Need

Institutional Sign In

Cart (1) | Welcome wu chen | Sign Out

Browse

My Settings

Get Help

Subscribe

Contents

Journals & Magazines > IEEE Access > Volume: 4

## Robustness Testing of Embedded Software Systems: An **Industrial Interview Study**

Publisher: IEEE

Cite This

Cite This

PDF

for your organization

**Full-Text** 

CONTACT IEEE TO SUBSCR

access to IEEE Xplore

4 Author(s)

Syed Muhammad Ali Shah ; ...

**View All Authors** 

7 2042 Full Paper Citations Text Open Acces Views Comment(s)

Abstract

**Document Sections** 

I. Introduction

II. Related Work

III. Research Method

IV. Results

V. Discussion

Authors

References

Citations

Keywords

Metrics

More Like This

Footnotes

**Abstract:** Embedded software is at the core of current and future telecommunication, automotive, multimedia, and industrial automation systems. The success of practically any indust... View more

## Metadata

## Abstract:

Embedded software is at the core of current and future telecommunication, automotive, multimedia, and industrial automation systems. The success of practically any industrial application depends on the embedded software system's dependability, and one method to verify the dependability of a system is testing its robustness. The motivation behind this paper is to provide a knowledge base of the state of the practice in robustness testing of embedded software systems and to compare this to the state of the art. We have gathered the information on the state of the practice in robustness testing from seven different industrial domains (telecommunication, automotive, multimedia, critical infrastructure, aerospace, consumer products, and banking) by conducting 13 semi-structured interviews. We investigate the different aspects of robustness testing, such as the general view of robustness, relation to requirements engineering and design, test execution, failures, and tools. We highlight knowledge from the state of the practice of robustness testing of embedded software systems. We found different robustness testing practices that have not been previously described. This paper shows that the state of the practice, when it comes to robustness testing, differs between organizations and is quite different from the state of the art described in the scientific literature. For example, methods commonly described in the literature (e.g., the fuzzy approach) are not used in the organizations we studied. Instead, the interviewees described several ad hoc approaches that take specific scenarios into account (e.g., power failure or overload). Other differences we found concern the classification of robustness failures, the hypothesized root causes of robustness failures, and the types of tools used for robustness testing. This paper is a first step in capturing the state of the practice of robustness testing of embedded software systems. The results can be used by both researchers and...



Rapid embedded system testing using verification patterns

IFFF Software

Published: 2005

Model-Based Test Case Generation by Reusing Models From Runtime Monitoring of Deeply Embedded Systems

IEEE Embedded Systems Letters

Published: 2013

View More

Top Organizations with Patents on Technologies Mentioned in This Article

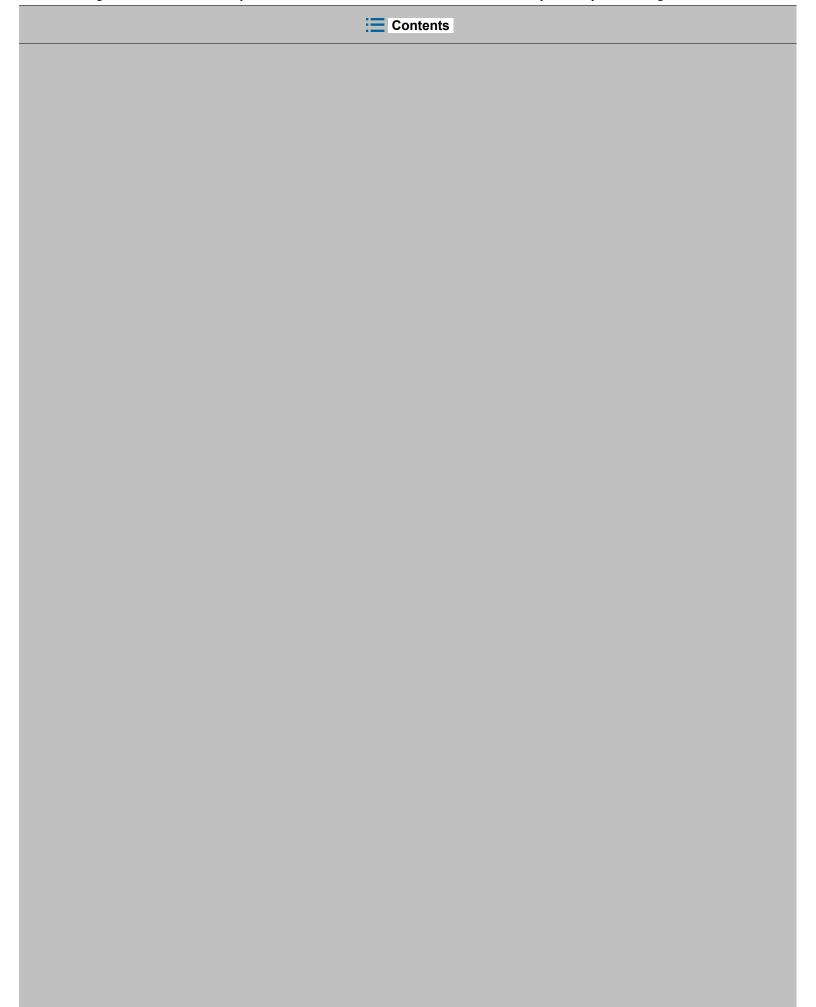
**ORGANIZATION 4 ORGANIZATION 3** ORGANIZATION 2



**New IEEE Open Access Journals** 



1 of 2 3/27/2020, 4:11 PM



2 of 2