka Institute of Technology (FIT), Japan
Miralda Cuka, Fukuoka Institute of Technology (FIT), Japan

Finance Chair

Makoto Ikeda, Fukuoka Institute of Technology (FIT), Japan

Steering Committee Co-Chairs

Leonard Barolli, Fukuoka Institute of Technology (FIT), Japan
Fatos Xhafa, Technical University of Catalonia, Spain

EIDWT 2019

28-26 February 2019
HCT-Fujairah campuses - UAE

Welcome Message

Welcome to the 7th International Conference on Emerging Internet, Data and Web Technologies (EIDWT 2019), which will be held from February 26-28, 2019 at Higher Colleges of Technology, Fujairah campuses, in the United Arab Emirates (UAE).

The EIDWT is dedicated to the dissemination of original contributions that are related to the theories, practices and concepts of emerging inter-networking and data technologies, together with, most importantly, their applicability in the fields of business and academia so as to create a collective intelligence approach.

EIDWT 2019 will see a range of topics discussed, including Information Networking, Data Centers, Data Grids, Clouds, Crowds, Mashups, Social Networks, Security Issues and other Web 2.0 implementations. All topics will be underpinned by a collaborative and collective intelligence approach, leading to advancements of virtual organizations and their user communities. This approach is predicated on the understanding that current and future Web and Web 2.0 implementations will store, and continuously produce, a vast amount of data, which, if combined and analyzed through a collective intelligence manner, will make a difference to the organizational settings and their user communities.

The scope of EIDWT 2019 therefore includes methods and practices which bring various emerging Internet and data technologies together to capture, integrate, analyze, mine, annotate and visualize data in a meaningful and collaborative manner. In addition, EIDWT 2019 aims to provide a forum for original discussion and prompt future directions in these fields.

It is extremely pleasing to note that 52 high-quality academic papers were accepted for presentation at EIDWT 2019, a fact which augurs well for a memorable and stimulating forum. The EIDWT 2019 Organizing Committee thank all authors for submitting their papers for review and acceptance. The committee is also indebted to Program Area Chairs, Program Committee members and reviewers who carried out the arduous task of carefully evaluating the submitted papers.

We would like to give our special thanks to the EIDWT 2019 Honorary Co-Chairs for their guidance and support, and express our appreciation to the keynote speakers for accepting our invitations and delivering very interesting addresses at the conference. We also thank the Local Arrangements Chairs for making excellent local arrangements for the conference.

We hope you will enjoy the conference and have a great time in Fujairah, UAE.

**EIDWT 2019
International Conference
Organizers**

EIDWT 2019 Keynote Address I

Prof. Ngoc-Thanh Nguyen,
Wroclaw University of Science and Technology, Wroclaw, Poland

How to Build Intelligent Collectives for Prediction Market Tasks

Abstract: This talk presents a general framework for building intelligent collectives for prediction market tasks. It will be shown that two aspects play an important role in this process: diversity and independency. Our findings qualify the positive impact of diversity and independence on collective performance. Particularly, collectives with higher diversity and independence levels will lead to better collective accuracy. Subsequently, expanding the collective cardinality that causes an increase in its diversity will also be positively associated with the collective performance. With some restrictions, the hypothesis "The more diverse the collective, the higher the collective performance" is formally proved.

EIDWT 2019 Keynote Address II

Prof. Jacek Ilow, Dalhousie University, Halifax, Canada

Cooperative Wireless Relay Networks

Abstract: This talk presents principles involved in designing Multiple-Input-Multiple-Output (MIMO) wireless relay networks with different levels of coordination between communicating terminals in ad hoc networks. In particular, cooperative transmission strategies are contrasted with the approaches where terminals transmit independently resulting in high levels of interference. A unifying framework of power control and signal alignment is adopted to demonstrate better power and bandwidth efficiency in cooperative communication systems with compute-and-forward strategies, which exploits interference to obtain significantly higher rates between users in a network. Geometric concepts and abstractions are used to establish the energy-efficient relay choices and to design distributed signal coding to combat fading in networks with randomly distributed nodes such as in Wireless Sensor Networks (WSNs). The benefits of distributed net- work coding reducing the number of transmissions are examined. While cooperation improves energy efficiency in wireless networks, it introduces a protocol overhead. The balancing of the cooperative gain (in terms of energy and bandwidth efficiency) and the cooperation overhead is also presented in this talk.

EIDWT 2019
28-26 February 2019
HCT-Fujairah campuses - UAE

Program

DAY 1	**Tuesday, February 26, 2019**	
	13:00 - 16:30	Registration
	19:00 - 21:00	Reception dinner

DAY 2	**Wednesday, February 27, 2019**	
	09:00	Registration
	10:00 - 11:00	Opening and Keynote Talk I ***Prof. Ngoc-Thanh Nguyen,*** *Wroclaw University of Science and Technology, Wroclaw, Poland* **How to Build Intelligent Collectives for Prediction Market Tasks**
	11:00-11:30	Coffee Break
	11:30-13:30	Parallel Sessions

EIDWT S1: VANETs and UWSNs

*Chair: **Leonard Barolli**, Fukuoka Institute of Technology, Japan*

1   Group Speed Parameter Effect for Clustering of Vehicles in VANETs: A Fuzzy-based Approach
Kosuke Ozera, Kevin Bylykbashi, Yi Liu, Makoto Ikeda, Leonard Barolli, Makoto Takizawa

2   Big Data Role in Improving Intelligent Transportation Systems Safety: A Survey
Mohammed Arif Amin, Samah Hadouej, Tasneem S J Darwish

3   Towards Optimizing Energy Efficiency and Alleviating Void Holes in UWSN
Abdul Mateen, Nadeem Javaid, Muhammad Bilal, Muhammad Arslan Farooq, Zahoor Ali Khan, Fareena Riaz

4   Cluster-based Routing Protocols with Adaptive Transmission Range Adjustment in UWSNs
Muhammad Awais, Nadeem Javaid, Abdul Mateen, Aimen Rasool, Zahoor Ali Khan, Farooq Hassan

5   A Fuzzy-based System for Cloud-Fog-Edge Selection in VANETs
Kevin Bylykbashi, Yi Liu, Keita Matsuo, Makoto Ikeda, Leonard Barolli, Makoto Takizawa

6   Security Approach for In-Vehicle Networking Using Blockchain Technology
Maher Salem, Moayyad Mohammed, Ali Rodan

EIDWT S2: Security, Privacy and Digital Forensic

*Chair: **Baojiang Cui**, Beijing University of Posts and Telecommunications, China*

1 An Enhanced Knowledge Integration of Association Rules in the Privacy Preserved Distributed Environment to Identify the Exact Interesting Pattern
Sujni Paul

2 Obfuscation Algorithms based on Congruence Equation and Knapsack Problem *Da Xiao, Shouying Bai, Qian Wu, Baojiang Cui*

3 A Hybrid Approach for Document Analysis in Digital Forensic Domain
Flora Amato, Giovanni Cozzolino, Marco Giacalone, Francesco Moscato, Francesco Romeo, Fatos Xhafa

4 Feasibility Approach Based on SecMonet Framework to Protect Networks from Advanced Persistent Threat Attacks
Maher Salem and Moayyad Mohammed

5 A New Transformation of 3D Models using Chaotic Encryption based on Arnold Cat Map
Benson Edwin Raj, L. Jani Anbarasi, Modigari Narendra, V.J.Subhasini

6 Linguistic-based Security in Fog and Cloud Computing
Urszula Ogiela, Makoto Takizawa, Lidia Ogiela

EIDWT S3: Medical Applications

*Chair: **Nasser Nassiri**, Higher Colleges of Technology, UAE*

1 Predicting Cancer Survivability: A Comparative Study
Ola Abu Elberak, Loai Alnemer, Majdi Sawalha, Jamal Alsakran

2 Semantic Multi Agent Architecture for Chronic Disease Monitoring & Management
Lina Nachabe, Bachar El Hassan, Jean Taleb

3 Hybrid Approach for Heart Disease Prediction Using Data Mining Techniques
Monther Tarawneh and Ossama Embarak

4 Clinical Trial on Computer-Aided Design in Pre-Operative Alveolar Bone Grafting in Cleft Lip - Cleft Palate Patient
Krit Khwanngern, Vivatchai Kaveeta, Suriya Sitthikham

5 A Common Ontology Based Approach for Clinical Practice Guidelines using OWL-Ontologies
Khalid Samara, Munir Naveed, Yasir Javed, Mouza Alshemaili

6 Application of Fog and Cloud Computing for Patient's Data in the Internet of Things *Soulat Waheed and Peer. A. Shah*

13:30-14:30	Lunch
16:30	City Tour
19:00-21:00	Conference Banquet

DAY 3

Thursday, February 28, 2019	
09:00	Registration
10:00 - 11:00	**Keynote Address II** *Prof. Jacek Ilow, Dalhousie University, Halifax, Canada* **Cooperative Wireless Relay Networks**
11:00-11:30	Coffee Break
11:30-13:30	Parallel Sessions

EIDWT S4: IoT and Smart Grids

*Chair: **Yoshihiro Okada**, Kyushu University, Japan*

1. **IoT Device Selection in Opportunistic Networks: A Fuzzy Approach Considering IoT Device Failure Rate**
Miralda Cuka, Donald Elmazi, Keita Matsuo, Makoto Ikeda, Leonard Barolli, Makoto Takizawa

2. **E-Learning Material Development Framework Supporting 360VR Images/Videos Based on Linked Data for IoT Security Education**
Yoshihiro Okada, Akira Haga, Shi Wei, Chenguang Ma, Srishti Kulshrestha

3. **Implementation of Fog Nodes in the Tree-based Fog Computing (TBFC) Model of the IoT**
Ryusei Chida, Yinzhe Guo, Ryuji Oma, Shigenari Nakamura, Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa

4. **A Framework for Automatically Generating IoT Security Quizzes in a Virtual 3D Environment Based on Linked Data**
Wei Shi, Chenguang Ma, Srishti Kulshrestha, Ranjan Bose, Yoshihiro Okada

5. **Load and Price Forecasting based on Enhanced Logistic Regression in Smart Grid**
Aroosa Tahir, Zahoor Ali Khan, Nadeem Javaid, Zeeshan Hussain, Aimen Rasool, Syeda Aimal

6. **Load and Price Forecasting in Smart Grids using Enhanced Support Vector Machine**
Ammara Nayab, Tehreem Ashfaq, Syeda Aimal, Aimen Rasool, Nadeem Javaid, Zahoor Ali Khan

EIDWT-S5: Authentication Methods and Detection Systems

Chair: **Yuji Suga**, Internet Initiative Japan Inc., Japan

1   **Outgoing Data Filtration for Detecting Spyware on Personal Computers**
Aishwarya Afzulpurkar, Mouza Alshemaili, Khalid Samara

2   **Formulation of Information Hiding Model for One-time Authentication Methods using the Merkle Tree**
Yuji Suga

3   **Authentication Protocols using Multi-level Cognitive CAPTCHA**
Marek R. Ogiela and Lidia Ogiela

4   **An Approach to Discover Malicious Online Users in Collaborative Systems**
Ossama Embarak, Maryam Khaleifah, Alya Ali

5   **An Enhanced Model for Abusive Behavior Detection in Social Network**
Kefaya Qaddoum, Israr Ahmad, Yasir Javed, Ali Rodan

6   **Terminal Access Data Anomaly Detection Based on GBDT for Power User Electric Energy Data Acquisition System**
Qian Ma, Bin Xu, Bang Sun, Feng Zhai, Baojiang Cui

EIDWT S6: Data Analytics and Enterprise Systems

Chair: **Fatos Xhafa**, Technical University of Catalonia, Spain

1   **Data Analytics for Load and Price Forecasting via Enhanced Support Vector Regression**
Tanzeela Sultana, Zahoor Ali Khan, Nadeem Javaid, Syeda Aimal, Aisha Fatima, Shaista Shabbir

2   **Big Data Analytics in E-procurement of a Chain Hotel**
Elezabeth Mathew

3   **Data Modeling and Visualization of Tax Strategies Employed by Overseas American Individuals and Firms**
Alfred Howard Miller

4   **Adoption of Emerging Technologies in Supply Chain Operations for Cost Reduction and Enhancement of Share- holder Wealth: A Case Study of UAE Organization**
Benjamin Silas Bvepfepfe, Amjad khan Suri, Ali El Asad

5   **Trust Analysis for Information Concerning Food-Related Risks**
Alessandra Amato and Giovanni Cozzolino

13:30-14:30	Lunch
14:30-16:30	Parallel Sessions

EIDWT S7: Intteligent Algorithms and Systems

*Chair: **Zahoor Ali Khan**, Higher Colleges of Technology, UAE*

1. A Comparison Study for Chi-square and Uniform Client Distributions by WMN-PSOSA Simulation System for WMNs
Shinji Sakamoto, Leonard Barolli, Shusuke Okamoto

2. Performance Analysis of WMNs by WMN-PSODGA Simulation System Considering Exponential and Chi- square Client Distributions
Admir Barolli, Shinji Sakamoto, Leonard Barolli, Makoto Takizawa

3. A Deep Learning Approach Towards Price Forecasting using Enhanced Convolutional Neural Network in Smart Grid
Fahad Ahmed, Maheen Zahid, Nadeem Javaid, Abdul Basit Majeed Khan, Zahoor Ali Khan, Zain Murtaza

4. A Hybrid Optimization GNA Algorithm for The Quadratic Assignment Problem Solving
Kefaya Qaddoum and Azmi Al Azzam

5. A Fuzzy-based System for Selection of Actor Nodes in WSANs Considering Actor Reliability and Load Distri- bution
Donald Elmazi, Miralda Cuka, Makoto Ikeda, Leonard Barolli, Makoto Takizawa

EIDWT S8: Network Protocols and Mobile Computing

*Chair: **Leonard Barolli**, Fukuoka Institute of Technology, Japan*

1. Evaluating Indoor Location Triangulation Using Wi-Fi Signals
Yasir Javed, Zahoor Khan, Sayed Asif

2. Effect of Peer Mobility for a Fuzzy-based Peer Coordination Quality System in Mobile P2P Networks
Vladi Kolici, Yi Liu, Keita Matsuo, Leonard Barolli

3. Large-scale Simulation of Site-specific Propagation Model: Defining Reference Scenarios and Performance Evaluation
Zeeshan Hameed Mir

4. A Unicast Rate-based Protocol for Video Streaming Applications over the Internet
G.-A. Lusilao Zodi, T. Ankome, J. Mateus, L. Iiyambo, J. Silaa

5. TCP with Network Coding Performance under Packet Reordering
Nguyen Viet Ha and Masato Tsuru

6. Evaluation of a Protocol to Prevent Illegal Information Flow Based on Maximal Roles in the RBAC Model
Shohei Hayashi, Shigenari Nakamura, Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa

EIDWT S9: Collaborative Systems and Classification Methods

*Chair: **Ossama Embarak**, Higher Colleges of Technology, UAE*

1. **Understanding Students Personality to Detect Their Learning Differences**
   Ossama Embarak, Zahoor Khan, Binod Gurung

2. **Proposal of a Regional Culture Inheritance System by AR Technology**
   Hengyi Li and Tomoyuki Ishida

3. **Perceiving Intellectual Style to Solve Privacy Problem in Collaborative Systems**
   Ossama Embarak, Kholoud Saeed, Manal Ali

4. **A Novel Simulation based Classifier using Random Tree and Reinforcement Learning**
   Israr Ahmed, Munir Naveed, Mohammed Adnan

5. **Enhanced Classification of Sentiment Analysis of Arabic Reviews**
   Loai Alnemer, Bayan Alammouri, Jamal Alsakran, Omar El Ariss

6. **Domain Formalization for Metaphorical Reasoning**
   Flora Amato, Giovanni Cozzolino, Francesco Moscato

Conference Planner

DAY 1

Tuesday February 26, 2019		ROOM 1	ROOM 2	ROOM 3
Slot	Time			
		EIDWT-2019 Steering Committee Meeting and Discussion		
	13:00 – 16:30	Registration		
Social Event	19:00 – 21:00	Reception Party		

DAY 2

Wednesday February 27, 2019		ROOM 1	ROOM 2	ROOM 3
Slot	Time			
	9:00 – 10:00	Registration		
Session 1	**10:00 – 11:00**	**Opening Ceremony** **EIDWT-2019 Keynote I** (Plenary Room)		
Coffee Break	11:00 – 11:30	Coffee Break		
Session 2	**11:30 – 13:30**	**EIDWT S1**	**EIDWT S2**	**EIDWT S3**
Lunch	13:30 – 14:30	Lunch		
City Tour	16:30	City Tour		
Social Event	**19:00 – 21:00**	Banquet Party		

DAY 3

Thursday February 28, 2019		ROOM 1	ROOM 2	ROOM 3
Slot	Time			
	9:00 – 10:00	Registration		
Session 1	**10:00 – 11:00**	**EIDWT-2019 Keynote II** (Plenary Room)		
Coffee Break	11:00 – 11:30	Coffee Break		
Session 2	**11:30 – 13:30**	**EIDWT S4**	**EIDWT S5**	**EIDWT S6**
Lunch	13:30 – 14:30	Lunch		
Session 3	**14:30 – 16:30**	**EIDWT S7**	**EIDWT S8**	**EIDWT S9**