Fedex Institute of Technology  
University of Memphis  

Systems Testing Excellence Program  

CALL FOR RESEARCH PROPOSALS  

The Systems Testing Excellence Program represents a major interdisciplinary collaborative research effort at the University of Memphis designed to position the university as a leader in systems testing research. The program has a unique partnership with the Global Testing Center of Excellence of Fedex Corporation, serving as its key research and training partner.

The Program defines systems testing as a strategic and interdisciplinary area of interest encompassing all aspects of the testing of business systems including hardware testing, software testing, requirements testing and the testing of business rules. At a theoretical level it encompasses all forms of validation and verification of business applications using a systems thinking approach to ensure the successful development and application of technology in business.

To provide a kick-start to interdisciplinary research in systems testing, the STEP program is calling for proposals from faculty at the University of Memphis for research pertaining to all aspects of systems testing. The program is looking to provide seed funding of between $5-10K for about eight projects that will help establish the University as a research hub for the science of systems testing. Proposals should be between 8 and 12 pages in length and explain the following: justification for research, theoretical basis, research method, and expected contributions to both theory and practice, researcher bios, timeline and a short budget. Applicants are also encouraged to specify in their proposals opportunities and mechanisms for data collection and collaboration with the Global Testing Center of Excellence at Fedex Corporation. Faculty whose proposals are selected for funding will be designated as Systems Testing Research Fellows of the Fedex Institute of Technology. They will also be required to present their research at an International Workshop on Advances and Innovations in Systems Testing that will be held at the University in the Spring of 2007.

Some specific areas of research interest include:

Risk assessment models for designing testing plans  
Risk tolerance in testing for software changes  
Test automation issues, solutions, tools and frameworks  
Testability analysis, verification and measurement for component-based software  
Design for testability of components and component-based systems  
Performance evaluation models and measurement metrics for testing environments
Testing of infrastructures: scaling and implementation issues
Cultural and professional differences between testing and development personnel
Interplay between unit and system testing in complex integrated systems
Career ladders and training needs analysis for testing personnel
Reassessments of the traditional role of testing in the SDLC
Test scheduling and coordination in complex environments
Test-driven development methodologies
Integrating security testing and systems testing
Inter-cultural and communication issues in dealing with offshore testing vendors
Decision and optimizations models for the outsourcing of testing work
Real-time testing management on a 24 x 7 basis
Process optimization of test planning and implementation
Serial and parallel testing cycles and structures for effective implementation
Data and load management issues in testing environments
Testing and disaster recovery failover capabilities
Platform independent testing methods and processes

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