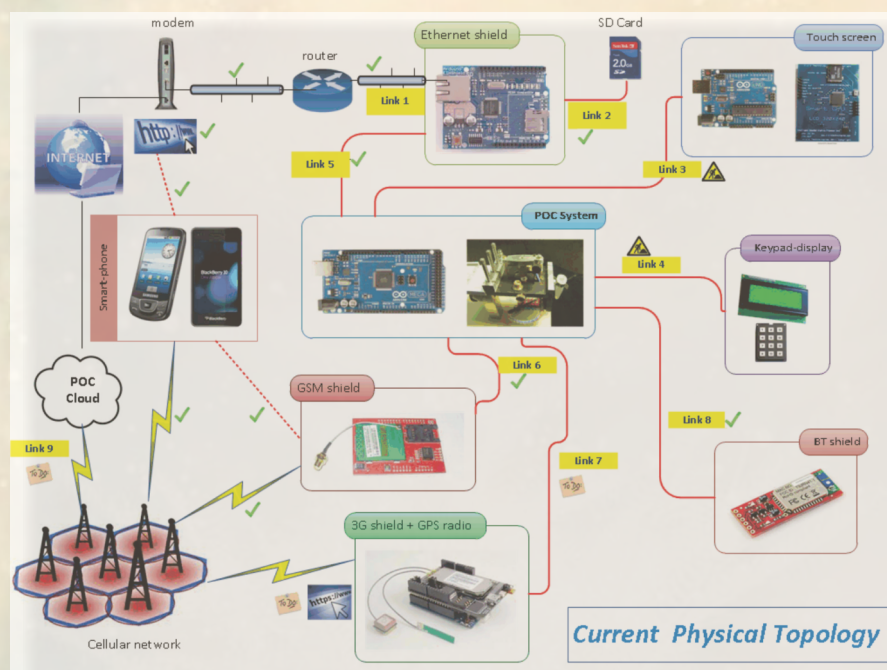




# Journal of Software Engineering and Applications

Special Issue on Software Engineering for Safety-Critical  
Systems and Medical Devices



# Journal Editorial Board

ISSN 1945-3116 (print) ISSN 1945-3124 (online)

<http://www.scirp.org/journal/jsea>

---

## Editor-in-Chief

**Prof. Yashwant K. Malaiya**

Colorado State University, USA

## Editorial Board (According to Alphabet)

**Dr. Nicoletta Adamo-Villani**

Purdue University, USA

**Prof. M. G. J. van den Brand**

Eindhoven University of Technology, Netherlands

**Prof. Kuang-Hua Chang**

The University of Oklahoma, USA

**Dr. Calvin Yu-Chian Chen**

China Medical University, China

**Dr. Kim-Kwang Raymond Choo**

University of South Australia, Australia

**Prof. Steven A. Demurjian**

The University of Connecticut, USA

**Dr. Phan H. Giang**

University of Kansas, USA

**Dr. Zonghua Gu**

Zhejiang University, China

**Dr. Nabil Hameurlain**

University of Pau, France

**Dr. Wolfgang Herzner**

Austrian Institute of Technology, Austria

**Dr. Jacky Wai Keung**

The Hong Kong Polytechnic University, China

**Dr. Mitsuhiro Kimura**

Hosei University, Japan

**Prof. Chang-Hwan Lee**

Dongguk University, South Korea

**Prof. Anthony F. Norcio**

University of Maryland, USA

**Prof. Janche Sang**

Cleveland State University, USA

**Prof. Midthe V. Srinath**

Mahendra Engineering College, India

**Dr. Eliot Winer**

The Iowa State University, USA

**Prof. Xin Yuan**

Florida State University, USA

## TABLE OF CONTENTS

**Volume 6    Number 9A**

**September 2013**

**Process of Designing Robust, Dependable, Safe and Secure Software  
for Medical Devices: Point of Care Testing Device as a Case Study**

S. Tulasidas, R. Mackay, P. Craw, C. Hudson, V. Gkatzidou, W. Balachandran.....1

**APN Model for Specification of the Communication Protocols in Multi-Agent System**

M. Borhen, K. Barkaoui, N. H. Alouane.....14

**Critical Energy Infrastructure: Cyberterrorism Threats and Means of Protection**

V. A. Vasenin.....23

**New Theoretical Aspects of Software Engineering for  
Development Applications and E-Learning**

E. Lavrischeva, A. Ostrovski.....34

---

The figure on the front cover is from the article published in *Journal of Software Engineering and Applications*, 2013, Vol. 6, No. 9A, pp. 1-13 by Sivanesan Tulasidas, *et al.*

# **Journal of Software Engineering and Applications (JSEA)**

## **Journal Information**

### **SUBSCRIPTIONS**

The *Journal of Software Engineering and Applications* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published monthly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **SERVICES**

#### **Advertisements**

Advertisement Sales Department, E-mail: [service@scirp.org](mailto:service@scirp.org)

#### **Reprints (minimum quantity 100 copies)**

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **COPYRIGHT**

Copyright©2013 Scientific Research Publishing, Inc.

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as described below, without the permission in writing of the Publisher.

Copying of articles is not permitted except for personal and internal use, to the extent permitted by national copyright law, or under the terms of a license issued by the national Reproduction Rights Organization.

Requests for permission for other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale, and other enquiries should be addressed to the Publisher.

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](mailto:jsea@scirp.org)



# Call for Papers

## Journal of Software Engineering and Applications (JSEA)

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

**JSEA** publishes four categories of original technical articles: papers, communications, reviews, and discussions. Papers are well-documented final reports of research projects. Communications are shorter and contain noteworthy items of technical interest or ideas required rapid publication. Reviews are synoptic papers on a subject of general interest, with ample literature references, and written for readers with widely varying background. Discussions on published reports, with author rebuttals, form the fourth category of JSEA publications.

### Subject Coverage

All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Accepted papers will immediately appear online 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

<http://www.scirp.org/journal/jsea>

E-mail: [jsea@scirp.org](mailto:jsea@scirp.org)