

**Aquitaine –Karnataka collaboration
Scientific Project for Pre-PhD student exchange**

Scientific Proposal

Project Title	A Study of Automated Feedback Methods for Bad Software Bug Fixes	
Scientific domain	Software Testing, Verification and Program Analysis	
Summary (ca. 10 lines)	<p>A dominant activity in software engineering process is about fixing bugs. Bug fixes are often buggy themselves leading to bad fixes or creation of new bugs. In a study reported in [1], bad fixes are about 9% of all the bug fixes in some chosen open source projects (this figure is expected to be higher in industrial projects). The question arises about what kind of automatic feedback could be provided to developers about bad bug fixes. It is an important problem to be addressed as the above affects the reliability of software</p> <p>The proposed project aims to</p> <ul style="list-style-type: none"> • Document systematically already reported research results in algorithms/tools for identifying bad bug fixes along with their strengths and weaknesses • Use criteria such as coverage or disruption to assess whether a fix resolves a bug; apply the concept of Weakest Precondition in the algorithms • Develop algorithms for identifying impact of bad bug fixes in one module (class) on another and providing necessary feedback to developers about the affected modules (classes) • Indicate how the existing algorithms reported in literature may be extended to concurrent or multi-threaded programs 	
Student profile wished	Computer Science back ground with an Interest in both Theory and Implementation of Tools.	
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Timing & duration for project (give approximate ranges)	6 months preferred; OR \geq 3 months also fine.	
Representative References	References [1] Zhongian G., Earl T.B., David J.H., Zhendong S. [2010] Has the Bug Really Been Fixed? , ICSE.	

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