

2023 17th International Conference on Electronics Computer and Computation (ICECCO 2023)

**Kaskelen, Kazakhstan
1 – 2 June 2023**



**IEEE Catalog Number: CFP2307V-POD
ISBN: 979-8-3503-3962-8**

**Copyright © 2023 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:	CFP2307V-POD
ISBN (Print-On-Demand):	979-8-3503-3962-8
ISBN (Online):	979-8-3503-3961-1

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

2023 17th International Conference on Electronics Computer and Computation (ICECCO) ICECCO 2023

Table of Contents

Program Committees	xi
ICECCO 2023 Reviewers	xiii
Author Index	168

Data Science / Machine Learning

Attrition Rate Measuring In Human Resource Analytics Using Machine Learning	3
<i>Bakhtiyor Meraliyev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Aruzhan Karabayeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Yelaman Nematov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Tolganay Altynbekova (Suleyman Demirel University, Kazakhstan)</i>	
Discovering Kazakh facial phenotype	9
<i>Cemil Turan (Suleyman Demirel University, Kazakhstan)</i>	
<i>Nagima Orazbayeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Venera Kali (Suleyman Demirel University, Kazakhstan)</i>	
Forecasting the Probability of a Power Outage Using Binary Classification	13
<i>Chulpan Minnegalieva (Institute of Computational Mathematics and Information Technologies, Russian Federation)</i>	
<i>Alina Gainullina (Institute of Computational Mathematics and Information Technologies, Russian Federation)</i>	
Early Prediction of Cardiac Arrest Using Hybrid Machine Learning Models	17
<i>Abhishek Bajpai (Rajkiya Engineering College, India)</i>	
<i>Suhani Sinha (Rajkiya Engineering College, India)</i>	
<i>Amitabha Yadav (National PG College, India)</i>	
<i>Vivek Srivastava (Rajkiya Engineering College, India)</i>	
Comparison of Time Series Databases	24
<i>Vladislav Rudakov (Computational Technologies CS MES RK)</i>	
<i>Merembayev Timur (Computational Technologies CS MES RK)</i>	

Amirgaliyev Yedilkhan (Computational Technologies CS MES RK)

Machine Learning as an effective tool for Human Resource management in recruiting process in the higher educational field	28
<i>Bakhtiyor Meraliyev (Suleyman Demirel University, Kazakhstan)</i>	
<i>Balzhan Alibekova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Islana Bekturganova (Suleyman Demirel University, Kazakhstan)</i>	
Recommendation System for Human Resource Management by the Use of Apache Spark Cluster	33
<i>Azamat Serek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Kamila Orynbekova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Assem Talasbek (Suleyman Demirel University, Kazakhstan)</i>	
<i>Darmen Kariboz (Suleyman Demirel University, Kazakhstan)</i>	
<i>Gulnara Saimassay (Suleyman Demirel University, Kazakhstan)</i>	
<i>Andrey Bogdanchikov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Cemil Turan (Suleyman Demirel University, Kazakhstan)</i>	
Design and Evaluation of a Personalized Job Recommendation System for Computer Science Students Using Hybrid Approach	37
<i>Amina Shaikym (Suleyman Demirel University, Kazakhstan)</i>	
<i>Zhadyra Zhalgassova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Ualikhan Sadyk (Suleyman Demirel University, Kazakhstan)</i>	
Time Series Models for Predicting Data Traffic Values	44
<i>Gulbarshun Mizamova (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Aizat Zhahiena (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Aizada Vakhitova (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
<i>Aijan Amaliya (Zhangir Khan West Kazakhstan Agrarian-Technical University, Kazakhstan)</i>	
A Matrix Factorization-based Collaborative Filtering Framework for Course Recommendations in Higher Education	48
<i>Guldana Muzdybayeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Dinara Khashimova (Suleyman Demirel University, Kazakhstan)</i>	
<i>Altynbek Amirzhanov (Suleyman Demirel University, Kazakhstan)</i>	
<i>Shirali Kadyrov (Suleyman Demirel University, Kazakhstan)</i>	
MBTI-based recommendation system for extracurricular activities for high school students ...	52
<i>Zhadyra Zhalgassova (Suleyman Demirel University, Kazakhstan)</i>	

Amina Shaikym (Suleyman Demirel University, Kazakhstan)
Ualikhan Sadyk (Suleyman Demirel University, Kazakhstan)
Aruzhan Kutzhan (Suleyman Demirel University, Kazakhstan)
Mukhtar Amirkumar (Suleyman Demirel University, Kazakhstan)
Bekassyl Assangali (Suleyman Demirel University, Kazakhstan)

Control Engineering / E-governance / Modeling and Simulation

Choosing the intelligent thermostats for the effective decision making in BEMS	56
<i>Nurkamilya Daurenbayeva (International Information Technology University, Kazakhstan)</i>	
<i>Lyazzat Atymtayeva (Suleyman Demirel University, Kazakhstan)</i>	
<i>Almas Nurlanuly (Equipment and Technology Academy of Civil Aviation, Kazakhstan)</i>	
Design and Implementation of an IoT-based Smart Pillbox for Improving Medical Adherence	60
<i>Sabit Shahriar Haque (Ahsanullah University of Science and Technology, Bangladesh)</i>	
<i>Rasul Khan Hamim (Bangladesh University of Engineering and Technology, Bangladesh)</i>	
<i>Tamimul Ehsan (Bangladesh University of Engineering and Technology, Bangladesh)</i>	
<i>Hazrat Ali (Nazarbayev University, Kazakhstan)</i>	
Conceptual approach to the formation of the digital twin of the Destination Earth (first glance)	65
<i>Dauren Rakhmetolla (Suleyman Demirel University, Kazakhstan)</i>	
<i>Gulfarida Tulemissova (Suleyman Demirel University, Kazakhstan)</i>	
Model of a two-dimensional free boundary problem in an cylindrical shape electrical contact	71
<i>Alexei Kavokin (Suleyman Demirel University, Kazakhstan)</i>	
<i>Kulakhmetova A.T (Institute of Mathematics and Mathematical Modeling, Kazakhstan)</i>	
<i>Shpadi Yu.R. (Institute of Mathematics and Mathematical Modeling, Kazakhstan)</i>	
Research of the parameters of a solar battery of composition materials for spacecraft	74
<i>A. Zhakupova (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	
<i>Zh. Ramzanova (S. Seifullin Kazakh Agro Technical University, Kazakhstan)</i>	
<i>M. Zamalitinova (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	
<i>M. Kovalenko (A.T. Tupolev Kazan National Research Technical University, Russia)</i>	
<i>D. Turekhan (L.N. Gumilev Eurasian National University, Kazakhstan)</i>	

Computer Education and ICT in Education

A Comparative Study of the Impact of Electronic Devices on University Students' Academic Performance	80
--	----

Aruzhan Kutzhan (Suleyman Demirel University, Kazakhstan)
Amina Shaikym (Suleyman Demirel University, Kazakhstan)
Ualikhan Sadyk (Suleyman Demirel University, Kazakhstan)

Investigating the factors that influence Kazakh female students' interest in STEM careers using machine learning techniques 84

Nurdaulet Shynarbek (Suleyman Demirel University, Kazakhstan)
Alibek Orynassar (Suleyman Demirel University, Kazakhstan)

Analysis of self-esteem on students' performance in online programming competition 90

Azamat Serek (Suleyman Demirel University, Kazakhstan)
Gulnara Saimassay (Suleyman Demirel University, Kazakhstan)
Meirambek Zhaparov (Paragon International University, Cambodia)
Chau Nguyen Giang (Ho Chi Minh City Open University, Vietnam)
Vinh Truong Hoang (Ho Chi Minh City Open University, Vietnam)
Zhadyra Zhalgassova (Suleyman Demirel University, Kazakhstan)

What Forces Us To Gamify The Programming In Higher Education: A Literature Review 94

Lazzat Tolegen (Suleyman Demirel University, Kazakhstan)
Akerke Alseitova (Suleyman Demirel University, Kazakhstan)

Deep learning techniques for the study of student's academic performance during distance education caused by COVID-19 98

Valentin Yunusov (Kazan Federal University, Russia)
Fail Gafarov (Kazan Federal University, Russia)
Pavel Ustin (Kazan Federal University, Russia)

Designing User Experience (UX) for Special Education: Principles, Practices, and Challenges 103

Aneesh Pradeep (New Uzbekistan University, Uzbekistan)

Design and Implementation of an Open-Source Educational Robot for Hands-On Learning Experiences in IoT 108

Zhumaniyaz Mamatnabiyev (Suleyman Demirel University, Kazakhstan)

Artificial Intelligence / Deep Learning / Computer Vision

Deep Learning in Crowd Analysis: A Survey of Current Research Trends 112

Mohamed Ibrahim (Suleyman Demirel University, Kazakhstan)
Cemil Turan (Suleyman Demirel University, Kazakhstan)

Overview of Deep Learning Models for Banknote Recognition 115

	<i>Ualikhan Sadyk (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Cemil Turan (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Rashid Baimukashev (Suleyman Demirel University, Kazakhstan)</i>	
Automatic Language Identification from Audio Signals using LSTM-RNN		120
	<i>Batir Sharimbaev (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Shirali Kadyrov (Suleyman Demirel University, Kazakhstan)</i>	
Kazakh Handwritten Text Recognition Using Computer Vision and Neural Network		125
	<i>Dauletkhan Narynbayev (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Ayan Serikkhan (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Asmina Barkhandinova (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Ilyas Mohammad (Suleyman Demirel University, Kazakhstan)</i>	
RoboArt: DALL-E and KUKA Robot Shake Hands		129
	<i>Kristina Mlikova (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Rassul Tolengutov (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Vadim Gaifulin (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Mukhamedgali Adil (Kazakh-British Technical University, Kazakhstan)</i>	
	<i>Muhammad Ilyas (Kazakh-British Technical University, Kazakhstan)</i>	
Deep Learning (DL) Dense Classifier with Long Short-Term Memory Encoder Detection and Classification against Network Attacks		135
	<i>Mohammad Imtiyaz Gulbarga (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Selcuk Cankurt (Vistula University, Poland)</i>	
	<i>Nurlan Shaidullaev (University of Central Asia, Kyrgyzstan)</i>	
	<i>AL Khan (Ala-Too International University, Kyrgyzstan)</i>	
HIVA: Holographic Intellectual Voice Assistant		141
	<i>Ruslan Isaev (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Radmir Gumerov (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Gulzada Esenalieva (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Remudin Reshid Mekuria (Ala-Too International University, Kyrgyzstan)</i>	
	<i>Ermeke Doszhanov (Ala-Too International University, Kyrgyzstan)</i>	
Deep Reinforcement Learning for Stochastic Dynamic Vehicle Routing Problem		147
	<i>Taukekhan Mustakhov (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Yernar Akhmetbek (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Aigerim Bogrybayeva (Suleyman Demirel University, Kazakhstan)</i>	
Fake News Classification using BLSTM with Glove Embedding		152
	<i>Sumeyra Betul Polat (Suleyman Demirel University, Kazakhstan)</i>	
	<i>Selcuk Cankurt (Vistula University, Poland)</i>	

Algebraic and Scientific Computing / Interesting Applications / Cyber Security / Signal Processing / IT law

Free products of operads and Gröbner base of some operads 157
Bauyrzhan Sartayev (Suleyman Demirel University, Kazakhstan)
Abdibek Ydyrys (Suleyman Demirel University, Kazakhstan)

A Comparative Study of the Analysis of PM2.5 Sources in Kyrgyzstan with 31 Selected Countries 163
Zuhra Sadriddin (Ala-Too International University, Kyrgyzstan)
Remudin Reshid Mekuria (Ala-Too International University, Kyrgyzstan)
Ruslan Isaev (Ala-Too International University, Kyrgyzstan)