

ASTESJ

ISSN: 2415-6698

Advances in Science, Technology
and Engineering Systems Journal



A Peer Review Bi-monthly Journal

Open Access: Indexing Journal

www.astesj.com



ASTES

Journal

A Bimonthly Peer-Review Journal (ISSN: 2415-6698)

☰ x Menu

[Home](#)

[Editorial Board](#)

[Archive](#) ▾

[CFP](#) ▾

[Online Submission](#)

[Instructions for Authors](#) ▾

[About Journal](#) ▾

Editorial Board

Editor-in-Chief

Prof. Passerini Kazmerski

University of Chicago, USA

editor@astesj.com

Editorial Board Members

Prof. Rehan Ullah Khan

Qassim University, Saudi Arabia

re.khan@qu.edu.sa

Prof. Sofoklis Makridis

University of Patras, Greece

smakridis@upatras.gr

Dr. Nguyen Tung Linh

Electric Power University, Vietnam

linhnt@epu.edu.vn

Mohamed Mohamed Abdel-Daim

Suez Canal University, Egypt

abdeldaim.m@vet.suez.edu.eg

Dr. Heba Afify

MTI university, Cairo, Egypt

hebaaffify@yahoo.com

Editorial Board Members

CFP for Special Issue

Special Issue on
Multidisciplinary Sciences &
Engineering

Special Issue on Innovation
Computing, Engineering Sc
& Technology

Scopus



Important Links

- » [Scopus Indexed Papers](#)
- » [Online Submission System](#)
- » [Special Issue Proposal Application](#)
- » [Journal Template \(Word & Latex\)](#)
- » [Online Submission Guidelines](#)
- » [Call for Papers](#)
- » [Abstract & Indexing](#)
- » [Publication Fee](#)
- » [Copyright Form](#)

Past Issues

- » [Conferences](#)
- » [Special Issues](#)
- » [Volume 1](#)
- » [Volume 2](#)
- » [Volume 3](#)
- » [Volume 4](#)
- » [Volume 5](#)
- » [Volume 6](#)
- » [Issue 1](#)

Online

edb@astesj.com

Prof. María Jesús Espinosa

Universidad Tecnológica Metropolitana, Mexico
maria.espinosa@utmetropolitana.edu.mx

Tariq Kamal

University of Nottingham, UK
Sakarya University, Turkey
tariq.kamal@ogr.sakarya.edu.tr

Dr. Omeje Maxwell

Covenant University, Nigeria
maxwell.omeje@covenantuniversity.edu.ng

Editorial Board Members

Dr. Hongbo Du

Prairie View A&M University, USA
hodu@pvamu.edu

Dr. Mohmaed Abdel Fattah Ashabrawy

Prince Sattam bin Abdulaziz University, Saudi Arabia
m.ashabrawy@psau.edu.sa

Muhammad Tanveer Riaz

School of Electrical Engineering
Chongqing University, P.R. China
tanveer.riaz@ieee.org

Prof. Majida Ali Abed Meshari

Tikrit University Campus, Iraq
majida.alasady@tu.edu.iq

Regional Editors

rge@astesj.com

Dr. Hung-Wei Wu

Kun Shan University, Taiwan
hwwu@mail.ksu.edu.tw

Facebook Page



Like Page



SAT NOV 14, 2020

Subscribe for Newsletters

Subscribe Now »

For Email Marketing you can trust.



Website Counter
001473914

Dr. Ahmet Kayabasi

Karamanoglu Mehmetbey University, Turkey

ahmetkayabasi@kmu.edu.tr

Aamir Nawaz

Gomal University, Pakistan

aamir nawaz@gu.edu.pk

Dr. Abhishek Shukla

R.D. Engineering College, India

abhishekknit@gmail.com

Mr. Manu Mitra

University of Bridgeport, USA

mmitra@my.bridgeport.edu

Regional Editors

rge@astesj.com

Dr. Maryam Asghari

Shahid Ashrafi Esfahani, Iran

Maryam.Asghari@ashrafi.ac.ir

Dr. Ebubekir Altuntas

Gaziosmanpasa University, Turkey

ebubekir.altuntas@gop.edu.tr

Dr. Gomathi Periasamy

Mekelle University, Ethiopia

pgoms@yahoo.com

Abdullah El-Bayoumi

Cairo University, Egypt

Abdullah.elbayoumi@pg.cu.edu.eg

Regional Editors

rge@astesj.com

Dr. Shakir Ali

Aligarh Muslim University, India

shakir.ali.mm@amu.ac.in

Dr. Sabry Ali Abdallah El-Naggar

Tanta University, Egypt

Sabry_elnaggar@yahoo.com

Dr. Walid Wafik Mohamed Badawy

National Organization for Drug Control and Research, Egypt

Walidgene6@gmail.com

Ayham Hassan Abazid

Jordan university of science and technology, Jordan

ahabzzid11@sci.just.edu.jo

Important Pages

- » Home
- » About Journal
 - » Abstract & Indexing
- » Archive
- » Call For Papers
- » Contact Us
- » Editorial Board
- » Instructions for Authors
- » Online Submission
- » Publication Fee
- » Publishing Ethics
- » Open Access Policy
- » Scopus Indexed Papers (Dec-19)

Copyright

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

SCImago Journal Rank (SJR)



ASTES

Journal

A Bimonthly Peer-Review Journal (ISSN: 2415-6698)

Search...

Se

☰ x Menu

[Home](#)[Editorial Board](#)[Archive](#) ▾[CFP](#) ▾[Online Submission](#)[Instructions for Authors](#) ▾[About Journal](#) ▾

Volume 5, Issue 6

Articles

Qualitative Properties of a Cell Proliferating Model with Multi-phase Transition and Age Structure

Youssef El Alaoui, Larbi Alaoui

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1-8 (2020);

✚ [View Description](#)

A Study on Intelligent Dialogue Agent for Older Adults' Preventive Care – Towards Development of a Comprehensive Preventive Care System –

Sho Hirose, Daisuke Kitakoshi, Akihiro Yamashita, Kentarou Suzuki, Masato Suzuki

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 9-21 (2020);

✚ [View Description](#)

Supervised Learning Techniques for Stress Detection in Car Drivers

Pamela Zontone, Antonio Affanni, Riccardo Bernardini, Leonida Del Linz, Alessandro Piras, Roberto Rinaldo

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 22-29 (2020);

✚ [View Description](#)

Analysis of Green Building Effect on Micro grid Based on Potential Energy Savings and BIM

Ihsan Mizher Baht, Petre Marian Nicolae, Ileana Diana, Nameer Baht

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 30-35 (2020);

✚ [View Description](#)

Effective Segmented Face Recognition (SFR) for IoT

Fei Gao, Jiangjiang Liu

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 36-44 (2020);

[Online](#)

CFP for Special Issue

[Special Issue on Multidisciplinary Sciences & Engineering](#)

[Special Issue on Innovation Computing, Engineering Sc & Technology](#)

Scopus

Crossref

Important Links

- » [Scopus Indexed Papers](#)
- » [Online Submission System](#)
- » [Special Issue Proposal Application](#)
- » [Journal Template \(Word & Latex\)](#)
- » [Online Submission Guidelines](#)
- » [Call for Papers](#)
- » [Abstract & Indexing](#)
- » [Publication Fee](#)
- » [Copyright Form](#)

Past Issues

- » [Conferences](#)
- » [Special Issues](#)
- » [Volume 1](#)
- » [Volume 2](#)
- » [Volume 3](#)
- » [Volume 4](#)
- » [Volume 5](#)
- » [Volume 6](#)
- » [Issue 1](#)

[+ View Description](#)

Business Intelligence for Generating Comprehensive Report in Electronic Completion and Handover

Fadhillah Moulita Andiani, Faizal Abid, Hendri, Abba Suganda Girsang

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 45-51 (2020);

[+ View Description](#)

Development of Group-Based Differentiated Learning (GBDL) Models

Toto Ruhimat, Deni Darmawan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 52-62 (2020);

[+ View Description](#)

The COVID-19 Effect in Mexican SMEs

Abel García-Villagrán, Patricia Cano-Olivos, José Luis Martínez-Flores, Diana Sánchez-Partida

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 63-71 (2020);

[+ View Description](#)

Automated Extraction of Heavyweight and Lightweight Models of Urban Features from LiDAR Point Clouds by Specialized Web-Software

Sergiy Kostrikov, Rostyslav Pudlo, Dmytro Bubnov, Vladimir Vasiliev, Yury Fedayay

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 72-95 (2020);

[+ View Description](#)

Using TOST in Teaching Operating Systems and Concurrent Programming Concepts

Tzanka Golemanov, Emilia Golemanova

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 96-107 (2020);

[+ View Description](#)

Technology Adoption in Education: A Systematic Literature Review

Kayode Emmanuel Oyetade, Tranos Zuva, Anneke Harmse

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 108-112 (2020);

[+ View Description](#)

Facebook Page



ASTES Journal
18K likes

Like Page



ASTES Journal
about 11 months ago



Subscribe for Newsletters

Subscribe Now »

For Email Marketing you can trust.



Website Counter

001473918

Understanding the usage, Modifications, Limitations and Criticisms of Technology Acceptance Model (TAM)

William Ratjeana Malatji, Rene Van Eck, Tranos Zuva

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 113-117 (2020);

[✚ View Description](#)

The Impact Assessment of the Errors in Determining the Mass and Zero Lift- Drag Coefficient on the Aircraft's Performance Data

Klyagin Viktor Anatolievich, Laushin Dmitry Andreevich

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 118-126 (2020);

[✚ View Description](#)

Infrared Uplink Implementation for Software Defined Visible Light Communication Systems

Oswaldo René Banda-Sayco

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 127-132 (2020);

[✚ View Description](#)

Experimental Investigation of RC Footings Resting on Sand Strengthened with Concrete Jacketing

Mohamed Attia Fouda, Mahmoud Elkateb, Tamer Elkateb, Ayman Khalil

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 133-142 (2020);

[✚ View Description](#)

Electro-tactile Stimulation for Augmenting Finger Motoric Learning

Daniel Sutopo Pamungkas, Arjon Turnip

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 143-147 (2020);

[✚ View Description](#)

Aviation MRO: Impact of Physical Environment Factors on Job Performance in Aircraft Maintenance Organization

Kamal Jaiswal, Serdar Dalkilic, Evangelos Papageorgiou, Balgopal Singh

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 148-154 (2020);

[✚ View Description](#)

Inferring Topics within Social Networking Big Data, Towards an Alternative for Socio-Political Measurement

Khalid Ait Hadi, Rafik, Abdellatif El Abderrahmani

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 155-159 (2020);

[View Description](#)

Research of the Effect of Rotation and Low-Frequency Vibration on the Robotic Assembly Process

Mikhail Vladimirovich Vartanov, Trung Ta Tran, Van Dung Nguyen

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 160-168 (2020);

[View Description](#)

A Novel Approach to Augment the Opto-Electronic Properties of Stannic Oxide (SnO₂) Thin Films by Vanadium Doping

A. Victor Babu, S. Murugan, D.C. Bernice Victoria

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 169-174 (2020);

[View Description](#)

Applications of the Heuristic Optimization Approach for Determining a Maximum Flow Problem Based on the Graphs' Theory

Simona Kirilova Filipova-Petrakieva

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 175-184 (2020);

[View Description](#)

A Toolkit for the Automatic Analysis of Human Behavior in HCI Applications in the Wild

Andrea Generosi, Silvia Ceccacci, Samuele Faggiano, Luca Giraldi, Maura Mengoni

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 185-192 (2020);

[View Description](#)

Real-Time Identification and Classification of Driving Maneuvers using Smartphone

Munaf Salim Najim Al-Din

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 193-205 (2020);

[View Description](#)

The Effect of E-Service Quality on Customer Satisfaction and Loyalty (Case Study at E-Marketplace XYZ in Indonesia)

Hanny Juwitasary, Christian Christian, Edi Purnomo Putra, Hilman Baskara, Mohammad Wildan Firdaus

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 206-210 (2020);

[✚ View Description](#)

Trace-Driven Simulation of LoRaWAN Air Channel Propagation in an Urban Scenario

Eugen Harinda, Hadi Larijani, Ryan M. Gibson

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 211-220 (2020);

[✚ View Description](#)

Multi-Directional Light Sensing Using A Rotating Sensor

Hoang Anh Dung, Nguyen Manh Cuong, Nguyen Phan Kien

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 221-227 (2020);

[✚ View Description](#)

Vehicle Rollover Detection in Tripped and Untripped Rollovers using Recurrent Neural Networks

Kailerk Treetipsounthorn, Thanisorn Sriudomporn, Gridsada Phanomchoeng, Christian Dengler, Setha Pannungum, Sunhapos Chantranuwathana, Ali Zemouche

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 228-238 (2020);

[✚ View Description](#)

Hybridization of Improved Binary Bat Algorithm for Optimizing Targeted Offers Problem in Direct Marketing Campaigns

Moulay Youssef Smaili, Hanaa Hachimi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 239-246 (2020);

[✚ View Description](#)

IT GRC Smart Adviser: Process Driven Architecture Applying an Integrated Framework

Meriyem Chergui, Aziza Chakir

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 247-255 (2020);

[✚ View Description](#)

Multi Operated Virtual Power Plant in Smart Grid

Yevhen Fediv, Olha Sivakova, Mykhailo Korchak

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 256-260 (2020);

[✚ View Description](#)

A Fuzzy Controller Based SAPF for Power Quality Enhancement of Distribution System Integrated with Wind Energy Source

Vikas Kumar Sharma, Lata Gidwani

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 261-268 (2020);

[✚ View Description](#)

Pre-University Students' Learning Styles and Attitude towards Mathematics Achievements

Nurhilyana Anuar, Nurashikin Abdullah, Sharifah Norasikin Syed Hod

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 269-273 (2020);

[✚ View Description](#)

A Comprehensive Review of Traditional Video Processing

Helen Kottarathil Joy, Manjunath Ramachandra Kounte

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 274-279 (2020);

[✚ View Description](#)

Overmind: A Collaborative Decentralized Machine Learning Framework

Puttakul Sakul-Ung, Amornvit Vatcharaphrueksadee, Pitiporn Ruchanawet, Kanin Kearpimy, Hathairat Ketmaneechairat, Maleerat Maliyaem

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 280-289 (2020);

[✚ View Description](#)

The Role of Promotion in Mobile Wallet Adoption – A Research in Vietnam

Ha Hoang, Tan Trinh Le

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 290-298 (2020);

[✚ View Description](#)

Complex Order $PI^{\alpha+j\beta} D^{\nu+j\theta}$ Design for Surface Roughness Control in Machining CNT Al-Mg Hybrid Composites

Ravi Sekhar, Tejinder Paul Singh, Pritesh Shah

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 299-306 (2020);

[✚ View Description](#)

Dense Deep Neural Network Architecture for Keystroke Dynamics Authentication in Mobile Phone

Lubna Abdelkareim Gabralla

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 307-314 (2020);

[✚ View Description](#)

Emotion Recognition on FER–2013 Face Images Using Fine–Tuned VGG–16

Gede Putra Kusuma, Jonathan, Andreas Pangestu Lim

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 315-322 (2020);

[✚ View Description](#)

Multi–Model Security and Social Media Analytics of the Digital Twin

Jim Scheibmeir, Yashwant Malaiya

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 323-330 (2020);

[✚ View Description](#)

The Contribution of Wind Energy Capacity on Generation Systems Adequacy Reliability using Differential Evolution Optimization Algorithm

Athraa Ali Kadhem, Noor Izzri Abdul Wahab, Ahmed Abdalla

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 331-340 (2020);

[✚ View Description](#)

Enhanced Power Utilization for Grid Resource Providers

Tariq Alwada'n, Thair Khmour, Abdulsalam Alarabeyyat, Ali Rodan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 341-346 (2020);

[✚ View Description](#)

DC–DC Buck Converter Driver with Variable Off–Time Peak Current Mode Control

Oswaldo Gasparri, Paolo Del Croce, Andrea Baschiroto

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 347-352 (2020);

[✚ View Description](#)

Blueprint Model: An Agile–Oriented Methodology for Tackling Global Software Development Challenges

Andre Figliuolo da Cruz, Cristiano Pereira Godoy, Lanier Menezes dos Santos, Lucas Frota Marinho, Marco Santarelle Jardim, Elisangela Paiva da Silva, Cicero Augusto Pahins, Paulo Fonseca, Felipe Taliar Giuntini

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 353-362 (2020);

[✚ View Description](#)

Vietnamese Text Classification with TextRank and Jaccard Similarity Coefficient

Hao Tuan Huynh, Nghia Duong-Trung, Dinh Quoc Truong, Hiep Xuan Huynh

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 363-369 (2020);

[✚ View Description](#)

Intrusion Detection and Classification using Decision Tree Based Key Feature Selection Classifiers

Manas Kumar Nanda, Manas Ranjan Patra

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 370-390 (2020);

[✚ View Description](#)

Comparison of Gaze Points Among Viewing Conditions (Resolution, Display Size, Viewer Position) During Video Viewing

Miho Shinohara, Yusuke Nosaka, Reiko Koyama, Riko Nakagawa, Takuya Sarugaku, Mitsuho Yamada

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 391-397 (2020);

[✚ View Description](#)

Method for Improving the Quality of the Product Obtained by Abrasive Treatment with Impregnated Tools

Viktor Butenko, Liana Gusakova, Dmitry Durov, Boris Safoklov, Oleg Dolgov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 398-402 (2020);

[✚ View Description](#)

Level of Resilience and Family Functionality in Adolescents of two Educational Institutions of a Vulnerable Area in Lima Province

Rosa Perez-Siguas, Hernan Matta-Solis, Eduardo Matta-Solis, Melissa Yauri-Machaca, Anika Remuzgo-Artezano, Lourdes Matta-Zamudio

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 403-407 (2020);

[✚ View Description](#)

To the Question of Multi-Criteria Optimization of Aircraft Components in Order to Optimize its Life Cycle

Sergey Alekseevich Serebryansky, Alexander Vladimirovich Barabanov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 408-415 (2020);

[✚ View Description](#)

The Probe Mark Discoloration on Bond Pad and Wafer Storage

Wen-Fei Hsieh, Henry Lin, Vincent Chen, Irene Ou, & Yung-Song Lou

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 416-422 (2020);

[View Description](#)

A Simulation Based Proactive Approach for Smart Capacity Estimation in the Context of Dynamic Positions and Events

Naeem Ahmed Haq Nawaz, Hamid Raza Malik, Ahmed Jaber Alshaor, Kamran Abid

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 423-438 (2020);

[View Description](#)

Effective Learning of Tax Regulations using Different Chatbot Techniques

Rafael Mellado-Silva, Antonio Faúndez-Ugalde, María Blanco-Lobos

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 439-446 (2020);

[View Description](#)

Electronic Warfare Methods Combatting UAVs

Miroslav Kratky, Vaclav Minarik, Michal Sustr, Jan Ivan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 447-454 (2020);

[View Description](#)

Fault-Tolerant Control of Permanent Magnet Synchronous Motor Drive under Open-Phase Fault

Amr Saleh, Nada Sayed, Ghada Ahmed Abdel, Mona Nagieb Eskander

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 455-463 (2020);

[View Description](#)

Extending the Classifier Algorithms in Machine Learning to Improve the Performance in Spoken Language Understanding Systems Under Deficient Training Data

Sheetal Jagdale, Milind Shah

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 464-471 (2020);

[View Description](#)

Reliability Improvement of Radial Distribution System by Reconfiguration

Srividhya. P, Mounika. K, Kirithikaa. S, Narayanan. K, Gulshan Sharma, Girish Ganesan. R, Tomonobu Senjyu

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 472-480 (2020);

[+ View Description](#)

American Sign Language Recognition Based on MobileNetV2

Kin Yun Lum, Yeh Huann Goh, Yi Bin Lee

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 481-488 (2020);

[+ View Description](#)

An Adaptive Nonlinear Sensorless Controller of Doubly Fed Induction Generator Driven By Wind Turbine

Radouane Ourhdir, Mohammed Rachidi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 489-496 (2020);

[+ View Description](#)

An Economic Theory Perspective for the Fight Against Poverty in the Peruvian Andes

Robert Antonio Romero-Flores

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 497-506 (2020);

[+ View Description](#)

Microcontroller Based Data Acquisition and System Identification of a DC Servo Motor Using ARX, ARMAX, OE, and BJ Models

Mokhlis Salah-eddine, Said Sadki, Bahloul Bensassi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 507-513 (2020);

[+ View Description](#)

Facebook Translation Service (FTS) Usage among Jordanians during COVID-19 Lockdown

Zakaryia Almahasees, Helene Jaccopard

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 514-519 (2020);

[+ View Description](#)

Accelerating Decision-Making in Transport Emergency with Artificial Intelligence

Alexander Raikov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 520-530 (2020);

[+ View Description](#)

Determinism of Replicated Distributed Systems—A Timing Analysis of the Data Passing Process

Adriano A. Santos, António Ferreira da Silva, António P. Magalhães, Mário de Sousa

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 531-537 (2020);

[View Description](#)

Variation Between DDC and SCAMSMA for Clustering of Wireless Multipath Waves in Indoor and Semi-Urban Channel Scenarios

Jojo Blanza, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 538-543 (2020);

[View Description](#)

Interface for Visualization of Wireless Propagation Multipath Clustering Outcomes

Jojo Blanza, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 544-549 (2020);

[View Description](#)

The Effect of Different Starches in the Environmental and Mechanical Properties of Starch Blended Bioplastics

Adriana C. Neves, Tew Ming, Marta Mroczkowska, David Culliton

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 550-554 (2020);

[View Description](#)

Proposal of a New Descriptive–Correlational Model of Population Lifestyle Analysis and Disease Diagnosis

Selene Tamayo Castro, Kristian Aldapa Salcido, Linda García Rodríguez

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 555-560 (2020);

[View Description](#)

sharpniZer: A C# Static Code Analysis Tool for Mission Critical Systems

Arooba Shahoor, Rida Shaukat, Sumaira Sultan Minhas, Hina Awan, Kashif Saghar

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 561-570 (2020);

[View Description](#)

Experimental Study on Mechanical Behavior of Polypropylene–based Blends with Talc Fillers

Pham Thi Hong Nga, Van-Thuc Nguyen

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 571-576 (2020);

[+ View Description](#)

Ontology-based Data Management Tool for Studying Radon Concentration

Felix Fernandez-Pena, Alex Maigua-Quinteros, Pilar Urrutia-Urrutia, Diana Coello-Fiallos

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 577-583 (2020);

[+ View Description](#)

Strategic Plan for the Achievement of the Competitiveness of Small Companies with Respect to Large Ones

Alan Guadalupe Ochoa Navarro, Juan De Dios Cota Apodaca, Dario Fuentes Guevara

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 584-587 (2020);

[+ View Description](#)

“Traffic Congestion Triangle” Based on More than One-Month Real Traffic Big Data Analysis in India

Tsutomu Tsuboi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 588-593 (2020);

[+ View Description](#)

Effective Application of Information System for Purchase Process Optimization

Pearl Keitemoge, Daniel Tetteh Narh

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 594-605 (2020);

[+ View Description](#)

Fast and Efficient Maximum Power Point Tracking Controller for Photovoltaic Modules

Khalid Chennoufi, Mohamed Ferfra

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 606-612 (2020);

[+ View Description](#)

Inventory Management Practices during COVID 19 Pandemic to Maintain Liquidity Increasing Customer Service level in an Industrial Products Company in Mexico

Ignacio Alvarez-Placencia, Diana Sánchez-Partida, Patricia Cano-Olivos, José-Luis Martínez-Flores

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 613-626 (2020);

[+ View Description](#)

Chatbot Developments in The Business World

Azani Cempaka Sari, Natashia Virnilia, Jasmine Tanti Susanto, Kent Anderson Phiedono, Thea Kevin Hartono

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 627-635 (2020);

[✚ View Description](#)

Burnout Among Primary School Teachers in the Wazzane Region in Morocco: Prevalence and Risk Factors

Abdeslam Amri, Zakaria Abidli, Mounir Bouzaaboul, Rabea Ziri, Ahmed Omar Touhami Ahami

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 636-641 (2020);

[✚ View Description](#)

Performance Analysis and Enhancement of Spline Adaptive Filtering based on Adaptive Step-size Variable Leaky Least Mean Square Algorithm

Sethakarn Prongnuch, Suchada Sitjongsataporn

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 642-651 (2020);

[✚ View Description](#)

Automatic Stochastic Dithering Techniques on GPU: Image Quality and Processing Time Improved

Giorgia Franchini, Roberto Cavicchioli, Jia Cheng Hu

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 652-663 (2020);

[✚ View Description](#)

Improved System Based on ANFIS for Determining the Degree of Polymerization

Marcel Nicola, Marian Duță, Maria-Cristina Nițu, Ancuța-Mihaela Aciu, Claudiu-Ionel Nicola

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 664-675 (2020);

[✚ View Description](#)

Network Modeling with ANP to Determine the Appropriate Area for the Development of Dry Port in Thailand

Jenjira Sukmanee, Ramil Kesvarakul, Nattawut Janthong

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 676-683 (2020);

[✚ View Description](#)

Social Influence Factor of e-Tourism Application Case Study University Student

Kristianus Oktriono, Surjandy Surjandy, Meyliana Meyliana, Michele Carolina, Stephanie Stephanie

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 684-688 (2020);

[✚ View Description](#)

Hand-Based Biometric Recognition Technique – Survey

Katerina Prihodova, Miloslav Hub

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 689-698 (2020);

[✚ View Description](#)

Automatic License Plate Detection and Recognition for Jordanian Vehicles

Khalil Mustafa Ahmad Yousef, Bassam Jamil Mohd, Yusra Abd-Al-Haleem Al-Khalaileh, Ahlam Hani Al-Hmeadat, Bushra Ibrahim El-Ziq

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 699-709 (2020);

[✚ View Description](#)

Adaptive Identification Method of Vehicle Model for Autonomous Driving Robust to Environmental Disturbances

Yohei Yamauchi, Mitsuyuki Saito

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 710-717 (2020);

[✚ View Description](#)

Cognitive Cybernetics in the Foresight of Globalitarianism

Zdenko Balaž, Krystian Wawrzynek

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 718-723 (2020);

[✚ View Description](#)

Ultra Wide Band-based Control of Emulated Autonomous Vehicles for Collision Avoidance in a Four-Way Intersection

Jashandeep Bhuller, Paolo Dela Peña, Vladimir Christian Ocampo II, Julio Simeon, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 724-730 (2020);

[✚ View Description](#)

Minimizing Collisions of Self-Driving Cars by a Control System Using Predetermined Two-Dimensional Grid Localization

Jashandeep Bhuller, Paolo Dela Peña, Vladimir Christian Ocampo II, Julio Simeon, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 731-737 (2020);

[+ View Description](#)

Comparison of Support Vector Machine-Based Equalizer and Code-Aided Expectation Maximization on Fiber Optic Nonlinearity Compensation Using a Proposed BER Normalized by Power and Distance Index

Mark Renier M. Bailon, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 738-743 (2020);

[+ View Description](#)

Analysis of Long-term Equilibrium Relationship Between KRW, RMB, JPY Exchange Rates and International Financial Market Variables: Comparative Analysis of KRW, RMB, JPY

Moon-Kyum Kim, Woong Ryeol Kim, Moon-Kyum Kim

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 744-761 (2020);

[+ View Description](#)

Optimization of Multi-user Face Identification Systems in Big Data Environments

Majdouline Meddad, Chouaib Moujahdi, Mounia Mikram, Mohammed Rziza

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 762-767 (2020);

[+ View Description](#)

Surge Protection Device for Ex Application

Teik Hua Kuan, Kuew Wai Chew, Kein Huat Chua

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 768-780 (2020);

[+ View Description](#)

Optimal Irrigation Strategy using Economic Model Predictive Control

Luisella Balbis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 781-787 (2020);

[+ View Description](#)

Dependency Head Annotation for Myanmar Dependency Treebank

Hnin Thu Zar Aye, Win Pa Pa

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 788-800 (2020);

[+ View Description](#)

A Model-Driven Approach for Reconfigurable Systems Development

Ismail Ktata, Naoufel Kharroubi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 801-810 (2020);

[✚ View Description](#)

Algorithm Design for Accurate Steps Counting Based on Smartphone Sensors for Indoor Applications

Hani Muhsen, Odeh Al-Amaydeh, Rakan Al-Hamlan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 811-816 (2020);

[✚ View Description](#)

Polarity Switch within Social Networks

Sara Abas, Malika Addou, Zineb Rachik

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 817-820 (2020);

[✚ View Description](#)

Towards a Smart Campus for Qassim University: An Investigation of Indoor Navigation System

Mohammed Hadwan, Rehan Uallah Khan, Khalil Ibrahim Mohammad Abuzanouneh

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 831-837 (2020);

[✚ View Description](#)

Effect of Heat Retention Time and Pouring Temperature on Graphite Shape and Mechanical Properties of Gray Cast Iron

Hong-Nga Thi Pham

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 838-844 (2020);

[✚ View Description](#)

Updated Analysis of Business Continuity Issues Underlying the Certification of Invoicing Software, Considering a Pandemic Scenario

Nelson Russo, Leonilde Reis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 845-852 (2020);

[✚ View Description](#)

An Enhanced Conceptual Security Model for Autonomous Vehicles

Abdulla Obaid Al Zaabi, Chan Yeob Yeun, Ernesto Damiani, Gaemyoung

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 853-864 (2020);

[+ View Description](#)

Low Power Fast Settling Switched Capacitor PTAT Current Reference Circuit for Low Frequency Applications

Muhammed Mansoor C. B., Hanumantha Rao G., Rekha S.

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 865-870 (2020);

[+ View Description](#)

Blockchain Application in Higher Education Diploma Management and Results Analysis

Fernando Richter Vidal, Feliz Gouveia, Christophe Soares

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 871-882 (2020);

[+ View Description](#)

Evaluating the Effectiveness of Query–Document Clustering Using the QDSM Measure

Claudio Gutierrez-Soto, Marco Palomino, Arturo Curiel, Hector Riquelme Cerda, Fernando Bejar Rain

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 883-893 (2020);

[+ View Description](#)

Method of Analysis and Classification of Acoustic Emission Signals to Identify Pre–Seismic Anomalies

Marapulets Yury, Senkevich Yury, Lukovenkova Olga, Solodchuk Alexandra

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 894-903 (2020);

[+ View Description](#)

A Fast Adaptive Time–delay–estimation Sliding Mode Controller for Robot Manipulators

Dang Xuan Ba

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 904-911 (2020);

[+ View Description](#)

Investigation of the Effect of FBG Profiles, Temperature and Transmission Distance for Environmental Sensing & Monitoring

Muhammad Arif Riza, Yun li Go

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 912-919 (2020);

[+ View Description](#)

Barriers and Supports in Engineering Career Development: An Exploration of First-Year Students

Rosmery Ramos-Sandoval, Jano Ramos-Diaz

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 920-925 (2020);

[✚ View Description](#)

Prediction of Vessel Dynamic Model Parameters using Computational Fluid Dynamics Simulation

Nu'man Amri Maliky, Nanda Pratama Putra, Mochamad Teguh Subarkah, Syarif Hidayat

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 926-936 (2020);

[✚ View Description](#)

Design and Implementation of DFT Technique to Verify LBIST at RTL Level

Nagaraj Vannal, Saroja V Siddamal

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 937-943 (2020);

[✚ View Description](#)

Empathy in Nursing Students that do the Non-Medical Internship in Three Universities in Lima, 2019

Liseth Acuña-Medina, Yumira Arias-Quispe, Yackeline Espeza-Velázquez, Brian Meneses-Claudio, Hernan Matta-Solis, Eduardo Matta-Solis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 944-950 (2020);

[✚ View Description](#)

Investigating the Optical Behavior of Single/Multi-Dimensional Photonic Crystal Structures for Photovoltaic Applications

Gehad Ali Alsayed, Zahraa Ismail, Sameh O. Abdellatif

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 951-958 (2020);

[✚ View Description](#)

Standalone Operation of Modified Seven-Level Packed U-Cell Inverter for Solar Photovoltaic System

Kishan Bhushan Sahay, Pankaj Kumar Singh, Rakesh Maurya

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 959-966 (2020);

[✚ View Description](#)

Hand Gesture Classification using Inaudible Sound with Ensemble Method

Jinwon Cheon, Sunwoong Choi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 967-971 (2020);

[✚ View Description](#)

Docker-C2A : Cost-Aware Autoscaler of Docker Containers for Microservicesbased Applications

Mohamed Hedi Fourati, Soumaya Marzouk, Mohamed Jmaiel, Tom Guerout

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 972-980 (2020);

[✚ View Description](#)

NPC five level inverter using SVPWM for Grid-Connected Hybrid Wind-Photovoltaic Generation System

Elamri Oumaymah, Oukassi Abdellah, Bouhali Omar, El Bahir Lhoussain

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 981-987 (2020);

[✚ View Description](#)

Mobile Money Wallet Attack Resistance using ID-based Signcrypton Cryptosystem with Equality Test

Seth Alornyo, Mustapha Adamu Mohammed, Francis Botchey, Collinson Colin M. Agbesi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 988-994 (2020);

[✚ View Description](#)

Advanced Design of Current-mode Pass-band Filter using Ant Colony Optimization Technique

Kritele Loubna, Benhala Bachir, Zorkani Izeddine

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 995-1000 (2020);

[✚ View Description](#)

Feature Gate Computational Top-Down Model for Target Detection

Aarthi Ramachandran, Amudha Joseph, Shunmuga Velayutham

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1001-1006 (2020);

[✚ View Description](#)

Design of a Remote Real-time Groundwater Level and Water Quality Monitoring System for the Philippine Groundwater Management Plan Project

Carlos M. Oppus, Maria Aileen Leah G. Guzman, Maria Leonora C. Guico, Jose Claro N. Monje, Mark Glenn F. Retirado, John Chris T. Kwong, Genevieve C. Ngo, Annael J. Domingo

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1007-1012 (2020);

[✚ View Description](#)

Determinants of Technological and Innovation Performance of the Nepalese Cellular Telecommunications Industry from the Customers' Perspective

Rewan Kumar Dahal, Ganesh Bhattarai, Dipendra Karki

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1013-1020 (2020);

[✚ View Description](#)

An Analysts' Skills: Bespoke Software vs Packaged Software at Small Software Vendors

Issam Jebreen

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1021-1026 (2020);

[✚ View Description](#)

Ozone, Nitrogen Dioxide, and PM2.5 Measurement at Three Urban Parks in Manila, Philippines using Portable Sensors

Maria Cecilia Galvez, Daniel Paulo Tipan, Angelo Ashtin Valera, Edgar Vallar, Alma Nacua

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1027-1032 (2020);

[✚ View Description](#)

Evaluation of the Living Condition in Fishermen Settlement in the Coastal Area of Marisa City, Gorontalo Province

Irwan Wunarlani, Sugiono Soetomo, Iwan Rudiarto

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1033-1041 (2020);

[✚ View Description](#)

Design of a Mobile Application for the School Enrollment Process in Order to Prevent Covid-19

Alexi Delgado, Enrique Lee Huamaní, Alfredo Chiara-Sotomayor, Florencio Roman-Casahuamán

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1042-1046 (2020);

[✚ View Description](#)

Estimating LAI of Rice Using NDVI Derived from MODIS Surface Reflectance

Rushikesh Kulkarni, Kiyoshi Honda

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1047-1053 (2020);

[✚ View Description](#)

Developing a Modular Material-Based Independent Training Model for Primary School Teacher Training

Asep Herry Hernawan, Mustari Bosra

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1054-1063 (2020);

[View Description](#)

Projection of Wireless Multipath Clusters Using Multi-Dimensional Visualization Techniques

Aaron Don M. Africa, Emmanuel T. Trinidad, Lawrence Materum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1064-1070 (2020);

[View Description](#)

Review of Different Methods for Optimal Placement of Phasor Measurement Unit on the Power System Network

Ademola Abdulkareem, Divine Ogbe, Tobiloba Somefun

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1071-1081 (2020);

[View Description](#)

Human Emotion Recognition Based on EEG Signal Using Fast Fourier Transform and K-Nearest Neighbor

Anton Yudhana, Akbar Muslim, Dewi Eko Wati, Intan Puspitasari, Ahmad Azhari, Murein Miksa Mardhia

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1082-1088 (2020);

[View Description](#)

5G, Vehicle to Everything Communication: Opportunities, Constraints and Future Directions

Boughanja Manale, Tomader Mazri

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1089-1095 (2020);

[View Description](#)

Development of Secondary Processing Data Methods under Single Point Thunderstorm Activity Monitoring

Anatoly Panyukov, Alexander

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1096-1102 (2020);

[View Description](#)

Evaluation of the Physico-Chemical Properties of Soil and Apple Leaves (*Malus Domestica*) in Beni Mellal-Khenifra Region, Morocco

Berrid Naby, Lougraimzi Hanane, El-Khabbazi Houda, Abidli Zakaria, Hamidi Otman, Keltoum Rahali, El Mahjoub Aouane

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1103-1108 (2020);

[✚ View Description](#)

Multi-Criteria Decision Analysis Coupled with GIS and Remote Sensing Techniques for Delineating Suitable Artificial Aquifer Recharge Sites in Tafilalet Plain (Morocco)

Aicha Ousrhire, Hassane Oulidi Jarar, Abdessamad Ghafiri

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1109-1124 (2020);

[✚ View Description](#)

Support Vector Machine Integrated with SASS-SM Approach for Parkinson's Diseases Classification

Kadhem Al-Daffaie, Hadi Ratham Al-Ghaya

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1125-1131 (2020);

[✚ View Description](#)

Experimental Analysis of Thin Layer Drying of Ginger Rhizome in Convective Environment

Gbasouzor Austin Ikechukwu, Sabuj Mallik, Jude Ejikeme Ebem Njoku, Joshua Depriver

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1132-1142 (2020);

[✚ View Description](#)

A Novel Approach of Smart Logistics for the Health-Care Sector Using Genetic Algorithm

Marouane EL Midaoui, Mohammed Qbadou, Khalifa Mansouri

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1143-1152 (2020);

[✚ View Description](#)

The Design of a Hybrid Model-Based Journal Recommendation System

Adewale Opeoluwa Ogunde, Mba Obasi Odim, Oluwabunmi Omobolanle Olaniyan, Theresa Omolayo Ojewumi, Abosede Oyenike Oguntunde, Michael Adebisi Fayemiwo, Toluwase Ayobami Olowookere, Temitope Hannah Bolanle

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1153-1162 (2020);

[✚ View Description](#)

An Efficient Performance of OFDM-Shaped Symbol for 5G Green Communication Compared to FBMC

Mohamed Yasin Ibrahim Afifi, El-Sayed Soliman Ahmed Said, Abd El-Hady Abd El-Azim Ammar

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1163-1170 (2020);

[✚ View Description](#)

PV Integrated Recursive Least Mean Square Estimation Based Shunt Active Power Filter

Ragam Rajagopal, K. Palanisamy, S. Paramasivam

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1171-1177 (2020);

[✚ View Description](#)

Defeating Anti-Debugging Techniques for Malware Analysis Using a Debugger

Jong-Wouk Kim, Jiwon Bang, Mi-Jung Choi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1178-1189 (2020);

[✚ View Description](#)

Development of a Technology and Digital Transformation Adoption Framework of the Postal Industry in Southern Africa: From Critical Literature Review to a Theoretical Framework

Kgabo Mokgohloa, Grace Kanakana-Katumba, Rendani Maladzhi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1190-1206 (2020);

[✚ View Description](#)

Evolution of Teaching Approaches for Science, Engineering and Technology within an Online Environment: A Review

Rendani Wilson Maladzhi, Grace Mukondeleli Kanakana-Katumba

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1207-1216 (2020);

[✚ View Description](#)

Development and Performance Analysis of HRPL Using 6LoWPAN CC2538 Module for IoT Ecosystem

Nin Hayati Mohd Yusoff, Nurul Azma Zakaria

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1217-1224 (2020);

[✚ View Description](#)

Priority-based Scheduling Algorithm for NOMA-integrated V2X

Ala Din Trabelsi, Hend Marouane, Faouzi Zarai

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1225-1236 (2020);

[✚ View Description](#)

Creativity in Prototypes Design and Sustainability – The case of Social Organizations

Clara Silveira, Leonilde Reis, Vitor Santos, Henrique S. Mamede

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1237-1243 (2020);

[✚ View Description](#)

Computer Vision for Industrial Robot in Planar Bin Picking Application

Le Duc Hanh, Huynh Buu Tu

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1244-1249 (2020);

[✚ View Description](#)

Crystallinity and Hardness Enhancement of Polypropylene using Atmospheric Pressure Plasma Discharge Treatment

Oscar Xosocotla, Horacio Martinez, Bernardo Campillo

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1250-1257 (2020);

[✚ View Description](#)

LEACH Based Protocols: A Survey

Nour Najeeb Abdalkareem Qubbaj, Anas Abu Taleb, Walid Salameh

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1258-1266 (2020);

[✚ View Description](#)

Towards a Documents Processing Tool using Traceability Information Retrieval and Content Recognition Through Machine Learning in a Big Data Context

Othmane Rahmaoui, Kamal Souali, Mohammed Ouzzif

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1267-1277 (2020);

[✚ View Description](#)

Time Granularity-based Privacy Protection for Cloud Metering Systems

Hesham Aly El Zouka, Mustafa Mohamed Hosni

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1278-1285 (2020);

[✚ View Description](#)

Analysis of the Operational Impact of ETC Lanes on Toll Station

Alimam Mohammed Karim, Alimam Mohammed Abdellah, Seghiouer Hamid

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1286-1292 (2020);

[✚ View Description](#)

Empirical Probability Distributions with Unknown Number of Components

Marcin Kuropatwiński, Leonard Sikorski

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1293-1305 (2020);

[✚ View Description](#)

Basic Study of 3-D Non-Invasive Measurement of Temperature Distribution using Ultrasound Images during HIFU Heating

Ryosuke Sakakibara, Yasuhiro Shindo, Kazuo Kato, Pak Kon Choi, Akira Takeuchi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1306-1311 (2020);

[✚ View Description](#)

Wideband Active Switch for Electronic Warfare System Applications

Mahadev Sarkar, Gaurav Anand, Sivakumar Ramadoss

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1312-1321 (2020);

[✚ View Description](#)

Evaluation of Simple Space Interpolation Methods for the Depth of Precipitation: Application for Boyacá, Colombia

Pedro Mauricio Acosta Castellanos, Alejandra Castro Ortegón, Hugo Fernando Guerrero Sierra

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1322-1327 (2020);

[✚ View Description](#)

SH-CNN: Shearlet Convolutional Neural Network for Gender Classification

Chaymae Ziani, Abdelalim Sadiq

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1328-1334 (2020);

[✚ View Description](#)

Quality of Nursing Care in Hospitalized Patients of the Carlos Lanfranco La Hoz Hospital, 2019

Amancio Izquierdo-Príncipe, Jaqueline Garcia-Núñez, Brian Meneses-Claudio, Hernan Solis-Matta, Lourdes Matta-Zamudio

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1335-1339 (2020);

[✚ View Description](#)

Quality of Life in Patients with Type 2 Diabetes of the Central Hospital of the Peruvian Air Force, 2019

Jared Zavala-Izaguirre, Fanny Mego-Llanos, Sarita Cornejo-Quispitongo, Brian Meneses-Claudio, Hernan Solis-Matta, Lourdes Matta-Zamudio

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1340-1344 (2020);

[✚ View Description](#)

Social skills and Resilience in Adolescents of Secondary Education of the Kumamoto I 3092 Educational Institution, of the Puente Piedra District – Lima 2019

Evelyn Roncal-Cespedes, Gloria Castillo-Laban, Brian Meneses-Claudio, Hernan Matta-Solis, Lourdes Matta-Zamudio, Eduardo Matta-Solis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1345-1349 (2020);

[✚ View Description](#)

Social Skills and Resilience in Adolescents of an Educational Institution in North Lima, 2019

Lili Sifuentes-Gomez, Doris Vega-Davila, Betty Flores-Paz, Brian Meneses-Claudio, Hernan Matta-Solis, Eduardo Matta-Solis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1350-1355 (2020);

[✚ View Description](#)

Improved Design and Recommendations for Street Lighting in Gitega City

Ntawuhorakomeye Noel, Ndayiragije Leonidas, Belov Mikhail Petrovich

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1356-1365 (2020);

[✚ View Description](#)

Investigating Students' Computational Thinking through STEM Robot-based Learning Activities

Sasithorn Chookaew, Suppachai Howimanporn, Santi Hutamarn

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1366-1371 (2020);

[✚ View Description](#)

Effect of Starch Oxidation Degree on the Properties of Hydrogels from Dialdehyde Starch and Polyvinyl Alcohol

Jahel Desire Carrera, Daniela Alejandra Viteri Narváez, Marco Leon, José Francisco Alvarez-Barreto

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1372-1380 (2020);

[✚ View Description](#)

Image Tag Recommendation based on Ranked Categorical Nearest Neighbors and Weighted Tag Features

Anupama D. Dondekar, Balwant A. Sonkamble

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1381-1386 (2020);

[View Description](#)

Analysis of Physical and Mechanical Properties of Galvanic-Plasma Wear-Resistant Coatings

Mahmood Shaker Albdeiri, Sergey Sergeev, Vladimir V. Krasilnikov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1387-1393 (2020);

[View Description](#)

A prediction of Cutting Force, System Vibration, and Productivity in Five-Axis Milling Process of the Spiral Bevel Gear

Nguyen Van Thien, Dung Hoang Tien, Nhu-Tung Nguyen, Nguyen Van Que, Do Duc Trung, Pham Thi Thieu Thoa

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1394-1401 (2020);

[View Description](#)

A Study on the Tool Wear in Milling Process of the Gleason Spiral Bevel Gear

Hoang Xuan Thinh, Pham Van Dong, Tran Ve Quoc

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1402-1407 (2020);

[View Description](#)

Recommendation System for SmartMart-A Virtual Supermarket

Poonam Ghuli, Manoj Kartik R, Mohammed Amaan, Mridul Mohta, N Kruthik Bhushan, Poonam Ghuli, Shobha G

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1408-1413 (2020);

[View Description](#)

Solution of the Semiconductor-Device Equations by the Numerov Process

Nicol`o Speciale, Rossella Brunetti, Massimo Rudan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1414-1421 (2020);

[View Description](#)

Handling Priority Data in Smart Transportation System by using Support Vector Machine Algorithm

Sara Ftaimi, Tomader Mazri

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1422-1427 (2020);

[✚ View Description](#)

Fabrication and Optimization of High Frequency ZnO Transducers for Both Longitudinal and Shear Emission: Application of Viscosity Measurement using Ultrasound

Hatem Dahmani, Ibrahim Zaaroura, Abbas Salhab, Pierre Campistron, Julien Carlier, Malika Toubal, Souad Harmand, Vincent Thomy, Marc Neyens, Bertrand Nongailard

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1428-1435 (2020);

[✚ View Description](#)

Parameter Estimation for Industrial Robot Manipulators Using an Improved Particle Swarm Optimization Algorithm with Gaussian Mutation and Archived Elite Learning

Abubakar Umar, Zhanqun Shi, Lin Zheng, Alhadi Khilil, Zulfiqar Ibrahim Bibi Farouk

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1436-1457 (2020);

[✚ View Description](#)

Comparative Study Between Three Methods for Optimizing the Power Produced from Photovoltaic Generator

El hadji Mbaye Ndiaye, Mactar Faye, Alphousseyni Ndiaye

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1458-1465 (2020);

[✚ View Description](#)

An Investigation of the Effect of Optimal Plane Spacing Between Electrode Planes for the EIT Industrial Applications

Yew Lek Chong, Renee Ka Yin Chin

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1466-1473 (2020);

[✚ View Description](#)

Social Engineering to Establish Digital Culture in Higher Education

Tedi Priatna, Dian Sa'adillah Maylawati, Hamdan Sugilar, Muhammad Ali Ramdhani

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1474-1479 (2020);

[✚ View Description](#)

Simulation Based Energy Consumption Optimization for Buildings by Using Various Energy Saving Methods

Omar Khaled Barakat, Ahmed El-Biomey Mansour, Mahmoud Mohamed Abd Elrazik, Ashraf Aboshosha, Amir Yassin Hassan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1480-1487 (2020);

[✚ View Description](#)

Impact of Changing Microstructural Compositions of Lime Based Mortar on Flexibility: Case Study of Sustainable Lime–Cement Composites)

Sule Adeniyi Olaniyan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1488-1498 (2020);

[✚ View Description](#)

Comparative Analysis Spline Methods in Digital Processing of Signals

Hakimjon Zaynidinov, Sayfiddin Bakhromov, Bunyod Azimov, Sarvar Makhmudjanov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1499-1510 (2020);

[✚ View Description](#)

Impact of Salinity on Stabilized Leachate Treatment from Ozonation Process

Iva Yenis Septiariva, I Wayan Koko Suryawan, Novi Kartika Sari, Ariyanti Sarwono

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1511-1516 (2020);

[✚ View Description](#)

Implementation of a Journalist Business Intelligence in Social Media Monitoring System

Abba Suganda Girsang, Sani Muhamad Isa, Natasya, Megga Eunike Cristilia Ginzal

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1517-1528 (2020);

[✚ View Description](#)

Prophet Architecture in Normalized Meter Energy Consumption Prediction on Building

Fernando Lioexander, Abba Suganda Girsang

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1529-1536 (2020);

[✚ View Description](#)

A Software–Defined Network Approach for The Best Hospital Localization Against Coronavirus (COVID–19)

Bilal Babayigit, Eda Nur Hascokadar

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1537-1544 (2020);

[+ View Description](#)

NemoSuite: Web-based Network Motif Analytic Suite

Wooyoung Kim, Yi-Hsin Hsu, Zican Li, Preston Mar, Yangxiao Wang

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1545-1553 (2020);

[+ View Description](#)

Application of Deep Belief Network in Forest Type Identification using Hyperspectral Data

Xianxian Luo, Songya Xu, Hong Yan

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1554-1559 (2020);

[+ View Description](#)

A Computational Modelling and Algorithmic Design Approach of Digital Watermarking in Deep Neural Networks

Revanna Sidamma Kavitha, Uppara Eranna, Mahendra Nanjappa Giriprasad

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1560-1568 (2020);

[+ View Description](#)

ESP2: Embedded Smart Parking Prototype

Tarek Frikha, Hedi Choura, Najmeddine Abdennour, Oussama Ghorbel, Mohamed Abid

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1569-1576 (2020);

[+ View Description](#)

A Framework for Adoption and Diffusion of Mobile Applications in Africa

Chinedu Wilfred Okonkwo, Magda Huisman, Estelle Taylor

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1577-1592 (2020);

[+ View Description](#)

Features Preference using Conjoint Analysis Method for E-marketplace Social Care System

Angelina Ervina Jeanette Egeten, Harjanto Prabowo, Ford Lumban Gaol, Meyliana

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1593-1597 (2020);

[+ View Description](#)

High-Performance Computing: A Cost Effective and Energy Efficient Approach

Safae Bourhnane, Mohamed Riduan Abid, Khalid Zine-Dine, Najib Elkamoun, Driss Benhaddou

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1598-1608 (2020);

[View Description](#)

Time-to-Event Analysis for Recovery from Coronavirus Disease (COVID-19): A Case Study on Wuhan and Elsewhere in China from Jan 1 to Feb 11, 2020

Murtada Khalafallah Elbashir, Saleh N. Almuayqil

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1609-1617 (2020);

[View Description](#)

Elasticity Based Med-Cloud Recommendation System for Diabetic Prediction in Cloud Computing Environment

Karamath Ateeq, Manas Ranjan Pradhan, Beenu Mago

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1618-1633 (2020);

[View Description](#)

On Design of IoT-based Power Quality Oriented Grids for Industrial Sector

Nesma N. Gomaa, Khaled Y. Youssef, Mohamed Abouelatta

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1634-1642 (2020);

[View Description](#)

FPGA-Based Homogeneous and Heterogeneous Digital Quantum Coprocessors

Valeriy Hlukhov

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1643-1650 (2020);

[View Description](#)

Type 2 Diabetes Risk and Physical Activity in outpatients treated in Health Centers in a District of North Lima, 2020

Deisy Chipana-Collahua, Mariluz Chipana-Collahua, Rosa Villegas-Ortiz, Brian Meneses-Claudio, Hernan Matta-Solis

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1651-1656 (2020);

[View Description](#)

A Novel Way to Design ADS-B using UML and TLA+ with Security as a Focus

Pranay Bhardwaj, Carla Purdy, Nawar Obeidat

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1657-1665 (2020);

[✚ View Description](#)

Real-time Gradient-Aware Indigenous AQI Estimation IoT Platform

Hasan Tariq, Abderrazak Abdaoui, Farid Touati, Mohammad Abdullah Al Hitmi, Damiano Crescini, Adel Ben Mnaouer

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1666-1673 (2020);

[✚ View Description](#)

Japanese Abstractive Text Summarization using BERT

Yuuki Iwasaki, Akihiro Yamashita, Yoko Konno, Katsushi Matsubayashi

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1674-1682 (2020);

[✚ View Description](#)

Sentiment Analysis in English Texts

Arwa Alshamsi, Reem Bayari, Said Salloum

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1683-1689 (2020);

[✚ View Description](#)

Analysis and Evaluation of Competitiveness in Medical Tourism Industry in Taiwan

Yen-Hung Chen, Tin-Chang Chang

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1690-1697 (2020);

[✚ View Description](#)

Education Value Chain Model for Examination, Grading, and Evaluation Process in Higher Education based on Blockchain Technology

Meyliana, Yakob Utama Chandra, Cadelina Cassandra, Surjandy, Erick Fernando, Henry Antonius Eka Widjaja, Harjanto Prabowo

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1698-1703 (2020);

[✚ View Description](#)

Analysis of Learning Difficulties in Object Oriented Programming in Systems Engineering Students at UNTELS

Teodoro Diaz-Leyva, Omar Chamorro-Atalaya

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1704-1709 (2020);

[✚ View Description](#)

Efficient and Scalable Ant Colony Optimization based WSN Routing Protocol for IoT

Afsah Sharmin, Farhat Anwar, S M A Motakabber

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1710-1718 (2020);

[✚ View Description](#)

Design of Power Efficient Routing Protocol for Smart Livestock Farm Applications

Shahenda S. Abou Emira, Khaled Y. Youssef, Mohamed Abouelatta

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1719-1726 (2020);

[✚ View Description](#)

New Properties of Crimes in Virtual Environments

Roman Dremluiga, Natalia Prisekina, Andrei Yakovenko

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1727-1733 (2020);

[✚ View Description](#)

A Machine Vision Approach for Underwater Remote Operated Vehicle to Detect Drowning Humans

Yaswanthkumar S K, Keerthana M, Vishnu Prasath M S

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1734-1740 (2020);

[✚ View Description](#)

An Evaluation of Some Machine Learning Algorithms for the Detection of Android Applications Malware

Olorunshola Oluwaseyi Ezekiel, Oluyomi Ayanfeoluwa Oluwasola, Irhebhude Martins

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1741-1749 (2020);

[✚ View Description](#)

Touristic's Destination Brand Image: Proposition of a Measurement Scale for Rabat City (Morocco)

Abdellatif Elouali, Smail Hafidi Alaoui, Noura Ettahir, Abderrazzak Khohmimidi, Nadia Motii, Keltoum Rahali, Mustapha Kouzer

Adv. Sci. Technol. Eng. Syst. J. **5**(6), 1750-1758 (2020);

[✚ View Description](#)

The Designing of Institute's Educational Mascots for Brand Identity

Nop Kongdee, Suparada Prapawong, Manissaward Jintapitak

Adv. Sci. Technol. Eng. Syst. J. 5(6), 1759-1777 (2020);

[+ View Description](#)



Important Pages

- » Home
- » About Journal
 - » Abstract & Indexing
- » Archive
- » Call For Papers
- » Contact Us
- » Editorial Board
- » Instructions for Authors
- » Online Submission
- » Publication Fee
- » Publishing Ethics
- » Open Access Policy
- » Scopus Indexed Papers (Dec-19)

Copyright



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

SCImago Journal Rank (SJR)



Proudly powered by WordPress | Education Hub by WEN Themes

Human Emotion Recognition Based on EEG Signal Using Fast Fourier Transform and K-Nearest Neighbor

Anton Yudhana^{1*}, Akbar Muslim¹, Dewi Eko Wati², Intan Puspitasari², Ahmad Azhari³, Murein Miksa Mardhia³

¹Faculty of Industrial Technology, Department of Electrical Engineering, Universitas Ahmad Dahlan, Yogyakarta, 55166, Indonesia

²Faculty of Teacher Training Education, Department of Teacher Training of Early Childhood, Universitas Ahmad Dahlan, Yogyakarta, 55166, Indonesia

³Faculty of Industrial Technology, Informatics Department, Universitas Ahmad Dahlan, Yogyakarta, 55166, Indonesia

ARTICLE INFO

Article history:

Received: 31 August, 2020

Accepted: 28 November, 2020

Online: 14 December, 2020

Keywords:

Electroencephalography (EEG)

Brainwaves

FFT

KNN

ABSTRACT

Human emotional states can transform naturally and are recognizable through facial expressions, voices, or body movements, influenced by received stimuli. However, the articulation of emotions is not practicable by every individual, even when feelings of joy, sadness, or otherwise are experienced. Biomedically, emotions affect brain wave activities, as the continuously functioning brain cells communicate through electrical pulsations. Therefore, an electroencephalogram (EEG) is used to capture input from brain signals, study impulses, and determine the human mood. The examination generally included observing a person's frame of mind in response to a given stimulus where the immediate results were inconclusive. In this study, the associated classifications were normal, focused, sad, and shocked. The raw brainwave data from 50 subjects were recorded by employing a single-channel EEG called the Neurosky Mindwave. Meanwhile, the assessments were performed while the candidates' minds were stimulated by listening to music, watching videos, or reading books. The Fast Fourier Transform (FFT) method was utilized for feature extractions, along with the K-nearest neighbours (K-NN) for classifying brain impulses. The parameter k had a value of 15, and the average classification accuracy was 83.33%, while the highest accuracy for the focused emotional state was 93.33%. The Neurosky Mindwave in conjunction with the FFT and KNN techniques is potential analytical solutions to facilitate the enhanced identification of human emotional conditions.

1. Introduction

The signal of the brainwaves has specific traits and characteristics of the person. The brainwaves cannot be imitated or interpreted by individuals so that there is no chance of resemblance. Identity recognition is essential to identify the features of the person [1].

Identity development is done using biometric technology, which aims at personality-implantation through the use of parts of the body or social behavior—application of Identity Recognition using Biometrics Technology for self-recognition by using parts of the body or human behavior [2-6]. In [7], the author has presented machine-learning algorithms to categorize EEG dynamics according to subject self-reported emotional states

during music listening. Support Vector Machine was employed to classify four emotional states and obtained an accuracy of 82.29% across 26 subjects. Vanitha [8] has used Hilbert-Huang Transform (HHT) to remove artifacts and relevant time-frequency features from the EEG signal, and the extracted features are manipulated to detect stress levels using Support Vector Machine (SVM) Classifier on real-time stress detection.

EEG is used as a diagnostic tool by medicine. In comparison, a broader application of the EEG is to analyze a person's mental state, thought patterns, or emotional state [9, 10]. The EEG signal's visual observation is real, given the very low amplitude of the EEG signal, and the pattern is very complex. In addition, EEG signals are strongly influenced by various variables, including emotional conditions, health, respondent activity, environment, electrical disturbances from other organs, and external stimuli.

*Corresponding Author: Anton Yudhana, eyudhana@ee.uad.ac.id

[11,12]. Conducting the introduction of the EEG signal requires a pattern of brain activity that is prominent and constant. This pattern emerged due to specific stimulation from volunteers. EEG signals are shown to provide more insight into the subject's emotional processes and responses. The recorded EEG signals will get the waveform, the duration, the orientation of the signal, and the signal rhythm. [13-15].

The EEG signal pattern data's shape and position are not yet known because the signal pattern and response speed response of each individual's brain to the received stimuli are different [16]. Therefore, we need a signal processing method EEG that can pattern specific brain activity [17].

In this study, the Fast Fourier Transform (FFT) based spectrum analysis method converts the EEG signal from the time domain to frequency domain. The FFT results were classified by K-Nearest Neighbor (KNN) as a training data set to characterize the brain wave output from the EEG as a material for analyzing differences in brain waves in each emotional state studied.

2. Data Acquisition

2.1. Neurosky Mindwave Mobile

Neurosky Mindwave Mobile is a brain-computer interface (BCI) device that can be used wirelessly and connected to several devices such as computers and smartphones via Bluetooth connection to collect input from the human brain wave activity [18].

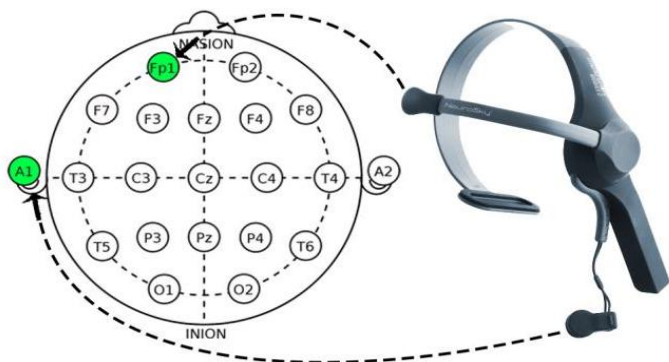


Figure 1: Neurosky Mindwave Mobile and electrode's position

Mindwave provided single-channel EEG in the form of an electrode and placed in the forehead or Fp1 position to measure the brain's electrical voltage and ear-clip on the left ear or A1 position as ground. With Neurosky's ThinkGear and eSense technologies, connected devices can receive a real-time visual representation of brain waves generated from the electrodes [19, 20].

2.2. Subjects

In this study, EEG data were recorded from 50 subjects aged around 20 - 22 years old who were in healthy condition. All of the subjects were undergraduate students and were informed about the purpose of this experiment.

2.3. Stimuli

The use of appropriate stimuli is needed to get better brain wave recording results where a psychologist has validated the

stimulus used for this study. Respondents were given stimuli in the form of listening to music, watching videos, and mathematical calculations to influence brain wave activity in the subject to produce an emotional condition that was following the object to be studied [21,22].

2.4. Procedure of Data Collecting

Before starting data collection, make sure that the respondent is in good health. The data collection process is carried out in a quiet and calm place to make subjects feel comfortable and reduce disturbances affecting data collection. We use the computer laboratory at Ahmad Dahlan University for this research.



Figure 2: Illustration of the data collecting process

Data collection will be needed as much as 200 data with 50 respondents and carried out four times with a span of at least two days. The recording time for data collection is 7 minutes. When the recording begins, the respondent will be given a stimulus in instrumental music, video, and math questions [23].

3. Methods

3.1. Fast Fourier Transform (FFT)

FFT is applied in various fields, from digital signal processing and solving partial differential equations to algorithms to multiply integers in large numbers. FFT is an algorithm for calculating discrete Fourier transforms (DFT) quickly and efficiently. Because many signals in a communication system are continuous in the time domain, we use the Fourier transform to represent the frequency domain [24].

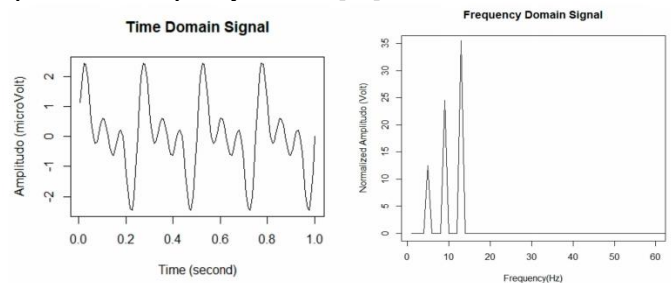


Figure 3: Time-domain signal and frequency domain of EEG signals

FFT is a reliable method for signal processing in the form of a sine wave as EEG signals, and it was proven in previous studies

related to real-time applications because of superior speed compared to other available methods. However, it is not suitable for the analysis of short EEG signals [25]. The FFT formula is defined in (1).

$$S(f) = \int_{-\infty}^{\infty} s(t)e^{-j2\pi ft} dt \quad (1)$$

where $S(f)$ is a signal in the frequency domain, $s(t)$ is a signal in the time domain, and $e^{-j2\pi ft}$ is a constant value of a signal, f is frequency, and t is time.

FFT algorithm is used to reduce the complex transformations performed by DFT. For comparison, when using DFT, then the transformation complexity is N^2 . Meanwhile, with the FFT algorithm and faster transformation times, the complexity of the transformation is too decreased to $(N) \log(N)$.

3.2. K-nearest neighbor

K-Nearest Neighbor is a method for classifying objects based on training data closest to the object. The data is then presented with a distance measure to be processed into a mathematical calculation. In this classification, the calculation is done by using Euclidean Distance. The training data with the closest distance are said to be neighbors and then sorted from the closest distance to the farthest distance. Each neighbor is different from one another or the like. Similar neighbors with the largest number among k neighbors correspond to the object being classified [26]. To find the neighbor, it uses distance metrics like euclidean distance as given in equation (2).

$$D(x, y) = \sum_{k=1}^N \sqrt{(x_k - y_k)^2} \quad (2)$$

where $D(x, y)$ is the distance between x and y facilities, x_k, y_k is the x and y coordinates of variable k ($k = 1, 3, 5, \dots, n$). The value of k must be an odd number, and the number of training data is even to avoid ambiguity. This value is necessary to facilitate the achievement of classification results from the number of closest neighbors. When there is a class with the most neighbors, the test data will get that class result [27].

3.3. Hardware Design

The block diagram above shows that Neurosky Mindwave Mobile is a major component in this hardware system. Neurosky captures input from brain waves via electrodes attached to the Fp1 area of the respondent's head and sends an EEG signal via a Bluetooth connection, which acts as a communication protocol between Mindwave and PC / Laptop.



Figure 4: Hardware system diagram

3.4. Software Design

The block diagram above explains that when raw EEG data is obtained from recording brain waves using Neurosky Mindwave on respondents who have been given a stimulus. Raw

data taken in the signal pre-processing stage is cut 2 seconds early to minimize noise at the beginning of the recording, due to external interference such as a Bluetooth connection between the recording device and the application, or due to the imperfect installation of the device on the respondent's head. The next stage of feature extraction is carried out using the FFT algorithm to convert the EEG signal in the time domain into the frequency domain and extract all important frequency components from the EEG signal such as Delta waves (0.1 - 3 Hz), Theta (4 - 7 Hz.), Alfa (8 - 12 Hz), Beta (12 - 30 Hz), and Gamma (30 - 100 Hz) [28]. From the results of feature extraction, a huge amount of data is obtained, and data simplification must be done by not including data that is below the average value so that the classification results are more accurate for each emotion. Furthermore, grouping training data and test data are carried out using the KNN classification method in mathematical calculations with the Euclidean formula to calculate the closest distance to the results of the FFT feature extraction. The final step is to determine the accuracy of the KNN classification results on waves using the Confusion Matrix.

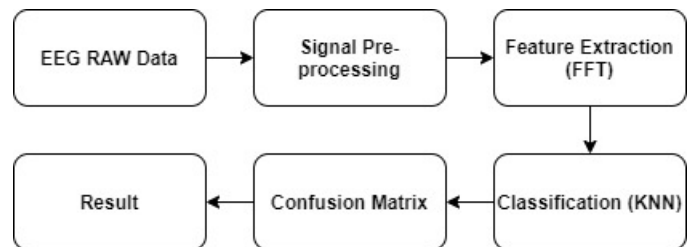


Figure 5: System design diagram

4. Result

In this research, several experimental stages were carried out. The first step is signal pre-processing to reduce noise in raw data, then feature extraction to change the form of RAW data from brain waves to the FFT spectrum. Second, monitoring the FFT results in each emotional state, followed by taking all the highest data from the FFT spectrum with a range of 0.2 Hz. Finally, KNN is used to classify emotions (normal, focused, sad, and shocked) and calculate accuracy using a confusion matrix.

4.1. Feature Extraction of Raw Data

As previously explained, FFT feature extraction with a sampling frequency of 512 Hz is used to convert the time domain signal from raw data to the frequency domain. We use MATLAB2016b software to do this process. The results of running the program can be seen in Figure 6 below.

The picture above shows the feature extraction program results, which produces two different forms of signal output with the same raw data input from subjects who have been given a stimulus in the form of listening to instrumental music. It can be seen that the signal in the time domain has data along with 2.13×10^5 ms with the highest amplitude of 631, which is in the range of 1.32×10^5 ms, while the signal in the frequency domain has data with a range of 0 - 50 Hz where the highest amplitude value is at a frequency of 2.26 Hz. These results will show a different value for each respondent due to different human brain wave activity against the given stimulus.

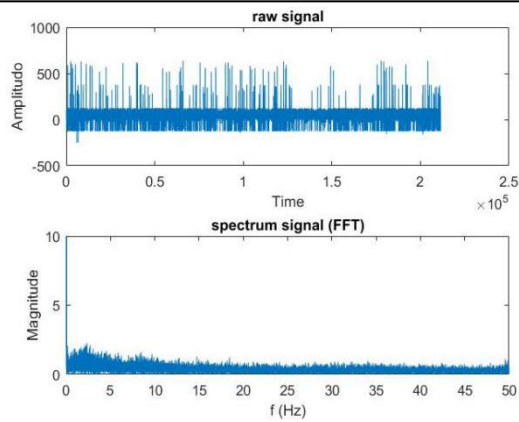


Figure 6: Feature extraction result of raw data

4.2. FFT Spectrum Comparison

In this stage, a comparison of four signal combinations resulted from FFT feature extraction that represented the subject's emotional condition. The results of running programs are shown in Figure 7.

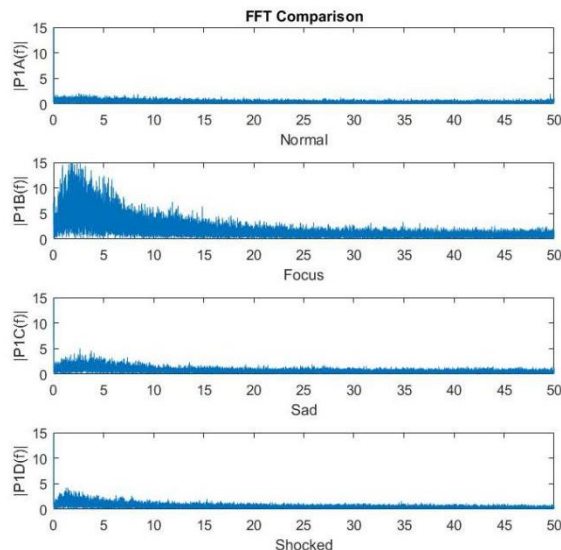


Figure 7: FFT spectrum of all emotional state

It can be seen that the spectrum of the FFT signal in four emotional states, namely Normal, Focus, Sad, and Shocked. When the spectrum is observed, there is a significant difference from the shape of the spectrum wherein the Focused and Normal emotional state, the difference in the form of the spectrum is very recognizable compared to the Sad and Shocked emotional states.

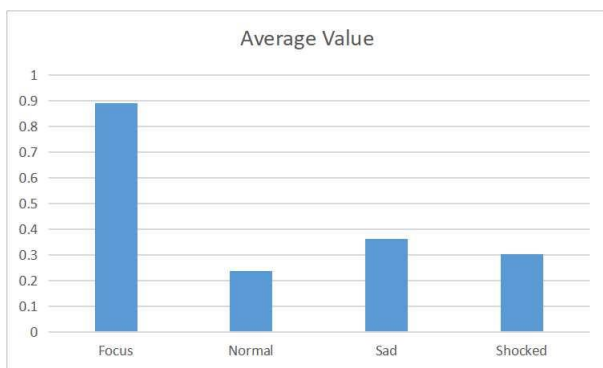


Figure 8: The average value of amplitude in the FFT spectrum

Then the amplitude value is compared to prove the truth of the observations. However, each spectrum with a frequency range of 0 - 50 Hz produces hundreds of thousands of data so that only the average value from data will be taken. Normal emotions get an average score of 0.2386, Focus 0.8904, Sad 0.3625, and Shocked 0.3044. Figure 8 shows the average value of the FFT spectrum.

From a comparison of the average values on each FFT spectrum, focus emotional state has the highest amplitude and lowest for Normal emotions, between Sad and Shocked emotions there is a small difference in the average results so that it can be proven the truth of observation result on the FFT spectrum.

4.3. Collecting Data Based on Spectrum Peaks

A reduction process is carried out at this stage at a frequency of 50 Hz to 10 Hz because the fluctuation of data values in the FFT spectrum always occurs at frequency range 0-10 Hz. Figures 9 to 12 show the results of the reduction process.

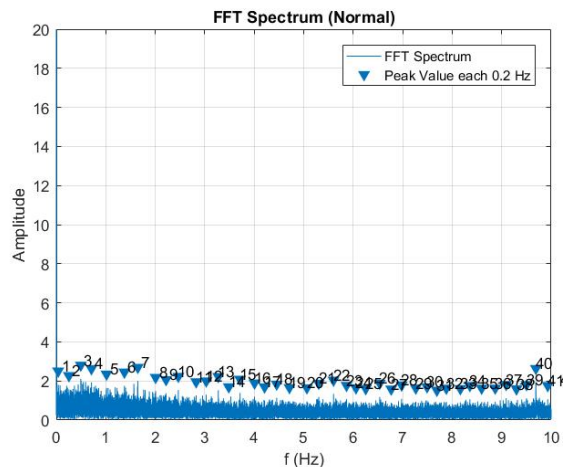


Figure 9: FFT Spectrum of Normal emotion

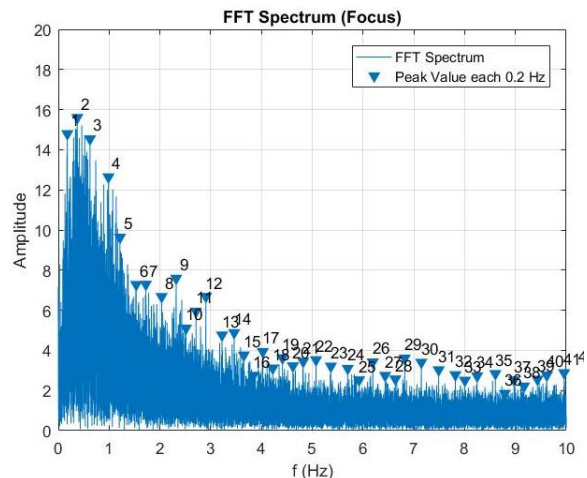


Figure 10: FFT spectrum of Focus emotion

The Values at the highest peaks of the marked frequency spectrum will be collected from the figure above. The frequency in the range 0 - 10 Hz produces 40 data by looking for the highest peak value every 0.2 Hz. Then, from 40 data, each 10 data's average value will be sought to produce four average values used

as material for the classification process. The results of the average value are shown in table 1.

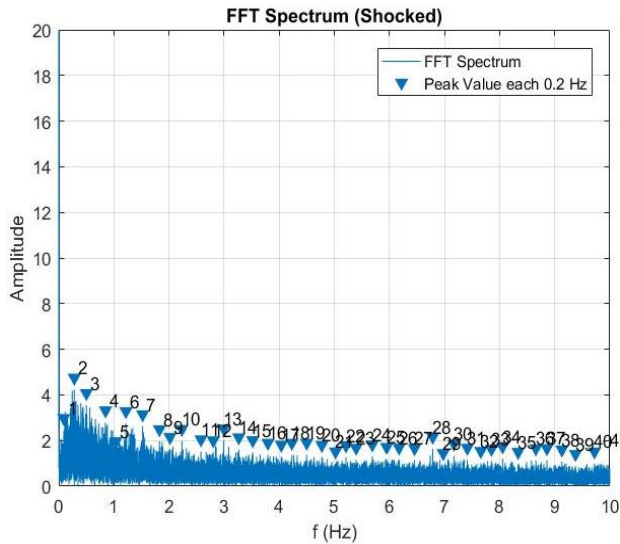


Figure 11: FFT spectrum of Shocked emotion

Table 1: Frequency average value

Focus	Normal	Sad	Shocked
8.891733187	1.908573527	4.199081623	3.059306615
3.371044125	1.2510798	2.052021058	1.633249441
2.851979474	1.124556395	1.583934658	1.250179144
2.597699756	1.202698894	1.554512291	1.136366638

If the reduction process is not carried out in the FFT spectrum, then based on the previous discussion (4.2), it is explained that the frequency in the range 50 Hz produces hundreds of thousands of EEG data and a minimum average value, which can complicate the classification process. We get between the results of previous observations and the current calculations to get very similar results from this process. It can be proven that the results of recording brain waves with the stimulus used to produce good data quality.

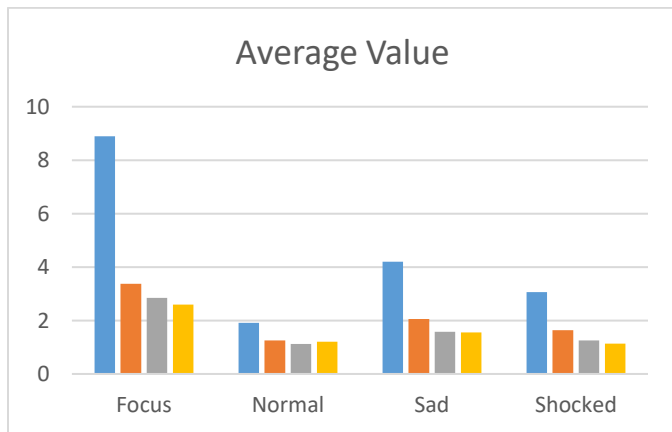


Figure 12: Average value of FFT based on spectrum peaks

4.4. KNN Classifier

In this process, 50 respondents studied and recorded brain waves four times obtained 200 data with 140 training data and 60

testing data. The KNN classification is then carried out to determine the results of the subject's actual emotional state from the 60-testing data.

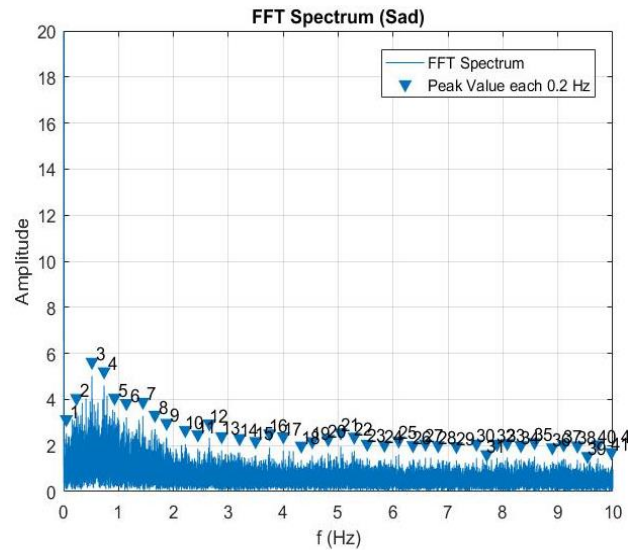


Figure 13: FFT spectrum of Sad emotion

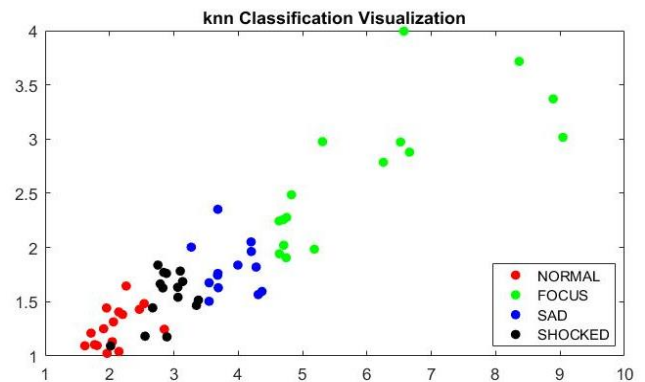


Figure 14: Visualization of KNN classification

The KNN classification results run through MATLAB2016b are displayed in a scatter chart and the coordinate points. It can be seen that each color at the coordinate point is a representation of the emotional condition of the subject, which forms a group based on the value obtained from 60 testing data. If observed, there are several color points whose coordinate values are closer to other neighboring groups. This indicates a change in the status of the color point. more clear results are shown in Table 2 below

Table 2: Result of KNN Classifier

	Match	Error	Match	Error	Match	Error
k Values	7		15		23	
Normal	11	4	13	2	13	2
Focus	13	2	14	1	12	3
Sad	9	6	12	3	11	4
Shocked	12	3	11	4	12	3
Total	45	15	50	10	48	12

The table above shows that the KNN classification results using the k = 15 value are the best choice among k = 7 or k = 23. Sixty

test data produces 50 data that corresponds to the original emotional state status, and 10 data does not match. Then perform accuracy testing using the confusion matrix as in table 3 below.

Table 3: Accuracy result using confusion matrix

<i>k</i> Values	Accuracy		
	7	15	23
Normal	73.33%	86.66%	86.66%
Focus	86.66%	93.33%	80.00%
Sad	60.00%	80.00%	73.33%
Shocked	80.00%	73.33%	80.00%
Average	74.99%	83.33%	79.99%

From the table above, the highest average accuracy is obtained from the results of the KNN classification using a value of $k = 15$ with a result of 83.33%, where the accuracy value of the focused emotional state gets the highest result of 93.33%, followed by a normal emotional state of 86.66%, 80% sad emotional state, and shocked get the lowest accuracy of 73.33%. Differences in accuracy results using the right stimulus dramatically affects the accuracy obtained. Regulations about sad emotions and focus are needed to help improve the accuracy of the results obtained.

5. Conclusion

This study aims to identify human emotions towards a given stimulus by applying the FFT method as feature extraction from the raw data generated by recording brain waves using the Neurosky Minwave mobile with the KNN method using the variable $k = 15$ to classify the FFT spectrum. Accuracy in each emotional state studied was performed using a confusion matrix where the best accuracy was obtained for Focus emotions as much as 93.33%, followed by Normal emotions 86.66%, Sad 80%, and Shocked getting the lowest accuracy results of 73.33%. The results of the average accuracy in the classification of brain waves were 83.33%. This research found that FFT and KNN can be used as alternatives in the EEG signal analysis method.

Acknowledgment

The research is funded by Ministry of Research and Technology / National Agency for Research and Innovation Fundamental Research with contract number: 1627.9/LL5/PG/2020

References

- [1] A. Yudhana, S. Mukhopadhyay, I.R. Karas, A. Azhari, M.M. Mardhia, S.A. Akbar, A. Muslim, F.I. Ammatulloh, "Recognizing Human Emotion patterns by applying Fast Fourier Transform based on Brainwave Features," Proceedings - 1st International Conference on Informatics, Multimedia, Cyber and Information System, ICIMCIS 2019, 249–254, 2019, doi:10.1109/ICIMCIS48181.2019.8985227. This paper is an extension of work originally presented in International Conference on Informatics, Multimedia, Cyber and Information System (ICIMCIS).
- [2] I. Jayarathne, M. Cohen, S. Amarakeerthi, "BrainID: Development of an EEG-based biometric authentication system," 7th IEEE Annual Information Technology, Electronics and Mobile Communication Conference, IEEE IEMCON 2016, (October), 2016, doi:10.1109/IEMCON.2016.7746325.
- [3] Z. Pang, J. Li, H. Ji, M. Li, "A new approach for EEG feature extraction for detecting error-related potentials," 2016 Progress in Electromagnetics Research Symposium, PIERS 2016 - Proceedings, 3595–3597, 2016, doi:10.1109/PIERS.2016.7735380.
- [4] B. Trowbridge, C. Rodriguez, J. Prine, M. Holzemer, J. McCormack, and R. Integlia, "Gaming, fitness, and relaxation," in Games Entertainment Media Conference (GEM), 2015 IEEE, 1–4, 2015.
- [5] D. Bright, A. Nair, D. Salvekar, S. Bhisikar, "EEG-based brain controlled prosthetic arm," Conference on Advances in Signal Processing, CASP 2016, 479–483, 2016, doi:10.1109/CASP.2016.7746219.
- [6] A. Yudhana, Sunardi, Priyatno, "Development of Door Safety Fingerprint Verification using Neural Network," Journal of Physics: Conference Series, **1373**(1), 2019, doi:10.1088/1742-6596/1373/1/012053.
- [7] Y.P. Lin, C.H. Wang, T.P. Jung, T.L. Wu, S.K. Jeng, J.R. Duann, J.H. Chen, "EEG-based emotion recognition in music listening," IEEE Transactions on Biomedical Engineering, **57**(7), 1798–1806, 2010, doi:10.1109/TBME.2010.2048568.
- [8] V. Vanitha, P. Krishnan, "Real time stress detection system based on EEG signals," Biomedical Research (India), 2016(Special Issue 2), S271–S275, 2016.
- [9] N. Kamaruddin, M.H.M. Nasir, A. Wahab, "Dysphoria detection using EEG signals," Advances in Science, Technology and Engineering Systems, **4**(4), 197–205, 2019, doi:10.25046/aj040424.
- [10] S. Al Irfan, A. Yudhana, S.C. Mukhopadhyay, I.R. Karas, D.E. Wati, I. Puspitasari, "Wireless Communication System for Monitoring Heart Rate in the Detection and Intervention of Emotional Regulation," Proceedings - 1st International Conference on Informatics, Multimedia, Cyber and Information System, ICIMCIS 2019, 243–248, 2019, doi:10.1109/ICIMCIS48181.2019.8985210.
- [11] P.D. Purnamasari, P. Yustiana, A.A. Putri Ratna, D. Sudiana, "Mobile EEG Based Drowsiness Detection using K-Nearest Neighbor," 2019 IEEE 10th International Conference on Awareness Science and Technology, ICAST 2019 - Proceedings, (June), 1–5, 2019, doi:10.1109/ICAwST.2019.8923161.
- [12] M. Zuhair, S. Thomas, "Classification of patient by analyzing EEG signal using DWT and least square support vector machine," Advances in Science, Technology and Engineering Systems, **2**(3), 1280–1289, 2017, doi:10.25046/aj0203162.
- [13] M. Soleymani, S. Asghari-Esfeden, Y. Fu, M. Pantic, "Analysis of EEG Signals and Facial Expressions for Continuous Emotion Detection," IEEE Transactions on Affective Computing, **7**(1), 17–28, 2016, doi:10.1109/TAFFC.2015.2436926.
- [14] Q. Meng, D. Gupta, A. Wudenne, X. Du, L.E. Hong, F. Sen Choa, "Three-dimensional EEG signal tracking for reproducible monitoring of self-contemplating imagination," Advances in Science, Technology and Engineering Systems, **2**(3), 1634–1646, 2017, doi:10.25046/aj0203203.
- [15] V. Starcevic, D. Berle, K. Viswasam, A. Hannan, D. Milicevic, V. Brakoulias, E. Dale, "Specificity of the Relationships Between Dysphoria and Related Constructs in an Outpatient Sample," Psychiatric Quarterly, **86**(4), 459–469, 2015, doi:10.1007/s11126-015-9344-8.
- [16] D. Nie, X.W. Wang, L.C. Shi, B.L. Lu, "EEG-based emotion recognition during watching movies," 2011 5th International IEEE/EMBS Conference on Neural Engineering, NER 2011, 667–670, 2011, doi:10.1109/NER.2011.5910636.
- [17] R.A. Surya, A. Fadlil, A. Yudhana, "Identification of Pekalongan Batik Images Using Backpropagation Method," Journal of Physics: Conference Series, **1373**(1), 2019, doi:10.1088/1742-6596/1373/1/012049.
- [18] E.C. Djamel, M.Y. Abdullah, F. Renaldi, "Brain computer interface game controlling using fast fourier transform and learning vector quantization," Journal of Telecommunication, Electronic and Computer Engineering, **9**(2–5), 71–74, 2017.
- [19] S. Sengupta, S. Biswas, S. Nag, S. Sanyal, A. Banerjee, R. Sengupta, D. Ghosh, "Emotion specification from musical stimuli: An EEG study with AFA and DFA," 2017 4th International Conference on Signal Processing and Integrated Networks, SPIN 2017, 596–600, 2017, doi:10.1109/SPIN.2017.8050019.
- [20] A. Azhari, L. Hernandez, "Brainwaves feature classification by applying K-means clustering using single-sensor EEG," International Journal of Advances in Intelligent Informatics, **2**(3), 167–173, 2016, doi:10.26555/ijain.v2i3.86.
- [21] R. Das, E. Maiorana, P. Campisi, "EEG Biometrics Using Visual Stimuli: A Longitudinal Study," IEEE Signal Processing Letters, **23**(3), 341–345, 2016, doi:10.1109/LSP.2016.2516043.
- [22] N. Masood, H. Farooq, "Investigating EEG patterns for dual-stimuli induced human fear emotional state," Sensors (Switzerland), **19**(3), 1–23, 2019, doi:10.3390/s19030522.
- [23] E.C. Djamel, D.P. Pangestu, D.A. Dewi, "EEG-Based Recognition of Attention State Using Wavelet and Support Vector Machine," 2016 International Seminar on Intelligent Technology and Its Applications (ISITIA), 139–144, 2016, doi: 10.1109/ISITIA.2016.7828648.

- [24] C.S. Huang, C.L. Lin, L.W. Ko, S.Y. Liu, T.P. Su, C.T. Lin, "Knowledge-based identification of sleep stages based on two forehead electroencephalogram channels," *Frontiers in Neuroscience*, **8**(SEP), 1–12, 2014, doi:10.3389/fnins.2014.00263.
- [25] R. Jaswal, "Brain Wave Classification and Feature Extraction of EEG Signal by Using FFT on Lab View," *International Research Journal of Engineering and Technology*, 1208–1212, 2016.
- [26] A.E. Putra, C. Atmaji, F. Ghaleb, "EEG-Based Emotion Classification Using Wavelet Decomposition and K-Nearest Neighbor," *Proceedings - 2018 4th International Conference on Science and Technology, ICST 2018*, **1**, 1–4, 2018, doi:10.1109/ICSTC.2018.8528652.
- [27] S. Shukla, R. Chaurasiya, "Emotion Analysis Through EEG and Peripheral Physiological Signals Using KNN Classifier," *Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)*, 2019, doi:10.1007/978-3-030-00665-11
- [28] B. Senzio-Savino, M.R. Alsharif, C.E. Gutierrez, K. Yamashita, "Synchronous emotion pattern recognition with a virtual training environment," *Proceedings of the 2015 International Conference on Artificial Intelligence, ICAI 2015 – WORLDCOMP*, 650–654, 2019.

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH**

Judul karya ilmiah (artikel) : Human Emotion Recognition Based on EEG Signal Using Fast Fourier Transform and K-Nearest Neighbor

Jumlah Penulis : 6 Orang

Nama Penulis : Anton Yudhana, Akbar Muslim, Dewi Eko Wati, Intan Puspitasari, Ahmad Azhari, **Murein Miksa Mardhia**

Status Pengusul : ~~Penulis pertama~~/.../penulis keenam /~~penulis korespondensi~~ **

Identitas Jurnal Ilmiah : **a. Nama Jurnal** : Advances in Science, Technology and Engineering Systems Journal (ASTESJ)

b. No ISSN : 2415-6698

c. Vol, No, Bulan, Thn : Vol 5, Issue 6, Page No 1082-1088, 2020

d. Penerbit : ASTES Publishers

e. DOI artikel : 10.25046/aj0506131

f. Alamat web jurnal : <https://astesj.com/v05/i06/>

g. Terindeks Scopus, SimagoJR, Crossref

Kategori Publikasi Jurnal Ilmiah :



Jurnal Ilmiah Internasional/Int. Bereputasi**

(beri V pada kategori yang tepat)



Jurnal Ilmiah Nasional Terakreditasi



Jurnal Ilmiah Nasional/ Nasional Terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian *Peer Review* :

Komponen yang dinilai	Nilai Maksimal Jurnal Ilmiah (isikan di kolom yang sesuai)					Nilai Akhir Yang Diperoleh
	Internasional Bereputasi	Internasional	Nasional Terakreditasi	Nasional Tidak Terakreditasi	Nasional Terindeks DOAJ dll	
a. Kelengkapan unsur isi artikel (10%)	4					4
b. Ruang lingkup dan kedalaman pembahasan (30%)	12					11
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12					12
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12					12
Total = (100%)	40					(40 x 39) / 5
Nilai Pengusul						3.12

Komentar Peer
Review

1. Tentang kelengkapan dan kesesuaian unsur :

unsur paper jelas lengkap dan sesuai

2. Tentang ruang lingkup & kedalaman pembahasan :

proses pengumpulan data hingga penrosesan
dengan FFT & FNN di bahas cukup jelas dan
lengkap

3. Kecukupan dan kemutakhiran data serta metodologi :

Metode yang sesuai dengan topik riset
dan mutakhir

4. Kelengkapan unsur kualitas penerbit :

Penerbit merupakan publisher bereputasi
dan memiliki unsur kualitas yang baik

5. Indikasi plagiasi :

Tidak ada indikasi

6. Kesesuaian bidang ilmu :

sesuai dengan bidang ilmu penguji

Januari 2021
Reviewer 1

Nama
NIP/NIY.
Bidang Ilmu
Jabatan Akademik
Unit Kerja

 Fitha Nuryanto S.S. M.S.

*dinilai oleh dua Reviewer secara terpisah

** coret yang tidak perlu

*** nasional/ terindeks di DOAJ, CABI, Copernicus

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: JURNAL ILMIAH**

Judul karya ilmiah (artikel) : Human Emotion Recognition Based on EEG Signal Using Fast Fourier Transform and K-Nearest Neighbor

Jumlah Penulis : 6 Orang

Nama Penulis : Anton Yudhana, Akbar Muslim, Dewi Eko Wati, Intan Puspitasari, Ahmad Azhari, **Murein Miksa Mardhia**

Status Pengusul : ~~Penulis pertama/...~~/penulis keenam /~~penulis korespondensi~~ **

Identitas Jurnal Ilmiah : **a. Nama Jurnal** : Advances in Science, Technology and Engineering Systems Journal (ASTESJ)

b. No ISSN : 2415-6698

c. Vol, No, Bulan, Thn : Vol 5, Issue 6, Page No 1082-1088, 2020

d. Penerbit : ASTES Publishers

e. DOI artikel : 10.25046/aj0506131

f. Alamat web jurnal : <https://astesj.com/v05/i06/>

g. Terindeks Scopus, SimagoJR, Crossref

Kategori Publikasi Jurnal Ilmiah :



Jurnal Ilmiah Internasional/Int. Bereputasi**

(beri v pada kategori yang tepat)



Jurnal Ilmiah Nasional Terakreditasi



Jurnal Ilmiah Nasional/ Nasional Terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian *Peer Review* :

Komponen yang dinilai	Nilai Maksimal Jurnal Ilmiah (isikan di kolom yang sesuai)					Nilai Akhir Yang Diperoleh
	Internasional Bereputasi	Internasional	Nasional Terakreditasi	Nasional Tidak Terakreditasi	Nasional Terindeks DOAJ dll	
a. Kelengkapan unsur isi artikel (10%)	4					3,5
b. Ruang lingkup dan kedalaman pembahasan (30%)	12					11,7
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12					11,3
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12					11,4
Total = (100%)	40					
Nilai Pengusul						37,9

**Komentar Peer
Review**

1. Tentang kelengkapan dan kesesuaian unsur :

Kelengkapan dan kesesuaian unsur dalam paper ini sudah cukup bagus dan lengkap.

2. Tentang ruang lingkup & kedalaman pembahasan :

Ruang lingkup dan pembahasan dalam paper ini sudah cukup baik.

3. Kecukupan dan kemutakhiran data serta metodologi :

Kecukupan dan kemutakhiran data dalam paper ini sudah cukup baik dan metodologi sudah sesuai.

4. Kelengkapan unsur kualitas penerbit :

Unsur kualitas penerbit sudah cukup lengkap.

5. Indikasi plagiasi :

Tidak terdapat indikasi plagiasi dalam paper ini.

6. Kesesuaian bidang ilmu :

Kesesuaian bidang ilmu antara penulis dengan topik dalam paper ini sudah sesuai.

Januari 2021
Reviewer 2



Nama : Lisna Zahrotun, S.T, M.G *dinilai oleh dua Reviewer secara terpisah

NIP/NIY. : 60150773 ** coret yang tidak perlu

Bidang Ilmu : Teknik Informatika *** nasional/ terindeks di DOAJ, CABI, Copernicus

Jabatan Akademik : Lektor

Unit Kerja : FTI UAD