

Journal of Software Engineering and Applications



https://www.scirp.org/journal/jsea

Journal Editorial Board

ISSN 1945-3116 (print) ISSN 1945-3124 (online) https://www.scirp.org/journal/jsea

Editor-in-Chief

Prof. Yashwant K. Malaiya

.

Colorado State University, USA

Editorial Board

Prof. Omar Abu Arqub **Prof. Philip Achimugu** Dr. Nicoletta Adamo-Villani Prof. Abbas H. Hassin Alasadi Dr. Omar H. Alhazmi Dr. Shahzad Ashraf **Prof. Charles W. Butler Prof. Kuang-Hua Chang** Dr. Calvin Yu-Chian Chen Dr. Kim-Kwang Raymond Choo Prof. Beata Czarnacka-Chrobot **Dr. Christian Dawson** Prof. Steven A. Demuriian **Prof. Agostino Forestiero** Dr. Kevin A. Gary Dr. Phan H. Giang Dr. Zonghua Gu **Prof. Yavuz Gunalay** Dr. Nabil Hameurlain Prof. Shanmugasundaram Hariharan **Dr. Wolfgang Herzner Prof. Richard T. Hurley Prof.** Mike Joy Dr. Jacky Wai Keung Dr. Mitsuhiro Kimura **Prof. Chang-Hwan Lee Prof. Pascal Lorenz** Dr. Mohamed Wiem Mkaouer Prof. Nageswara Rao Moparthi Dr. Indrajit Saha

Prof. Janche Sang Prof. Chintakindi Sanjay Prof. Midthe V. Srinath Dr. Eliot Winer Dr. Yongfeng Yin

Prof. Xin Yuan

Al-Balqa Applied University, Jordan Air Force Institute of Technology Kaduna, Nigeria Purdue University, USA University of Basrah, Iraq Taibah University, Saudi Arabia Hohai University, China Colorado State University, USA The University of Oklahoma, USA China Medical University, China University of South Australia, Australia Warsaw School of Economics, Poland Loughborough University, UK The University of Connecticut, USA National Research Council of Italy, Italy Arizona State University, USA George Mason University, USA Zhejiang University, China Bahçeşehir University, Türkiye University of Pau, France Vardhaman College of Engineering, India Austrian Institute of Technology, Austria Trent University, Canada University of Warwick, UK City University of Hong Kong, China Hosei University, Japan Dongguk University, South Korea University of Haute Alsace, France Rochester Institute of Technology, USA K L Deemed to be University, India National Institute of Technical Teachers' Training & Research, Kolkata, India Cleveland State University, USA GITAM University, India STET Women's College, India The Iowa State University, USA School of Reliability and System Engineering, Beihang University (BUAA), China Florida State University, USA



Table of Contents

Volume 16 Number 5

May 2023

Guideline of Test Suite Construction for GUI Software Centered on Grey-Box Approach	
M. Q. TanLi, J. Y. Xiao, Y. Zhang	113
Software Metric Analysis of Open-Source Business Software	
C. W. Butler.	144

Journal of Software Engineering and Applications (JSEA) Journal Information

SUBSCRIPTIONS

The *Journal of Software Engineering and Applications* (Online at Scientific Research Publishing, <u>https://www.scirp.org/</u>) is published monthly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$89 per issue. To subscribe, please contact Journals Subscriptions Department, E-mail: <u>sub@scirp.org</u>

SERVICES

Advertisements Advertisement Sales Department, E-mail: <u>service@scirp.org</u>

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA. E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2023 by Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY). <u>http://creativecommons.org/licenses/by/4.0/</u>

Copyright for individual papers of the journal:

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact: E-mail: jsea@scirp.org

Call for Papers



Journal of Software Engineering and Applications (JSEA)

ISSN 1945-3116 (print) ISSN 1945-3124 (online) https://www.scirp.org/journal/jsea

JSEA is a professional journal in the field of software engineering and application. The goal of this journal is to provide an international platform for engineers and academicians all over the world to promote, share, and discuss various new issues and development in the field of software engineering. It is an archival publication to disseminate the results of fundamental and applied research, especially those relevant to software engineering. This journal aims to encourage deeper understanding and greater effectiveness in the theory analysis and engineering application relevant to software engineering fields.

Subject Coverage

All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Generally, accepted papers will appear online within 3 weeks followed by printed hard copy. The journal publishes original papers including but not limited to the following fields:

Automated Software Design and Synthesis Automated Software Specification Component-Based Software Engineering Computer-Supported Cooperative Work Formal Methods Knowledge Acquisition Object-Oriented Technology Patterns and Frameworks Process and Workflow Management Program Understanding Issues Programming Languages and Software Engineering Reflection and Metadata Approaches Reliability and Fault Tolerance Requirements Engineering Reverse Engineering Software Architecture Software Design Methods Software Domain Modeling and Meta-Modeling Software Engineering Decision Support Software Engineering Education Software Maintenance and Evolution Software Process Modeling Software Quality Software Reuse Software Testing Tutoring, Help, Documentation Systems

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the JSEA.

Notes for Prospective Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

Website and E-mail

https://www.scirp.org/journal/jsea

E-mail: jsea@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

Art and Design Review

Advances in

Advances in Biological

Entomolog

Applied Mathematics

Engineering

uitit e

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



Soft

Website: https://www.scirp.org Subscription: sub@scirp.org Advertisement: service@scirp.org