Piramanayagam Arumuga Nainar

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Research Interests

Programming Languages, Software Engineering. Dynamic and Statistical Debugging Methods.

Education

PhD in Computer Science, expected in December 2011
M.S. in Computer Science, May 2007; GPA: 3.94

- Advisor: Prof. Ben Liblit
- Minor in Mathematics

University of Wisconsin-Madison

B.E. in Computer Science, April 2005; GPA: 3.7
College of Engineering, Guindy,
Anna University, Chennai, India

Publications

P. Arumuga Nainar, T. J. Rosin and B. Liblit. Statistical Debugging Using Compound Boolean Predicates. In the 2007 International Symposium on Software Testing and Analysis (ISSTA).

M. Musuvathi, S. Qadeer, T. Ball, G. Basler, P. Arumuga Nainar, I. Neamtiu. Finding and Reproducing Heisenbugs in Concurrent Programs. In the Eighth Symposium on Operating System Design and Implemenatation (OSDI 2008).

P. Arumuga Nainar and B. Liblit. Adaptive Bug Isolation. In the 32nd International Conference on Software Engineering (ICSE 2010).

Talks

Statistical Debugging using Compound Boolean Predicates, ISSTA 2007

Automated Adaptive Bug Isolation Using Dyninst

- Departmental Summer RA talks, October 2006
- Revised version presented at Paradyn/Condor Week, April 2007

Adaptive Bug Isolation, ICSE 2010

Research Summary

Cooperative Bug Isolation for x86 binaries Bug isolation in binary code is necessary for reasons such as the need to debug libraries or non-availability of source code. Performance overhead, which is a critical issue, is reduced using two methods: control flow analysis to find a minimal set of instrumentation points, and self-removing instrumentation.

Adaptive Bug Isolation We further reduce performance overhead in binary instrumentation using adaptive instrumentation updates after deployment. At any stage, only a small subset of behaviors is instrumented, resulting in low-overhead monitoring.

Propositional Combination of Bug Predicates We augment CBI's bug predictive ability by combining predicates on program state using logical operations (conjunction and disjunction).

Work Experience

- *Research Assistant* in the Cooperative Bug Isolation (CBI) project - since Spring 2006
- *Research Intern* at Microsoft Research - Summer 2007.
  - Extension of the CHESS model checker to check Windows User Mode drivers.
- *Teaching Assistant* at UW Madison - Fall 2005.
  - Assistance for Introduction to Data Structures.
- *Summer Intern* at Microsoft India - Summer 2004.
  - Regression tests for PEAP authentication in the 'Routing and Remote Access Server'.

Honors and Awards

- UW CS Departmental Summer Graduate Research Assistantship, Summer 2006
- All India Rank 2 in GATE 2005 for entrance to graduate studies in India
- 4th place in the ACM ICPC NCNA Regional Contest, 2006
- 6th place in the ACM ICPC IIT Bombay Regional Contest, 2005
- National Talent Scholarship, also known as NTSE, awarded by NCERT, India
- Top 0.1% percentile in Mathematics in AISSE 1999
  - Merit certificate from Central Board of Secondary Education, India

Other Activities

National Service Society (India)
ACM Students Chapter, Anna University
Computer Science Engineers Association, Anna University

Personal Information

Country of Citizenship: India
US Visa Status: F1

References

Available on request.