

2021 25th International Computer Science and Engineering Conference (ICSEC 2021)

**Virtual Conference
18-20 November 2021**



**IEEE Catalog Number: CFP21IBE-POD
ISBN: 978-1-6654-1198-1**

**Copyright © 2021 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:	CFP21IBE-POD
ISBN (Print-On-Demand):	978-1-6654-1198-1
ISBN (Online):	978-1-6654-1197-4

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

About ICSEC 2021	i
Message from Dean of the University of Phayao	ii
Message from General Chair	iii
Committees	iv
Conference Program	ix
Keynotes	
Keynote1: Prof. Ilsun You	xi
Keynote2: Dr. Ettikan Kandasamy Karupiah	xii
Keynote3: Supavadee Aramvith, Ph.D.	xii
Invited Speaker	
Invited Speaker1: Dr. Manik Sharma	xii
Research Papers	
A Parallel Multi-Deque Sorting Algorithm	1
Thai Ingredient Replacement Recommendation Using Taxonomy	5
IoT-Based Terrace Farming System for Cities	11
AI-Based Obstacle Detection and Navigation for the Blind using Convolutional Neural Network	17
The Phytochemicals Drug Discovery for Diabetes by the Maximal Clique Algorithm	23
Develop a Smart Phone Base Machine Vision System	29
Rainfall Nowcasting Based on Neighboring Rain Gauge Stations Using Learning Machines	33
Technological Barriers of (non)Blockchain Enabled IoT Data Marketplaces	39
Feature-Based Attack on Visual Tracking	45
COVID-19 and Other Lung Disease Detection Using VGG19 Pretrained Features and Support Vector Machine	51
Analysis of the Relationship of Tourist Behavior in Andaman Coast Provinces, Southern Thailand	57
Encrypted Traffic Characterization Using None Zero Payload and Payload Ratio Characteristics Round 1	63
Comparison Between Support Vector Machine and K-Nearest Neighbor Algorithms for Leukemia Images Classification Using Shape Features	70
Feature Engineering and Feature Selection for Fault Type Classification from Dissolved Gas Values in Transformer Oil	75
Fusion of Signal-Based Multichannel CNN-LSTM Models for Human Activity Recognition Using Wearable Sensors	81
A Heuristic-Based Efficient Path Planning Scheme for Data Gathering WSNs Using Mobile Sinks	87
Relationships of Tourist Groups and Phuket Attractions from Online Reviews	93
Adaptive Kernel Transform for Face Recognition Under Uneven Illumination Conditions	98
Refining Word Embeddings Using Domain-Specific Knowledge for Drug Reviews Sentiment Classification	104
Improving Performance of Sparse Autoencoder by Using DPHOG for Gender Classification	110
Thailand License Plate Detection and Recognition	116
Generating the Employment Predictive Model Using Data Mining Techniques	122
Fixed Deposit of Bank Data Analysis and Risk-Shifting Behavior at Commercial Banks	128
Range Measurement by Computer Vision Systems Based on Invariant Moments	134
CNN Classification of Finger Movements Using Spectrum Analysis of sEMG Signals	138
Communication Management Plan of OSS Operational Implementation: A Case Study of Telecommunication Company	143
Usability Evaluation of Touch Screen Interface with Various User Groups	149
Heterogeneous Network Propagation with Optimal Similarity Measure for Drug-Target Associations	155
Enhanced Local Receptive Fields Based Extreme Learning Machine Using Dominant Patterns Selection	161

The Prototype Development of Thai Language Understanding Based on Mental Image Directed Semantic Theory	167
On Comparison of Time Series Models in Modeling and Forecasting Available Bandwidth in Wide Area Networks	173
Optimizing Link-Level Entanglement Generation in Quantum Networks with Unequal Link Lengths	179
Experiments on Quantum Circuits for Compact Genetic Algorithm	185
Data Segmentation Effects on Oxygen in Blood Sleep Apnea Detection CNN-Based Model	191
Comparison of 3D Rice Organs Point Cloud Classification Techniques	196
Fast Segmentation Convolutional Neural Network with Edge-Guided Path for Real-Time Diagnosis of Gastric Intestinal Metaplasia	200
ICNET: An Edutainment Web Application for Learning Computer Networks	206
Experimental Piano - Playing Robot Hand	212
Framework for Eliciting Security Requirements of Web Application from Business Users	216
Foliar Fertilizer Robot for Raised Bed Greenhouse Using NDVI Image Processing System	222
Comparison of Methods to Estimate Missing Values in Monthly Rainfall Data	228
Classification of Cocoa Bean Cut-Test Image Using Stacked Machine Learning Model	234
Design and Development of a Vision System for Identifying a Workpiece Quality and Defects Using Object Detection	240
DeltaFace: Fully Automatic 3D Facial Cosmetic Surgery Simulation	246
Bluetooth Geo-Fence for Elderly and Patient Care	252
Thai Fingerspelling Recognition Using Hand Landmark Clustering	256
Augmenting Differentiable Neural Computer with Read Network and Key-Value Memory	262
Algorithms for Bilevel Variational Inequality Problems and Application to Image Restoration	267
Quantum Neural Network Model for Token Allocation for Course Bidding	273
Multi-Label Diabetes Health Intervention Dataset	277
Deep Convolution Neural Network for Thai Classical Music Instruments Sound Recognition	283
Construction of CiteScore Based Metric for Conferences on a Subject Area of Computer Science in Scopus	289
Thai Name Gender Classification Using Deep Learning	295
Design a Monitoring System for Lignite Transferring by Dump Trucks in the Coal Mine Using Deep Learning at the Edge Combined with Cloud Service	301
Optimal Object Classification Model for Embedded Systems Based on Pre-Trained Models	307
Facial Action Units Recognition Using Deep Learning Model with Bottleneck Features	313
Development of Tele-Operated Mobile Robots for COVID-19 Field Hospitals	319
The Atmospheric Ozone Monitoring System by Using Internet of Things Technology for Nanosatellites (3U CubeSat)	325
Screening TB Using Deep Transfer Learning	330
An Extendable Auto-Position for UWB-Based Indoor Positioning Systems	334
Stationary Wavelet-Based Adaptive Face Transform for Face Recognition in Lighting Conditions	340
GMM-P: Intelligent Method Based a Mobile Battery Swapping Service for Electric Vehicles	346
Implementing Online Food Ordering System for Food Court Using Scrum Approach	351
Challenges of Agile Adoption in Banking Industry: A Systematic Literature Review	357
Sentiment Analysis of Messages on Twitter Related to COVID-19 Using Deep Learning Approach	363
Visual Inspection for Circular-Tablet Quality by Image Template Matching	368
Design of Particulate Matter Monitoring Based on NB-IoT	372
OOP Codes: Teaching Object-Oriented Programming Concepts Through a Mobile Serious Game	377
Prediction Performance and Explainability of COVID-19 Classification Models	383
ASPAHI: Application for Security and Privacy Awareness Education for Home IoT Devices	388

An Evaluation of the UIT-VSFC Dataset Using Modern Machine Learning Techniques and Word Embeddings	394
Weapon Detection Using Faster R-CNN Inception-V2 for a CCTV Surveillance System	400
Blister Package Classification Using ResNet-101 for Identification of Medication	406
Tomato Maturity Classification: A Transfer Learning Approach	411
Quantum Circuit for Regression Learning with Backpropagation	417
Robotic System for Depalletization of Pharmaceutical Products with 3D Camera	422
Fuzzy Clustering Tree Algorithm for Medical Data Classification	428
COVID-19 and Global Increases in Cybersecurity Attacks: Technical Review of Possible Adverse AI Attacks	434
Effects of Preprocessing in Person Identification Using Ear Features	443
Fall Detection from Smart Wearable Sensors Using Deep Convolutional Neural Network with Squeeze-And-Excitation Module	448
Bidirectional Gate Recurrent Unit Neural Network for Recognizing Face Touching Activities Using Smartwatch Sensors	454
A Lightweight Deep Learning Network for Sensor-Based Human Activity Recognition Using IMU Sensors of a Low-Power Wearable Device	459
A Deep Learning to Mosquitoes Species Pattern Recognition	464
Classification of Covid-19 Patients Requiring Intensive Care Unit	469
Author Index	473