

2021 16th International Conference on Electronics Computer and Computation (ICECCO 2021)

**Kaskelen, Kazakhstan
25 – 26 November 2021**



**IEEE Catalog Number: CFP2107V-POD
ISBN: 978-1-6654-0946-9**

**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:	CFP2107V-POD
ISBN (Print-On-Demand):	978-1-6654-0946-9
ISBN (Online):	978-1-6654-0945-2

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

2021 16th International Conference on Electronics Computer and Computation (ICECCO) **ICECCO 2021**

Table of Contents

Program Committees	xiv
ICECCO 2021 Reviewers	xvi
Author Index	249

Wireless and Mobile Sensor Networks / Communication Engineering

Development of Attendance Monitoring System using IoT Technologies	3
<i>Zhumaniyaz Mamatnabiyev (Suleyman Demirel University, Kazakhstan)</i>	
Deploying Microwave Radios using Mitigation Techniques for Eluding Interference between NAN to MDMS Fragment of Smart Grid Communication Network	9
<i>Ahmed Qaddus (Bahria University, Pakistan)</i> <i>Abid Ali Minhas (Al Yamamah University, Saudi Arabia)</i>	
Intrusion Detection System for Wireless Networks	15
<i>Baimukashev Rashid (Suleyman Demirel University, Kazakhstan)</i> <i>Kamalkhan Artykbayev (Nazarbayev University, Kazakhstan)</i> <i>Kazybek Adam (Nazarbayev University, Kazakhstan)</i> <i>Begenov Mels (Suleyman Demirel University, Kazakhstan)</i>	
Development an Intelligent Task Offloading System for Edge-Cloud Computing Paradigm	20
<i>Sabyrzhan K. Atanov (L. N. Gumilyov Eurasian National University, Kazakhstan)</i> <i>Zhexen Y. Seitbattalov (L. N. Gumilyov Eurasian National University, Kazakhstan)</i> <i>Zhanar S. Moldabayeva (L. N. Gumilyov Eurasian National University, Kazakhstan)</i>	

Signal Processing / Micro-Electronics Engineering / Electromagnetic Engineering / Mechatronics / Robotics

Hardware implementation of pseudo-random numbers on CPLD	26
<i>Adil Maidanov (L. N. Gumilyov Eurasian National University, Kazakhstan)</i> <i>Sabyrzhan Atanov (L. N. Gumilyov Eurasian National University, Kazakhstan)</i> <i>Bibigul Tailak (L. N. Gumilyov Eurasian National University, Kazakhstan)</i>	

Scientific Computation / Programming Languages

- Computational model of stationary flow with integral nonlocal boundary conditions 30
Altyngazy Karimov (al-Farabi A. KazNU, Kazakhstan)
Alexei Kavokin (Suleyman Demirel University, Kazakhstan)
Saule Kattabekova (Suleyman Demirel University, Kazakhstan)

Machine Learning/Computer Vision/Artificial Intelligence/Data Science

- Part-of-speech tagging of Kazakh text via LSTM network with a bidirectional modifier 34
Azamat Serek (Suleyman Demirel University, Kazakhstan)
Ainur Issabek (Suleyman Demirel University, Kazakhstan)
Adil Akhmetov (Suleyman Demirel University, Kazakhstan)
Alisher Sattarbek (Suleyman Demirel University, Kazakhstan)
- Development of a preliminary version of a model for machine learning in predicting yield on the example of wheat in the conditions of East Kazakhstan 38
Nail Alikuly Beisekenov (D. Serikbayev East Kazakhstan Technical University, Kazakhstan)
Marzhan Anuarbekovna Sadenova (D. Serikbayev East Kazakhstan Technical University, Kazakhstan)
Natalya Anatolyevna Kulenova (D. Serikbayev East Kazakhstan Technical University, Kazakhstan)
Mamysheva Asel Mukhtarkanovna (D. Serikbayev East Kazakhstan Technical University, Kazakhstan)
- 3D U-Net for brain stroke lesion segmentation on ISLES 2018 dataset 44
Azhar Tursynova (al-Farabi Kazakh National University, Kazakhstan)
Batyrkhan Omarov (al-Farabi Kazakh National University, Kazakhstan)
- Review of violent extremism detection techniques on social media 48
Kydyrkhanov Zhaksylyk (al-Farabi Kazakh National University, Kazakhstan)
Omarov Batyrkhan (al-Farabi Kazakh National University, Kazakhstan)
Mussiraliyeva Shynar (al-Farabi Kazakh National University, Kazakhstan)
- Development and Modeling of Intelligent Control System of Cruise Missile Based on Fuzzy Logic 53
A.S. Utegen (L.N. Gumilev Eurasian National University, Kazakhstan)
Kh. Moldamurat (L.N. Gumilev Eurasian National University, Kazakhstan)
Mukhanbetkaliyeva Ainur (L.N. Gumilev Eurasian National University, Kazakhstan)
Amangul Talgat (Kazakh University of Technology and Business, Kazakhstan)
Anuar Galymzhan (L.N. Gumilev Eurasian National University, Kazakhstan)
S. S. Brimzhanova (A. Baitursynov KRU, Kazakhstan)

MBTI personality classification using Apache Spark	59
<i>Kamila Orynbekova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Assem Talasbek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Abylay Omar (Suleyman Demirel University, Kazakhstan)</i>	
<i>Andrey Bogdanchikov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Shirali Kadyrov (Suleyman Demirel University, Kazakhstan)</i>	
Question answering model construction by using transfer learning	63
<i>Aimoldir Aldabergen (Suleyman Demirel University, Kazakhstan)</i>	
<i>Bakdaulet Kynabay (Suleyman Demirel University, Kazakhstan)</i>	
<i>Azamat Zhamanov (Suleyman Demirel University, Kazakhstan)</i>	
Spatial interpolation of humidity values in the fields of East Kazakhstan agricultural experimental station	69
<i>Aliya Nugumanova (Sarsen Amanzholov East Kazakhstan University, Kazakhstan)</i>	
<i>Andrei Bondarovich (Altai State University, Russia)</i>	
<i>Aizhan Tlebaldinova (Sarsen Amanzholov East Kazakhstan University, Kazakhstan)</i>	
<i>Irina Shuller (East Kazakhstan Agricultural Experimental Station LLP, Kazakhstan)</i>	
<i>Kamila Rakhymbek (Sarsen Amanzholov East Kazakhstan University, Kazakhstan)</i>	
<i>Almasbek Maulit (Sarsen Amanzholov East Kazakhstan University, Kazakhstan)</i>	
Speech data collection system for Kazakh language	73
<i>Darkhan Kuanyshbay (Suleyman Demirel University, Kazakhstan)</i>	
<i>Olimzhon Baimuratov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Yedilkhan Amirgaliyev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Arailym Kuanyshbayeva (Kazakh Ablai Khan University of International Relations and World Languages, Kazakhstan)</i>	
Using CNN Models to Identify Suspicious and Criminal Behavior - A Survey of Current Research Trends	81
<i>Zhunis Karimov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Nauryzbay Sapargali (Suleyman Demirel University, Kazakhstan)</i>	
<i>Nazerke Manteyeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Mels Begenov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Birzhan Moldagaliyev (Suleyman Demirel University, Kazakhstan)</i>	
Predicting Student Performance and Motivation in Online Education - A Survey of Current Research Trends	85
<i>Yerbol Baigarayev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Zhumat Abdimaulenov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Aizada Nurlanova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Birzhan Moldagaliyev (Suleyman Demirel University, Kazakhstan)</i>	

Deep Neural Network Classification Models for COVID-19 Detection in X-ray Images	89
<i>Yerkin Abdukarimov (Nazarbayev University, Kazakhstan)</i>	
<i>Assanali Abu (Nazarbayev University, Kazakhstan)</i>	
<i>Meirzhan Altynbekov (Nazarbayev University, Kazakhstan)</i>	
<i>Adai Shomanov (Nazarbayev University, Kazakhstan)</i>	
<i>Seong-Jun Lee (Daegu-Gyeongbuk Medical Innovation Foundation, South Korea)</i>	
<i>Min-Ho Lee (Nazarbayev University, Kazakhstan)</i>	
Prediction of Student’s Dropout from a University Program	94
<i>Nurdaulet Shynarbek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Alibek Orynassar (Suleyman Demirel University, Kazakhstan)</i>	
<i>Yershat Sapazhanov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Shirali Kadyrov (Suleyman Demirel University, Kazakhstan)</i>	
Automatic Classification of University Staff Enquiries in Russian and English	98
<i>Abylay Omar (Suleyman Demirel University, Kazakhstan)</i>	
<i>Shirali Kadyrov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Yerbol Baigarayev (Suleyman Demirel University, Kazakhstan)</i>	
MAS agents development for mining industry	102
<i>Abu Kuandykov (International Information Technology University, Kazakhstan)</i>	
<i>Dinara Kozhamzharova (International Information Technology University, Kazakhstan)</i>	
<i>Nurlan Karimzhan (International Information Technology University, Kazakhstan)</i>	
<i>Murat Aitimov (Kyzylorda State University named after Korkyt Ata, Kazakhstan)</i>	
Computer Vision Based Pre-processing of Microscopic Images	108
<i>Kurmangazy Kongratbayev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Cemil Turan (Suleyman Demirel University, Kazakhstan)</i>	
<i>Bekzot Tursunmamatov (Suleyman Demirel University, Kazakhstan)</i>	
Data Analysis for The Student Health Digital Profile	112
<i>Madina Mansurova (al-Farabi Kazakh National University, Kazakhstan)</i>	
<i>Malika Zubairova (al-Farabi Kazakh National University, Kazakhstan)</i>	
<i>Nurgali Kadyrbek (al-Farabi Kazakh National University, Kazakhstan)</i>	
<i>Gulnur Tyulepberdinova (al-Farabi Kazakh National University, Kazakhstan)</i>	
<i>Talshyn Sarsembayeva (al-Farabi Kazakh National University, Kazakhstan)</i>	
Handling data imbalance using CNN and LSTM in financial news sentiment analysis	118
<i>Moldir Omarkhan (Kazakh-British Technical University, Kazakhstan)</i>	
<i>Gulnur Kissymova (Kazakh-British Technical University, Kazakhstan)</i>	
<i>Iskander Akhmetov (Kazakh-British Technical University, Kazakhstan)</i>	
Abnormality Detection in Chest X-ray Images Using Uncertainty Prediction Algorithms	126

	<i>Nurbek Saparkhojayev (Karaganda Industrial University, Kazakhstan)</i>	
	<i>Lazzat Zholayeva (Kantau Multidisciplinary College, Kazakhstan)</i>	
	<i>Dinara Tokseit (Kantau Multidisciplinary College, Kazakhstan)</i>	
	<i>Yerzhan Tashkenbayev (Karaganda Industrial University, Kazakhstan)</i>	
Few-Shot Learning Approach for COVID-19 Detection from X-Ray Images		129
	<i>Rakhat Abdrakhmanov (Nazarbayev University, Kazakhstan)</i>	
	<i>Assanali Abu (Nazarbayev University, Kazakhstan)</i>	
	<i>Meirzhan Altynbekov (Nazarbayev University, Kazakhstan)</i>	
	<i>Adai Shomanov (Nazarbayev University, Kazakhstan)</i>	
	<i>Dmitriy Viderman (Nazarbayev University, Kazakhstan)</i>	
	<i>Min-Ho Lee (Nazarbayev University, Kazakhstan)</i>	
Electromyography Signal Classification Using Deep Learning		132
	<i>Mekia Shigute Gaso (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Selcuk Cankurt (Ala-Too International University, Kyrgyzstan and Suleyman Demirel University, Kazakhstan)</i>	
	<i>Abdulhamit Subasi (Institute of Biomedicine University of Turku, Finland)</i>	
Morphological Classification of Galaxies Using SpinalNet		138
	<i>Dim Shaiakhmetov (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Remudin Reshid Mekuria (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Ruslan Isaev (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Fatma Unsal (Ala-Too International University, Kyrgyzstan)</i>	
Sentiment Analysis of Kaspi Product Reviews		143
	<i>Yerassyl Kelsingazin (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Iskander Akhmetov (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Alexander Pak (Kazakh-British Technical University, Kazakhstan)</i>	
Optimization of CNN Model for Breast Cancer Classification		148
	<i>Nikolay Mikhailov (Nazarbayev University, Kazakhstan)</i>	
	<i>Mariam Shakeel (Nazarbayev University, Kazakhstan)</i>	
	<i>Abdybek Urmanov (Nazarbayev University, Kazakhstan)</i>	
	<i>Min-Ho Lee (Nazarbayev University, Kazakhstan)</i>	
	<i>M. Fatih Demirci (Nazarbayev University, Kazakhstan and TOBB University of Economics and Technology, Turkey)</i>	
COVID-19 classification based on CNNs models in CT image datasets		151
	<i>Dina Kushenchirekova (Nazarbayev University, Kazakhstan)</i>	
	<i>Andrey Kurenkov (Nazarbayev University, Kazakhstan)</i>	
	<i>Didar Mamyrov (Nazarbayev University, Kazakhstan)</i>	
	<i>Dmitriy Viderman (Nazarbayev University, Kazakhstan)</i>	

Seong-Jun Lee (Daegu-Gyeongbuk Medical Innovation Foundation, South Korea)
Min-Ho Lee (Nazarbayev University, Kazakhstan)

Breast cancer histopathology image classification using CNN	155
<i>Mukhamejan Karatayev (Nazarbayev University, Kazakhstan)</i>	
<i>Saltanat Khalyk (Nazarbayev University, Kazakhstan)</i>	
<i>Adai Shomanov (Nazarbayev University, Kazakhstan)</i>	
<i>Min-Ho Lee (Nazarbayev University, Kazakhstan)</i>	
<i>M. Fatih Demirci (Nazarbayev University, Kazakhstan and TOBB University of Economics and Technology, Turkey)</i>	
Modeling and Cluster Analysis of Antagonistic Systems	160
<i>Daulet Toybazarov (National Defense University named after the First President of the Republic of Kazakhstan, Kazakhstan)</i>	
<i>Sabyrzhan Atanov (L. N. Gumilyov Eurasian National University, Kazakhstan)</i>	
<i>Zufar Burnayev (National Defense University named after the First President of the Republic of Kazakhstan, Kazakhstan)</i>	
<i>Gani Baiseitov (Limited company «R&D Center «Kazakhstan Engineering», Kazakhstan)</i>	
<i>Dauren Kassenov (Ministry of Defense of the Republic of Kazakhstan, Kazakhstan)</i>	
Analysis of Prostate Cancer DNA Sequences Using Bi-direction Long Short Term Memory Model	167
<i>Yusuf Aleshinloye Abass (Nile University of Nigeria, Nigeria)</i>	
<i>Nwojo Nnanna Agwu (Nile University of Nigeria, Nigeria)</i>	
<i>Steve A. Adeshina (Nile University of Nigeria, Nigeria)</i>	
<i>Moussa Muhamat Boukar (Nile University of Nigeria, Nigeria)</i>	
What factors at school influence student academic performance at university	173
<i>Nazim Ibragimov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Asmina Barkhandinova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Nurzat Shayakhmetov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Aruzhan Akkoziyeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Sultanmakmud Bazarbayev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Zhandos Tangatar (Suleyman Demirel University, Kazakhstan)</i>	

Interesting Applications

Machine learning techniques versus classical statistics in strength predictions of eco-friendly masonry units	179
<i>Assia Aboubakar Mahamat (Nile University of Nigeria, Nigeria)</i>	
<i>Moussa Mahamat Boukar (Nile University of Nigeria, Nigeria)</i>	
Evaluation of Collision Resolution Methods Using Asymptotic Analysis	183

Dalhatu Yusuf Ahmed (Nigerian Communications Commission, Nigeria)
Saleh Abdullahi (Nile University of Nigeria, Nigeria)
Moussa Mahamat Boukar (Nile University of Nigeria, Nigeria)
Salisu Ibrahim Yusuf (Nile University of Nigeria, Nigeria)

Review of electronic industry in Kazakhstan: conditions and opportunities 189
Gulfarida Tulemissova (Suleyman Demirel University, Kazakhstan)
Olimzhon Baimuratov (Suleyman Demirel University, Kazakhstan)

Control Engineering / E-governance / Modeling and Simulation / Gamification

Majorizing model of a Σ -frequency pulse system for automatic temperature control of the optical fiber drawing process 195
Bekmurza Aitchanov (Suleyman Demirel University, Kazakhstan)
Aliya Tergeussizova (Al-Farabi Kazakh National University, Kazakhstan)

Design of a hand rehabilitation gaming platform using IoT technologies 200
Madina Alimanova (Suleyman Demirel University, Kazakhstan)
Dinara Kozhamzharova (International Information Technology University, Kazakhstan)
Shyngys Adilkhan (Suleyman Demirel University, Kazakhstan)
Marat Urmanov (Suleyman Demirel University, Kazakhstan)
Nurlan Karimzhan (International Information Technology University, Kazakhstan)

Development of a Software Simulator for Small Satellite Swarm Control 203
Khuralay Moldamurat (L.N. Gumilev Eurasian National University, Kazakhstan)
Alihan Utegen (L.N. Gumilev Eurasian National University, Kazakhstan)
Saule Brimzhanova (A. Baitursynov KRU, Kazakhstan)
Dinara Kalmanova (L.N. Gumilev Eurasian National University, Kazakhstan)
Yryskeldi Nazerke (L.N. Gumilev Eurasian National University, Kazakhstan)

Application of game design elements on higher education in Computer Science 208
Marat Urmanov (Suleyman Demirel University, Kazakhstan)
Madina Alimanova (Suleyman Demirel University, Kazakhstan)
Shyngys Adilkhan (Suleyman Demirel University, Kazakhstan)

Building Information Modeling for rural road design: a case study 212
Khalil Idrissi Gartoumi (Universite Moulay Ismail, Morocco)
Mohamed Aboussaleh (Universite Moulay Ismail, Morocco)
Smail Zaki (Universite Moulay Ismail, Morocco)

Coordination of movement of multiagent robotic systems 219
Abzal Kyzyrkanov (L.N. Gumilev Eurasian National University, Kazakhstan)

Sabyrzhan Atanov (L.N. Gumilev Eurasian National University, Kazakhstan)
Shadi Aljawarneh (Jordan University of Science and Technology, Jordan)

Simulation of an intelligent detection system virus SARS-CoV-2 in enclosed spaces	223
<i>Zhanar Moldabayeva (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	
<i>Peter Schmidt (University of Economics, Slovakia)</i>	
<i>Zhexen Seitbattalov (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	
<i>Tanzharyk Amankeldinov (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	

Computer Education

Analysis of supervisors and students in the context of diploma defense	228
<i>Azamat Serek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Aisaule Bazarkulova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Abylaikhan Chazhabayev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Adil Akhmetov (Suleyman Demirel University, Kazakhstan)</i>	

Models Self-Blend and A LA CARTE as a promising direction for the transformation of higher education	232
<i>Oksana Nass (West Kazakhstan Agrarian Technical University, Kazakhstan)</i>	
<i>Olga Skuliabina (Baltic State Technical University named after D.F. Ustinov Voennmeh, Russia)</i>	
<i>Gaukhar Kamalova (West Kazakhstan Agrarian Technical University, Kazakhstan)</i>	
<i>Svetlana Nass (Saint Petersburg State Marine Technical University, Russia)</i>	

Application of k-means in the perception of supervisors from students' side	236
<i>Azamat Serek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Adil Akhmetov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Nurbek Ismagulov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Bekarys Rysbek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Beibarys Rysbek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Sanzhar Alim (Suleyman Demirel University, Kazakhstan)</i>	

Experience of using SMART technologies in university education	239
<i>Zhanargul Abuova (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Aizada Vakhitova (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Anargul Bekenova (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Zhenis Bagisov (Makhambet Utemisov West Kazakhstan University, Kazakhstan)</i>	
<i>Ideyat Bapiyev (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	

Effective ways to pass exams in programming disciplines and optimize the process of analyzing results. Case study: SDU 243
Ualikhan Sadyk (Suleyman Demirel University, Kazakhstan)
Zhasdauren Duisebekov (Suleyman Demirel University, Kazakhstan)
Nauryzbay Sapargali (Suleyman Demirel University, Kazakhstan)
Altynbek Amirzhanov (Suleyman Demirel University, Kazakhstan)

IT Law

The use of blockchain technology in the field of digital music 246
Bakhytzhan Berdiyeva (Suleyman Demirel University, Kazakhstan)
Abay Magauiya (Suleyman Demirel University, Kazakhstan)
Madina Tuktibayeva (Suleyman Demirel University, Kazakhstan)
Gaukhar Temirgaliyeva (Suleyman Demirel University, Kazakhstan)