

ISSN 2667-4211

ESKİŞEHİR TECHNICAL UNIVERSITY
JOURNAL OF SCIENCE AND TECHNOLOGY
A – Applied Sciences and Engineering

Volume 24 Number 2 - June - 2023



Volume: 24 / Number: 2 / June - 2023

Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering (ESTUJST-A) is a peer-reviewed and refereed international journal published by Eskişehir Technical University. Since 2000, it has been regularly published and distributed biannually and it has been published quarterly and only electronically since 2016.

The journal accepts only manuscripts written in English.

The journal issues are published electronically in **March, June, September, and December**.

Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering is an international peer-reviewed and refereed journal published by Eskişehir Technical University.

The journal is dedicated to the dissemination of knowledge in applied sciences and engineering disciplines.

The journal aims to publish high quality, original international scientific research articles with specific contributions to the literature in the field of engineering and applied sciences. The journal publishes research papers in the fields of applied science and technology such as Physics, Biology, Mathematics, Statistics, Chemistry and Chemical Engineering, Environmental Sciences and Engineering, Civil Engineering, Earth and Atmospheric Sciences, Electrical and Electronical Engineering, Computer Science and Informatics, Materials Sciences and Engineering, Mechanical Engineering, Mining Engineering, Industrial Engineering, Aeronautics and Astronautics, Pharmaceutical Sciences.

The journal publishes original research articles and special issue articles. All articles are peer-reviewed and the articles that have been evaluated are ensured to meet with researchers as soon as possible.

Eskişehir Technical University holds the copyright of all published material that appear in Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering.

"Anadolu Üniversitesi Bilim ve Teknoloji Dergisi A - Uygulamalı Bilimler ve Mühendislik (Anadolu University Journal of Science and Technology A - Applied Sciences and Engineering)" published within Anadolu University started to be published within Eskişehir Technical University which was established due to statute law 7141, in 2018. Hence, the name of the journal is changed to " Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering (Eskişehir Teknik Üniversitesi Bilim ve Teknoloji Dergisi A - Uygulamalı Bilimler ve Mühendislik)".

Indexed by **ULAKBIM TR Dizin**



Volume: 24 / Number: 2 / June– 2023

Owner / Publisher: Prof. Dr. Adnan ÖZCAN for Eskiőehir Technical University

EDITOR-IN-CHIEF

Prof. Dr. Semra KURAMA

Eskiőehir Technical University, Institute of Graduate Programs, 26470 Eskiőehir, TURKEY

Phone: +90 222 213 7470

e-mail: skurama@eskisehir.edu.tr

CO-EDITOR IN CHIEF

Assoc. Prof. Dr. Savaş S. ATEŐ

Eskiőehir Technical University, Institute of Graduate Programs, 26470 Eskiőehir, TURKEY

Phone: +90 222-213 7472

e-mail: ssates@eskisehir.edu.tr

CO-EDITOR IN CHIEF

Assit. Prof. Dr. Hüseyin Ersin EROL

Eskiőehir Technical University, Institute of Graduate Programs, 26470 Eskiőehir, TURKEY

Phone: +90 222-213 7473

e-mail: heerol@eskisehir.edu.tr

CONTACT INFORMATION

Eskiőehir Technical University Journal of Science and Technology

Eskiőehir Technical University, Institute of Graduate Programs, 26470 Eskiőehir, TURKEY

Phone: +90 222 213 7485

e-mail : btada@eskisehir.edu.tr



Volume: 24 / Number: 2 / June - 2023

OWNER

Adnan ÖZCAN, The Rector of Eskiőehir Technical University

EDITORIAL BOARD

Semra KURAMA, Editor in Chief

Savaş S. ATEŐ, Co-Editor in Chief

Hüseyin Ersin EROL, Co-Editor in Chief

LANGUAGE EDITOR-ENGLISH

İlker DEMİROĐLU

SECTION EDITORS

Emin AÇIKKALP (ESTU, Turkey)
Őener AĐALAR (ESTU, Turkey)
Ziya AKÇA (Eskisehir Osmangazi University, Turkey)
Haydar ARAS (Eskisehir Osmangazi University, Turkey)
TuĐba ARAS (ESTU)
Funda ATEŐ (ESTU, Turkey)
UĐur AVDAN (ESTU, Turkey)
Nezihe AYAS (ESTU, Turkey)
Doç. Dr. Rukiye AYRANCI (Kütahya Dumlupınar University)
Özge BAĐLAYAN (ESTU, Turkey)
Recep BAKIŐ (ESTU, Turkey)
Müfide BANAR (ESTU, Turkey)
Ayőe H. BİLGE (Kadir Has University, Turkey)
Mehmet CANDAN (ESTU, Turkey)
Özgür CEYLAN (ESTU, Turkey)
Rasime DEMİREL (ESTU, Turkey)
İlker DEMİROĐLU (ESTU, Turkey)
Sedef DİKMEN (ESTU, Turkey)
Faruk DİRİSAĐLUK (Eskisehir Osmangazi University)
Barıő ERBAŐ (ESTU, Turkey)
Ömer Nezihe GEREK (ESTU, Turkey)
Özer GÖK (ESTU, Turkey)
Serdar GÖNCÜ (ESTU, Turkey)
Zerrin AŐAN GREENACRE (ESTU, Turkey)
Cihan KALELİ (ESTU, Turkey)
Gordona KAPLAN (ESTU, Turkey)
T. Hikmet KARAKOÇ (ESTU, Turkey)

Onur KAYA (ESTU, Turkey)
Murat KILIÇ (ESTU, Turkey)
Sabiha KOCA (Eskiőehir Osmangazi University, Turkey)
Semra KURAMA (ESTU, Turkey)
Gülbin KURTAY (Ankara University)
Anatoly NİKANOV (Saratov State Technical University, Slovenia)
Murad OMAROV (Kharkiv National University of Radio Electronics, Ukraine)
Emre AytuĐ ÖZSOY (ESTU, Turkey)
Özlem ONAY (ESTU, Turkey)
Gürkan ÖZTÜRK (ESTU, Turkey)
Emrah PEKKAN (ESTU, Turkey)
Najeeb REHMAN (Comsat University, Pakistan)
İsmail Hakkı SARPÜN (Akdeniz University, Turkey)
Sevil SÖYLEYİCİ (Pamukkale University)
UĐur SERİNCAN (ESTU, Turkey)
Cem SEVİK (ESTU, Turkey)
İlkin YÜCEL ŐENGÜN (Ege University, Turkey)
Aynur ŐENSOY ŐORMAN (ESTU, Turkey)
Sevil ŐENTÜRK (ESTU, Turkey)
Engin TIRAŐ (ESTU, Turkey)
Ümran Tezcan ÜN (ESTU, Turkey)
Önder TURAN (ESTU, Turkey)
Osman TUTAL (ESTU, Turkey)
Muammer TÜN (ESTU, Turkey)
Gülay ÜNAL (ESTU, Turkey)
Gülgün YILMAZ ÜNAL (ESTU, Turkey)

Secretary/Typset

Handan YİĐİT



ABOUT

Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering (ESTUJST-A) is a peer-reviewed and refereed international journal published by Eskişehir Technical University. Since 2000, it has been regularly published and distributed biannually and it has been published quarterly and only electronically since 2016.

The journal accepts only manuscripts written in English.

The journal issues are published electronically in **MARCH, JUNE, SEPTEMBER, and DECEMBER.**

AIM AND SCOPE

Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering is an international peer-reviewed and refereed journal published by Eskişehir Technical University.

The journal is dedicated to the dissemination of knowledge in applied sciences and engineering disciplines.

The journal aims to publish high quality, original international scientific research articles with specific contributions to the literature in the field of engineering and applied sciences. The journal publishes research papers in the fields of applied science and technology such as Physics, Biology, Mathematics, Statistics, Chemistry and Chemical Engineering, Environmental Sciences and Engineering, Civil Engineering, Earth and Atmospheric Sciences, Electrical and Electronical Engineering, Computer Science and Informatics, Materials Sciences and Engineering, Mechanical Engineering, Mining Engineering, Industrial Engineering, Aeronautics and Astronautics, Pharmaceutical Sciences.

The journal publishes original research articles and special issue articles. All articles are peer-reviewed and the articles that have been evaluated are ensured to meet with researchers as soon as possible.

PEER REVIEW PROCESS

Manuscripts are first reviewed by the editorial board in terms of its its journal's style rules scientific content, ethics and methodological approach. If found appropriate, the manuscript is then send to at least two renown referees by editor. The decision in line with the referees may be an acceptance, a rejection or an invitation to revise and resubmit. Confidential review reports from the referees will be kept in archive. All submission process manage through the online submission systems.

OPEN ACCESS POLICY

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. Copyright notice and type of licence : **CC BY-NC-ND.**

PRICE POLICY

Eskişehir Technical University Journal of Science and Technology A - Journal of Applied Sciences and Engineering is an English, peer-reviewed, scientific, free of charge open-access-based journal. The author is not required to pay any publication fees or article processing charges (APCs) for peer-review administration and management, typesetting, and open-access. Articles also receive Digital Object Identifiers (DOIs) from the CrossRef organization to ensure they are always available.

ETHICAL RULES

You can reach the Ethical Rules in our journal in full detail from the link below:

<https://dergipark.org.tr/en/pub/estubtda/policy>

Ethical Principles and Publication Policy

Policy & Ethics

Assessment and Publication

As a peer-reviewed journal, it is our goal to advance scientific knowledge and understanding. We adhere to the guideline and ethical standards from the Committee on Publication Ethics (COPE) and the recommendations of ICMJE (International Committee of Medical Journal Editors) regarding all aspects of publication ethics and cases of research and publication misconduct to ensure that all publications represent accurate and original work and that our peer review process is structured without bias. We have outlined a set of ethical principles that must be followed by all authors, reviewers, and editors.

All manuscripts submitted to our journals are pre-evaluated in terms of their relevance to the scope of the journal, language, compliance with writing instructions, suitability for science, and originality, by taking into account the current legal requirements regarding copyright infringement and plagiarism. Manuscripts that are evaluated as insufficient or non-compliant with the instructions for authors may be rejected without peer review.

Editors and referees who are expert researchers in their fields assess scientific manuscripts submitted to our journals. A blind peer review policy is applied to the evaluation process. The Editor-in-Chief, if he/she sees necessary, may assign an Editor for the manuscript or may conduct the scientific assessment of the manuscript himself/herself. Editors may also assign referees for the scientific assessment of the manuscript and make their decisions based on reports by the referees. The Editor-in-Chief makes the final decision regarding the publishing of the manuscript.

Articles are accepted for publication by the Editor-in-Chief in accordance with the COPE (Committee on Publication Ethics). Authors can access this information online via the journals' websites (<https://publicationethics.org/>). Articles are accepted for publication on the understanding that they have not been published and are not going to be considered for publication elsewhere. Authors should certify that neither the manuscript nor its main contents have already been published or submitted for publication in another journal.

The journal adapts the COPE guidelines to satisfy the high-quality standards of ethics for authors, editors, and reviewers:

Duties of Editors-in-Chief and co-Editors

The crucial role of the journal Editor-in-Chief and co-Editors is to monitor and ensure the fairness, timeliness, thoroughness, and civility of the peer-review editorial process. The main responsibilities of Editors-in-Chief are as follows:

- Selecting manuscripts suitable for publication while rejecting unsuitable manuscripts,
- Ensuring a supply of high-quality manuscripts to the journal by identifying important,
- Increasing the journal's impact factor and maintaining the publishing schedule,
- Providing strategic input for the journal's development,

Duties of Editors

The main responsibilities of editors are as follows:

- An editor must evaluate the manuscript objectively for publication, judging each on its quality without considering the nationality, ethnicity, political beliefs, race, religion, gender, seniority, or institutional affiliation of the author(s). Editors should decline any assignment when there is a potential for conflict of interest.
- Editors must ensure the document(s) sent to the reviewers does not contain information of the author(s) and vice versa.
- Editors' decisions should be provided to the author(s) accompanied by the reviewers' comments and recommendations unless they contain offensive or libelous remarks.
- Editors should respect requests (if well reasoned and practicable) from author(s) that an individual should not review the submission.
- Editors and all staff members should guarantee the confidentiality of the submitted manuscript.
- Editors should have no conflict of interest with respect to articles they reject/accept. They must not have a conflict of interest with the author(s), funder(s), or reviewer(s) of the manuscript.
- Editors should strive to meet the needs of readers and authors and to constantly improve the journal.

Duties of Reviewers/Referees

The main responsibilities of reviewers/referees are as follows:

- Reviewers should keep all information regarding papers confidential and treat them as privileged information.
- Reviews should be conducted objectively, with no personal criticism of the author.
- Reviewers assist in the editorial decision process and as such should express their views clearly with supporting arguments.
- Reviewers should complete their reviews within a specified timeframe (maximum thirty-five (35) days). In the event that a reviewer feels it is not possible for him/her to complete the review of the manuscript within a stipulated time, then this information must be communicated to the editor so that the manuscript could be sent to another reviewer.
- Unpublished materials disclosed in a submitted manuscript must not be used in a reviewer's personal research without the written permission of the author. Information contained in an unpublished manuscript will remain confidential and must not be used by the reviewer for personal gain.
- Reviewers should not review manuscripts in which they have conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors, companies, or institutions connected to the papers.

- Reviewers should identify similar work in published manuscripts that has not been cited by the author. Reviewers should also notify the Editors of significant similarities and/or overlaps between the manuscript and any other published or unpublished material.

Duties of Authors

The main responsibilities of authors are as follows:

- The author(s) should affirm that the material has not been previously published and that they have not transferred elsewhere any rights to the article.
- The author(s) should ensure the originality of the work and that they have properly cited others' work in accordance with the reference format.
- The author(s) should not engage in plagiarism or in self-plagiarism.
- On clinical and experimental humans and animals, which require an ethical committee decision for research in all branches of science;

All kinds of research carried out with qualitative or quantitative approaches that require data collection from the participants by using survey, interview, focus group work, observation, experiment, interview techniques,

Use of humans and animals (including material/data) for experimental or other scientific purposes,

- Clinical studies on humans,
- Studies on animals,
- Retrospective studies in accordance with the law on the protection of personal data, (Ethics committee approval should have been obtained for each individual application, and this approval should be stated and documented in the article.)

Information about the permission (board name, date, and number) should be included in the "Method" section of the article and also on the first/last page.

During manuscript upload, the "Ethics Committee Approval" file should be uploaded to the system in addition to the manuscript file.

In addition, in case reports, it is necessary to include information on the signing of the informed consent/ informed consent form in the manuscript.

- The author(s) should suggest no personal information that might make the identity of the patient recognizable in any form of description, photograph, or pedigree. When photographs of the patient were essential and indispensable as scientific information, the author(s) have received consent in written form and have clearly stated as much.
- The author(s) should provide the editor with the data and details of the work if there are suspicions of data falsification or fabrication. Fraudulent data shall not be tolerated. Any manuscript with suspected fabricated or falsified data will not be accepted. A retraction will be made for any publication which is found to have included fabricated or falsified data.
- The author(s) should clarify everything that may cause a conflict of interests such as work, research expenses, consultant expenses, and intellectual property.
- The author(s) must follow the submission guidelines of the journal.
- The author(s) discover(s) a significant error and/or inaccuracy in the submitted manuscript at any time, then the error and/or inaccuracy must be reported to the editor.
- The author(s) should disclose in their manuscript any financial or other substantive conflicts of interest that might be construed to influence the results or interpretation of their manuscript. All sources of financial support should be disclosed under the heading of "Acknowledgment" or "Contribution".
- The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included in the paper and that all co-authors have seen and approved the final version of the paper and have agreed to its submission for publication. All those who have made

significant contributions should be listed as co-authors. Others who have participated in certain substantive aspects of the research should be acknowledged or listed under the heading of “Author Contributions”.

Cancellations/Returns

Articles/manuscripts may be returned to the authors in order to increase the authenticity and/or reliability and to prevent ethical breaches, and even if articles have been accepted and/or published, they can be withdrawn from publication if necessary. The Editor-in-Chief of the journal has the right to return or withdraw an article/manuscript in the following situations:

- When the manuscript is not within the scope of the journal,
- When the scientific quality and/or content of the manuscript do not meet the standards of the journal and a referee review is not necessary,
- When there is proof of ruling out the findings obtained by the research, (When the article/manuscript is undergoing an assessment or publication process by another journal, congress, conference, etc.,)
- When the article/manuscript was not prepared in compliance with scientific publication ethics,
- When any other plagiarism is detected in the article/manuscript,
- When the authors do not perform the requested corrections within the requested time (maximum twenty-one (21) days),
- When the author does not submit the requested documents/materials/data etc. within the requested time,
- When the requested documents/materials/data etc. submitted by the author are missing for the second time,
- When the study includes outdated data,
- When the authors make changes that are not approved by the editor after the manuscript was submitted,
- When an author is added/removed, the order of the authors is changed, the corresponding author is changed, or the addresses of the authors are changed without the consent of the Editor-in-Chief,
- When a statement is not submitted indicating that approval of the ethics committee permission was obtained for the following (including retrospective studies):
- When human rights or animal rights are violated,

ETHICAL ISSUES

Plagiarism

The use of someone else’s ideas or words without a proper citation is considered plagiarism and will not be tolerated. Even if a citation is given, if quotation marks are not placed around words taken directly from other authors’ work, the author is still guilty of plagiarism. Reuse of the author’s own previously published words, with or without a citation, is regarded as self-plagiarism.

All manuscripts received are submitted to iThenticate®, which compares the content of the manuscript with a database of web pages and academic publications. Manuscripts are judged to be plagiarized or self-plagiarized, based on the iThenticate® report or any other source of information, will be rejected. Corrective actions are proposed when plagiarism and/or self-plagiarism is detected after publication. Editors should analyze the article and decide whether a corrected article or retraction needs to be published.

Open-access theses are considered as published works and they are included in the similarity checks.

iThenticate® report should have a maximum of 11% from a single source, and a maximum of 25% in total.

Conflicts of Interest

Eskişehir Technical University Journal of Science and Technology A - Applied Sciences and Engineering should be informed of any significant conflict of interest of editors, authors, or reviewers to determine whether any action would be appropriate (e.g. an author's statement of conflict of interest for a published work, or disqualifying a referee).

Financial

The authors and reviewers of the article should inform the journal about the financial information that will bring financial gain or loss to any organization from the publication of the article.

*Research funds; funds, consulting fees for a staff member; If you have an interest, such as patent interests, you may have a conflict of interest that needs to be declared.

Other areas of interest

The editor or reviewer may disclose a conflict of interest that, if known, would be embarrassing (for example, an academic affiliation or rivalry, a close relationship or dislike, or a person who may be affected by the publication of the article).

Conflict of interest statement

Please note that a conflict of interest statement is required for all submitted manuscripts. If there is no conflict of interest, please state “There are no conflicts of interest to declare” in your manuscript under the heading “Conflicts of Interest” as the last section before your Acknowledgments.

AUTHOR GUIDELINES

All manuscripts must be submitted electronically.

You will be guided stepwise through the creation and uploading of the various files. There are no page charges. Papers are accepted for publication on the understanding that they have not been published and are not going to be considered for publication elsewhere. Authors should certify that neither the manuscript nor its main contents have already been published or submitted for publication in another journal. We ask a signed copyright to start the evaluation process. After a manuscript has been submitted, it is not possible for authors to be added or removed or for the order of authors to be changed. If authors do so, their submission will be cancelled.

Manuscripts may be rejected without peer review by the editor-in-chief if they do not comply with the instructions to authors or if they are beyond the scope of the journal. After a manuscript has been accepted for publication, i.e. after referee-recommended revisions are complete, the author will not be permitted to make any changes that constitute departures from the manuscript that was accepted by the editor. Before publication, the galley proofs are always sent to the authors for corrections. Mistakes or omissions that occur due to some negligence on our part during final printing will be rectified in an errata section in a later issue.

This does not include those errors left uncorrected by the author in the galley proof. The use of someone else's ideas or words in their original form or slightly changed without a proper citation is considered plagiarism and will not be tolerated. Even if a citation is given, if quotation marks are not placed around words taken directly from another author's work, the author is still guilty of plagiarism. All manuscripts received are submitted to iThenticateR, a plagiarism checking system, which compares the content of the manuscript with a vast database of web pages and academic publications. In the received iThenticateR report; The similarity rate is expected to be below 25%. Articles higher than this rate will be rejected.

Uploading Articles to the Journal

Authors should prepare and upload 2 separate files while uploading articles to the journal. First, the Author names and institution information should be uploaded so that they can be seen, and then (using the additional file options) a separate file should be uploaded with the Author names and institution information completely closed. When uploading their files with closed author names, they will select the "Show to Referee" option, so that the file whose names are closed can be opened to the referees.

Preparation of Manuscript

Style and Format

Manuscripts should be **single column** by giving one-spaced with 2.5-cm margins on all sides of the page, in Times New Roman font (font size 11). Every page of the manuscript, including the title page, references, tables, etc., should be numbered. All copies of the manuscript should also have line numbers starting with 1 on each consecutive page.

Manuscripts must be upload as word document (*.doc, *.docx vb.). **Please avoid uploading texts in *.pdf format.**

Symbols, Units and Abbreviations

Standard abbreviations and units should be used; SI units are recommended. Abbreviations should be defined at first appearance, and their use in the title and abstract should be avoided. Generic names of chemicals should be used. Genus and species names should be typed in italic or, if this is not available, underlined.

Please refer to equations with capitalisation and unabbreviated (e.g., as given in Equation (1)).

Manuscript Content

Articles should be divided into logically ordered and numbered sections. Principal sections should be numbered consecutively with Arabic numerals (1. Introduction, 2. Formulation of problem, etc.) and subsections should be numbered 1.1., 1.2., etc. Do not number the Acknowledgements or References sections. The text of articles should be, if possible, divided into the following sections: Introduction, Materials and Methods (or Experimental), Results, Discussion, and Conclusion.

Title and contact information

The first page should contain the full title in sentence case (e.g., Hybrid feature selection for text classification), the full names (last names fully capitalised) and affiliations (in English) of all authors (Department, Faculty, University, City, Country, E-mail), and the contact e-mail address for the clearly identified corresponding author. The first page should contain the full title, abstract and keywords (both English and Turkish).

Abstract

The abstract should provide clear information about the research and the results obtained, and should not exceed 300 words. The abstract should not contain citations and must be written in Times New Roman font with font size 9.

Keywords

Please provide 3 to 5 keywords which can be used for indexing purposes.

Introduction

The motivation or purpose of your research should appear in the “Introduction”, where you state the questions you sought to answer, and then provide some of the historical basis for those questions.

Methods

Provide sufficient information to allow someone to repeat your work. A clear description of your experimental design, sampling procedures, and statistical procedures is especially important in papers describing field studies, simulations, or experiments. If you list a product (e.g., animal food, analytical device), supply the name and location of the manufacturer. Give the model number for equipment used.

Results

Results should be stated concisely and without interpretation.

Discussion

Focus on the rigorously supported aspects of your study. Carefully differentiate the results of your study from data obtained from other sources. Interpret your results, relate them to the results of previous research, and discuss the implications of your results or interpretations.

Conclusion

This should state clearly the main conclusions of the research and give a clear explanation of their importance and relevance. Summary illustrations may be included.

Acknowledgments

Acknowledgments of people, grants, funds, etc. should be placed in a separate section before the reference list. The names of funding organizations should be written in full.

Conflict of Interest Statement

The authors are obliged to present the conflict of interest statement at the end of the article after the acknowledgments section.

Author Contributions

All authors, author contributions and contribution rates should be clearly stated.

References

Writing Style; **AMA; References Writing format** should be used in the reference writing of our journal. If necessary, at this point, the reference writings of the articles published in our article can be examined.

Citations in the text should be identified by numbers in square brackets. The list of references at the end of the paper should be given in order of their first appearance in the text. All authors should be included in reference lists unless there are 10 or more, in which case only the first 10 should be given, followed by ‘et al.’. Do not use individual sets of square brackets for citation numbers that appear together, e.g., [2,3,5–9], not [2], [3], [5]–[9]. Do not include personal communications, unpublished data, websites, or other unpublished materials as references, although such material may be inserted (in parentheses) in the text. In the case of publications in languages other than English, the published English title should be provided if one exists, with an annotation such as “(article in Turkish with an abstract in English)”. If the publication was not

published with an English title, cite the original title only; do not provide a self-translation. References should be formatted as follows (please note the punctuation and capitalisation):

Journal articles

Journal titles should be abbreviated according to ISI Web of Science abbreviations.

Guyon I, Elisseeff A. An introduction to variable and feature selection. *J Mach Learn Res* 2003; 3: 1157-1182.

Izadpanahi S, Ozcinar C, Anbarjafari G, Demirel H. Resolution enhancement of video sequences by using discrete wavelet transform and illumination compensation. *Turk J Elec Eng & Comp Sci* 2012; 20: 1268-1276.

Books

Haupt RL, Haupt SE. *Practical Genetic Algorithms*. 2nd ed. New York, NY, USA: Wiley, 2004.

Kennedy J, Eberhart R. *Swarm Intelligence*. San Diego, CA, USA: Academic Press, 2001.

Chapters in books

Poore JH, Lin L, Eschbach R, Bauer T. Automated statistical testing for embedded systems. In: Zander J, Schieferdecker I, Mosterman PJ, editors. *Model-Based Testing for Embedded Systems*. Boca Raton, FL, USA: CRC Press, 2012. pp. 111-146.

Conference proceedings

Li RTH, Chung SH. Digital boundary controller for single-phase grid-connected CSI. In: *IEEE 2008 Power Electronics Specialists Conference*; 15–19 June 2008; Rhodes, Greece. New York, NY, USA: IEEE. pp. 4562-4568.

Theses

Boynukalin Z. *Emotion analysis of Turkish texts by using machine learning methods*. MSc, Middle East Technical University, Ankara, Turkey, 2012.

Tables and Figures

All illustrations (photographs, drawings, graphs, etc.), not including tables, must be labelled “Figure.” Figures must be submitted in the manuscript.

All tables and figures must have a caption and/or legend and be numbered (e.g., Table 1, Figure 2), unless there is only one table or figure, in which case it should be labelled “Table” or “Figure” with no numbering. Captions must be written in sentence case (e.g., Macroscopic appearance of the samples.). The font used in the figures should be Times New Roman. If symbols such as \times , μ , η , or ν are used, they should be added using the Symbols menu of Word.

All tables and figures must be numbered consecutively as they are referred to in the text. Please refer to tables and figures with capitalisation and unabbreviated (e.g., “As shown in Figure 2...”, and not “Fig. 2” or “figure 2”).

The resolution of images should not be less than 118 pixels/cm when width is set to 16 cm. Images must be scanned at 1200 dpi resolution and submitted in jpeg or tiff format. Graphs and diagrams must be drawn with a line weight between 0.5 and 1 point. Graphs and diagrams with a line weight of less than 0.5 point or more than 1 point are not accepted. Scanned or photocopied graphs and diagrams are not accepted.

Figures that are charts, diagrams, or drawings must be submitted in a modifiable format, i.e. our graphics personnel should be able to modify them. Therefore, if the program with which the figure is drawn has a “save as” option, it must be saved as *.ai or *.pdf. If the “save as” option does not include these extensions, the figure must be copied and pasted into a blank Microsoft Word document as an editable object. It must not be pasted as an image file (tiff, jpeg, or eps) unless it is a photograph.

Tables and figures, including caption, title, column heads, and footnotes, must not exceed 16 × 20 cm and should be no smaller than 8 cm in width. For all tables, please use Word’s “Create Table” feature, with no tabbed text or tables created with spaces and drawn lines. Please do not duplicate information that is already presented in the figures.

Article Corrections and Uploading to the System

Authors should upload the desired edits for their articles without destroying or changing the Template file of the article, by selecting and specifying the relevant edits as Colored, and also submit the Clean version of the article in 2 separate files (using the Additional file option if necessary). * In case of submitting a corrected article, a separate File in Reply to the Referees must be prepared and the "Reply to the Referees" option in the Add additional file option should be checked and uploaded. If a separate file is not prepared in response to the referees, the Author will definitely be asked to upload the relevant file again and the evaluation will be in the pending phase.

CONTENTS

RESEARCH ARTICLE

THE EFFECT OF SYNTHETIC FIBER TYPE ON FRESH, HARDENED AND TOUGHNESS PROPERTIES OF HSFR-SCC <i>C.Kına, E. Balalan, K. Türk</i>	86
CLINICAL DECISION SUPPORT SYSTEM FOR EARLY DIAGNOSIS OF HEART ATTACK USING MACHINE LEARNING METHODS <i>B. Kurt, İ. Buçan Kırkbir</i>	107
NUMERICAL SOLUTIONS OF REACTION-DIFFUSION EQUATION SYSTEMS WITH TRIGONOMETRIC QUINTIC B-SPLINE COLLOCATION ALGORITHM <i>A.Tok Onarcan, N. Adar, İ. Dağ</i>	121
MODELLING OF DIFFERENT MOTHER WAVELET TRANSFORMS WITH ARTIFICIAL NEURAL NETWORKS FOR ESTIMATION OF SOLAR RADIATION <i>K. Kaysal, F. O. Hocaoğlu</i>	141
NONIC B-SPLINE APPROACH FOR ADVECTION DIFFUSION EQUATION <i>E. Kırıl</i>	155