

CONFERENCE ABSTRACTS

ICMLSC 2020

The 4th International Conference on
Machine Learning and Soft Computing

ICCRD 2020

International Conference on
Computer Research and Development

Haiphong City, Vietnam
January 17-19, 2020

Sponsored by



Media Partner



Table of Contents

Daily Schedule Overview.....	2
Welcome Address.....	3
Organizing Committee	4
Local Information.....	6
Key Points.....	7
Speeches.....	8
Keynote Speech I.....	8
Keynote Speech II.....	9
Keynote Speech III.....	10
Invited Speech	11
Presentations at a Glance.....	12
Oral Session I.....	14
Oral Session II.....	18
Oral Session III.....	22
Oral Session IV	27
Poster Session	31
Listeners	37
Author Index	38
One-day Visit.....	39

Daily Schedule Overview

Jan. 17 Day 1 Friday	Venue: Pre-function 5th Floor			
	10:00-17:00	<ul style="list-style-type: none"> -Registration -Conference Materials Pick-up 		
Jan. 18 Day 2 Saturday	Venue: Le Chan 2 Room 5th Floor			
	9:00-9:05	<ul style="list-style-type: none"> -Opening Remarks Prof. Pham The Bao Sai Gon University, Viet Nam		
	9:05-9:45	<ul style="list-style-type: none"> -Keynote Speech I <i>"Intelligent Assistive Robots Operating in Real Human Environments"</i> Prof. Genci Capi, Hosei University, Japan		
	9:45-10:25	<ul style="list-style-type: none"> -Keynote Speech II <i>"Nonparametric Probability Density Estimation Using Neural Network"</i> Prof. Hieu Trung Huynh, Industrial University of Ho Chi Minh City, Viet Nam		
	10:25-10:50	<ul style="list-style-type: none"> -Group Photo -Coffee Break 		
	10:50-11:30	<ul style="list-style-type: none"> -Keynote Speech III <i>"Generating Point Cloud from Measurements Based on Convolutional Neural Network – An Application for Building 3D Human Model"</i> Prof. Pham The Bao, Sai Gon University, Viet Nam		
	11:30-12:00	<ul style="list-style-type: none"> -Invited Speech <i>"Large-scale Applications of Machine Learning in 3D City Modelling"</i> Dr. Filip Biljecki, National University of Singapore, Singapore		
	12:00-13:30	<ul style="list-style-type: none"> -Lunch @ Flame Grill & Bar 6th Floor 		
	Venue: Le Chan 1 room & Le Chan 2 room 5th Floor			
	13:30-15:15	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> -Session I <i>Machine Learning and Intelligent Computing</i> </td> <td style="width: 50%; padding: 5px;"> <ul style="list-style-type: none"> -Session II <i>Advanced Information Technology and Network Engineering</i> </td> </tr> </table>	<ul style="list-style-type: none"> -Session I <i>Machine Learning and Intelligent Computing</i>	<ul style="list-style-type: none"> -Session II <i>Advanced Information Technology and Network Engineering</i>
	<ul style="list-style-type: none"> -Session I <i>Machine Learning and Intelligent Computing</i>	<ul style="list-style-type: none"> -Session II <i>Advanced Information Technology and Network Engineering</i>		
	15:15-15:45	<ul style="list-style-type: none"> -Poster Session -Coffee Break 		
15:45-17:30	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> -Session III <i>Image Analysis and Processing</i> </td> <td style="width: 50%; padding: 5px;"> <ul style="list-style-type: none"> -Session IV <i>Artificial Intelligence and Intelligent Systems</i> </td> </tr> </table>	<ul style="list-style-type: none"> -Session III <i>Image Analysis and Processing</i>	<ul style="list-style-type: none"> -Session IV <i>Artificial Intelligence and Intelligent Systems</i>	
<ul style="list-style-type: none"> -Session III <i>Image Analysis and Processing</i>	<ul style="list-style-type: none"> -Session IV <i>Artificial Intelligence and Intelligent Systems</i>			
18:00-20:00	<ul style="list-style-type: none"> -Dinner @ Flame Grill & Bar 6th Floor 			
Jan. 19 Day 3 Sunday	8:00-16:00	<ul style="list-style-type: none"> -One-day Visit 		

Welcome Address

It gives us immense pleasure to invite you to The 4th International Conference on Machine Learning and Soft Computing (ICMLSC 2020) and the International Conference on Computer Research and Development (ICCRD 2020) during the period January 17-19, 2020 at Haiphong City, Viet Nam. The conferences focus on the trending, highly popular, but exciting and extremely challenging areas from our keynote speakers of leading scientists and a variety of authors around the world. The outcome of our deliberations will play a crucial role in progress achieved in these areas.

The conferences bring together researchers looking for opportunities for conversations that cross the traditional discipline boundaries and allows them to resolve multidisciplinary challenging problems that only a venue of this nature can offer. It is the clear intent of the conference to offer excellent mentoring opportunities to participants. Through this amazing event we trust that you will be able to share the state-of-the-art developments and the cutting-edge technologies in these broad areas.

Special thanks are extended to our colleagues in program committee for their thorough review of all the submissions, which is vital to the success of the conference, and also to the members in the organizing committee and the volunteers who had dedicated their time and efforts in planning, promoting, organizing and helping the conference. Last but not least, our special thanks go to invited keynote speakers as well as all the authors for contributing their latest researches to the conference.

This conference program is highlighted by three keynote speakers: Prof. Pham The Bao, Sai Gon University, Vietnam, Prof. Genci Capi, Hosei University, Japan and Prof. Hieu Trung Huynh, Industrial University of Ho Chi Minh City, Vietnam and one invited speaker Dr. Filip Biljecki, National University of Singapore, Singapore.

We hope this success can develop into persistent success annually, in which there are presenters from all corners of the globe and all major countries.

We sincerely hope you have an excellent time during ICMLSC 2020 & ICCRD 2020 in picturesque Haiphong.

Conference Committee
Haiphong, Viet Nam

Organizing Committee

Advisory Chairs

Prof. Phuoc Tran Vinh, University of Information Technology, Vietnam

Prof. Hieu Trung Huynh, Dean of IT faculty of Industrial University of Ho Chi Minh City, Vietnam

Conference Chairs

Prof. Pham The Bao, Sai Gon University, Vietnam

Prof. Genci Capi, Hosei University, Japan

Program Chairs

Prof. Doo-Hwan Bae, KAIST, Korea

Prof. Ly Le, International University - Vietnam National University, Vietnam

Prof. Thuong Le-Tien, Hochiminh City University of Technology, Vietnam

Prof. Paolo Terenziani, DISIT - Universita' del Piemonte Orientale, Italy

Publicity Chair

Dr. Amir H. Alavi, Michigan State University, USA

Technical Committee

Prof. Young Cheol Ock, University of Ulsan, South Korea

Prof. Georgi Vayssilov, University of Sofia, Bulgaria

Prof. The-Cong Nguyen, Hanoi University of Science and Technology, Vietnam

Prof. Georgi Vayssilov, University of Sofia, Bulgaria

Prof. Moh'd Sami Ashhab, American University of Ras Al Khaimah, UAE

Prof. Seonghwan Yoon, Pusan National University, Korea

Prof. Jyothi Singaraju, Sri Padmavati University, India

Prof. Anton Satria Prabuwo, King Abdulaziz University, Saudi Arabia

Prof. Shibendu Shekhar Roy, National Institute Of Technology Durgapur, India

Prof. Soo Hyung Kim, Chonnam National University, South Korea

Prof. Hansoo Kim, Seowon University, Korea

Prof. Naoyuki Ishimura, Chuo University, Japan

Prof. Jaejoon Kim, Daegu University, South Korea

Prof. Chang Gyoon Lim, Chonnam National University, South Korea

Prof. The-Cong NGUYEN, Hanoi University of Science and Technology, Vietnam

Prof. Sharad K. Pradhan, National Institute of Technical Teachers' Training & Research, India

Prof. M. Tavakol, University of Tehran, Iran

Prof. Samarjeet Borah, Sikkim Manipal University, India

Prof. Chang Gyoon Lim, Chonnam National University, Korea

Assoc. Prof. Rositca Nikolova, University of Sofia "St. Kliment Ohridski", Bulgaria

Assoc. Prof. Arzu Baloğlu, Marmara University, Turkey
Assoc. Prof. Jarot S. Suroso, Indonesia Bina Nusantara University
Assoc. Prof. Baij Nath Kaushik, Shri Mata Vaishno Devi University, India
Dr. Dong Si, University of Washington Bothell, USA
Dr. Chi-On John Chan, Hong Kong Shue Yan University, Hong Kong
Dr. Agata Kołakowska, Gdańsk University of Technology, Poland
Dr. Mona Elshinawy, Howard University, USA
Dr. Hashem Izadi Moud, University of Florida, USA
Dr. Behnam Jahangiri, University of Missouri, USA
Dr. Amir H. Alavi, Michigan State University, USA
Dr. Le Nguyen Quoc Khanh, Nanyang Technological University, Singapore
Dr. Shao Tang, eBay Inc., USA

Local Information

Hai Phong is the main port of northern Vietnam and a commercial and industrial center and is the third most populous metropolis in the country. It is near Thai Binh province to the south, Quang Ninh province to the north and Hai Duong province to the west.

Hai Phong is located near the East Sea, which is why its weather is characterized by tropical monsoons. The northeast monsoon season is from November to April, while the south-eastern monsoon season is from May to October. Rain falls in Hai Phong even during the summer months and the best time to go is between November and March.



Weather in Hai Phong

January is the month with the least rainfall in Hai Phong, Vietnam. Rain falls for 5 days and accumulates 37.1mm (1.5") of precipitation. January is also the coldest month in Hai Phong, Vietnam, with an:

Average daily minimum temperature

14°C

Average daily highest temperature

19°C



Conference Venue



MERCURE HAI PHONG

12 Lach Tray, Ngo Quyen, Hai Phong, Vietnam

Phone: +84(225) 3 240 999 - Fax: +84(225) 3 240 998



Emergency Calls

Fire: 114

Police: 113

Ambulance: 115

Key Points



Oral Presentation

- ◆ Timing: a maximum of 15 minutes in total, including 3 minutes for Q&A. Please make sure your presentation is well timed.
- ◆ All oral session rooms are equipped with data projectors with a standard VGA connector. The speakers could also bring and use their own laptops or other presentation devices. Please check the compatibility of your laptop and the project before the session starts.
- ◆ It is suggested that you email a copy of your presentation to your personal inbox as a backup in case for some reason the files can't be accessed from your flash drive.
- ◆ Videos: If your Power Point files contain videos please make sure that they are well formatted and connected to the main files.



Poster Presentation

- ◆ Poster size is 60cm x 80cm.
- ◆ Posters are required to be condensed and attractive.



Dress Code

- ◆ Please wear formal clothes or national characteristics of clothing.

(!) IMPORTANT NOTES

- ❖ ALWAYS take care of your belongings during the conference.
- ❖ ALWAYS wear your participation badge during the conference. There will be NO access for people without a badge.
- ❖ NEVER discard your badge at will. There's a risk of irrelative people who use it for unknown purpose.
- ❖ Accommodation is not provided. Delegates are suggested make early reservation

Disclaimer: The conference organizer does not assume any responsibility for the loss of personal belongings of the participants.

Keynote Speech I



Prof. Genci Capi
Hosei University, Japan

Presentation:

Intelligent Assistive Robots Operating in Real Human Environments

Abstract:

Soon robots are expected to operate in our homes, hospitals and offices. Therefore, they have to process multiple sensors data and adapt the policy as the environment changes. In this talk, I will overview the existing efforts including our attempts at creating intelligent robots operating in everyday life environments. In particular, I will focus on BMI, robot navigation in urban environments, and assistive humanoid robot. I will show experimental results that demonstrate the effectiveness of proposed algorithms.

Biography:

Genci Capi received the B.E. degree from Polytechnic University of Tirana, in 1993 and the Ph.D. degree from Yamagata University, in 2002. He was a Researcher at the Department of Computational Neurobiology, ATR Institute from 2002 to 2004. In 2004, he joined at the Department of System Management, Fukuoka Institute of Technology, as an Assistant Professor, and in 2006, he was promoted to Associate Professor. In 2010, he was joined as a Professor at the Department of Electrical and Electronic Systems Engineering, University of Toyama, Toyama, Japan. He is currently a Professor at the Department of Mechanical Engineering, Hosei University, Tokyo, Japan.

His research interests include intelligent robots, BMI, multi robot systems, humanoid robots, learning and evolution.

Keynote Speech II



Prof. Hieu Trung Huynh
Industrial University of Ho Chi Minh City, Viet Nam

Presentation:

Nonparametric Probability Density Estimation using Neural Network

Abstract:

Estimating the probability density function (pdf) is one of major topics in the statistical modeling. It represents a random variable as a function of other variables from the observed data or describes the properties underlying the data distribution. It plays an important role in many applications. Several frameworks and real applications were reported where estimating the pdf of collected data is fundamental, they include Bayesian decision rule, predicting behavior, medical science, genomic analysis, bioinformatics, data compression, and the model selection, etc. Some density estimation methods have been developed. However, they may have some limitations including without maximum likelihood or requirement of keeping a training set to process a new pattern. In this study, an approach for nonparametric estimation of pdfs, which is based on artificial neural networks, is introduced. It can improve the performance over other traditional approaches in the field. Unlike Parzen neural networks, the proposed model estimates the pdfs based on the likelihood maximization. The theoretical analysis showed the asymptotical convergence of the proposed algorithm to the true pdf under the mild assumptions.

Biography:

Dr. Hieu Trung Huynh is the dean of Faculty of Information Technology, Industrial University of Ho Chi Minh city. His research interests include machine learning, intelligent computation, medical data analysis, and computer-aided diagnosis (CAD). He received his B.S. degree in Computer Science at University of Technology in 1998 and then became a lecturer there. He passed M.S courses in the University of Technology, VietNam, realized his thesis research work at Osaka Sangyo University, Japan, and received M.E. degree of Computer engineering at University of Technology in 2003. He did his PhD at Intelligent Computing Laboratory at Chonnam National University, Korea, and obtained his PhD degree in 2009. He then worked in this Laboratory until 2010. From 2011 to 2012, he has joined the Department of Radiology, University of Chicago, US. He has returned Viet Nam and appointed as dean of Faculty of Information Technology. He has published more than 40 papers primarily in the fields of machine learning, intelligent computation and medical data analysis. He is a member of IEICE, IEEE and committee member of several international conferences

Keynote Speech III



Prof. Pham The Bao
Sai Gon University, Viet Nam

Presentation:

Generating Point Cloud from Measurements Based on Convolutional Neural Network – An Application for Building 3D Human Model

Abstract:

3D point clouds enclose fundamental appearances of objects. Generating point clouds and meshes is an essential step in constructing computer-based 3D models. This paper introduces a novel method to create the point cloud of 3D objects from crucial measurements. To find the relation between shapes and sizes, we present a method of representing 3D data called slice-structure. A Neural Network-based learning model is then manipulated to be compatible with the data representation. Principal slices are generated by matching the measurements at predetermined heights before the whole point cloud is tuned by Convolutional Neural Network (CNN). We conduct experiments on a dataset of 3D scan on human bodies, which contains 1706 examples. The average error between predicted models and the real ones is 0.0772, and the generated models have good visualization as well.

Biography:

1995: BS., 2000: MSc., 2009: Ph.D. degrees in University of Science 1995 to 11/2018: Professor of the Department Computer Science, Faculty of Mathematics & Computer Science, University of Science, Hochiminh city, Vietnam. 11/2018 ~ now: Professor of the Department Computer Science, Faculty of Information Science, Sai Gon University, Hochiminh city, Vietnam. Chair of IC-IP Lab. Research interests: Image processing & pattern recognition, intelligent computing

Invited Speech



Dr. Filip Biljecki
National University of Singapore, Singapore

Presentation:

Large-scale Applications of Machine Learning in 3D City Modelling

Abstract:

3D geographic information is becoming increasingly available thanks to advancements in remote sensing, growing demand of cities, and proliferation of use cases. However, as use cases often focus on the geometric detail and visualisation, the semantic aspect of data is often lacking. This presentation will overview recent work that has been focused on automatically augmenting geospatial datasets with semantic information, increasing their completeness and potential.

The talk will also present other developments related to machine learning at the Urban Analytics Lab at the National University of Singapore.

Biography:

Dr. Filip Biljecki is assistant professor in urban analytics, GIS, and 3D city modelling at the National University of Singapore, the Asia's leading university and consistently ranked as one of the world's top universities. At NUS he established the Urban AnalyticsLab (<https://ual.sg>). He received both an MSc and a PhD degree (top 5%) from the Delft University of Technology in the Netherlands. Filip's background is on the intersection of 3D GIS, computer science, data science, and geomatics, supported by past work in the geospatial industry. He was awarded the Young Researcher Award in GIScience by the Austrian Academy of Sciences, and by EuroSDR (association of European government agencies in mapping, and universities) for the best doctoral research in GIS in Europe. Filip is also involved in the World Economic Forum as Council Fellow and PLOS ONE as Academic Editor.

Presentations at a Glance



Oral Presentation

◆ *Oral Session I: Machine Learning and Intelligent Computing*

C016-A: Machine Learning for Partial Discharge Diagnosis in Gas-Insulated Switchgear

C035: Diabetic Retinopathy Detection Using Deep Learning

C041: Learning Question Similarity

C027: Enhancement of Convolutional Neural Networks Classifier Performance in the Classification of IoT Big Data

C051: A Study on the Effect of Fuzzy Membership Function on Fuzzified RIPPER for Stock Market Prediction

C032: A Sublinear-Regret Reinforcement Learning Algorithm on Constrained Markov Decision Processes with Reset Action

◆ *Oral Session II: Advanced Information Technology and Network Engineering*

C0003: Numerical Simulation of Two-phase Slug Flow Liquid-Carryover in a Converging T-junction

C008: Implementing IoT-Adaptive Fuzzy Neural Network Model Enabling Service for Supporting Fashion Retail

C015: Cyber Physical System: Achievements and Challenges

C037: Churn Prediction using Ensemble Learning

C0012-A: On the Estimation of Value at Risk for the Portfolio Problem via Copulas

C052: An Ensemble Multi-objective Particle Swarm Optimization Approach for Exchange Rates Forecasting Problem

C022: Discovered Changes in Rice Occupation with Satellite Images based on Random Forest Approach

◆ *Oral Session III: Image Analysis and Processing*

C039: Video-based Skeletal Feature Extraction for Hand Gesture Recognition

C021: Developing a Mobile Application to Detect Improper Sitting Using Regression Analysis and an Accelerometer

C030: Distance-Based Mean Filter for Image Denoising

C0009-A: Defocus Blur Detection using Local Binary Pattern and Adaptive Threshold

C056: MLEU: Multi-Level Embedding U-Net for Fully Automatic Image Colorization

C0010: Improving Path Planning Methods in 2D Grid Maps

C017: Simulating Mangroves Rehabilitation with Cellular Automata

◆ *Oral Session IV: Artificial Intelligence and Intelligent Systems*

C040: Movie Recommender Systems Made Through Tag Interpolation

C024: Cerebro: Novelty Detection in Product Reviews

C028: Sequence Labeling Approach to the Task of Sentence Boundary Detection

C049: Energy Expenditure Estimation based on Artificial Intelligence and Microservice Architecture

C0001: Effect of Named Entity Recognition on English-Vietnamese Neural Machine Translation

C0007: Smart Solar-powered Lighting System for Smart Cities



Poster Presentation

C010: Multimodal Sentiment Analysis based on Multi-head Attention Mechanism

C005: Reasoning Algorithms for Complex Matching Features

C011: Valence-Arousal Model based Emotion Recognition using EEG, Peripheral Physiological Signals and Facial Expression

C006: Named Entity Recognition Method for Fault Knowledge based on Deep Learning

C023: Towards an Effective Solution for Medical Treatment Process based on Product Lifecycle Management

C033: A Proposal of Deep Learning Model for Classifying User Interests on Social Networks

C034: A Novel Approach using Context Matching Algorithm and Knowledge Inference for User Identification in Social Networks

C054: OCDex Portal: A Data-Driven Approach in Analyzing Procurement Process of Community-based HIV/AIDS Advocacy Related Items

C053: Reinforcement Q-learning PID Controller for a Restaurant Mobile Robot with Double Line-sensors

C0013: The Interaction of Five-fingered Haptic Controller for Manipulating Object in Virtual Reality

C031: Crop Knowledge Discovery Based on Agricultural Big Data Integration