

	<p>Abhik ROYCHOUDHURY</p> <p><a href="mailto:abhik@comp.nus.edu.sg">abhik@comp.nus.edu.sg</a> +65 6516 8939</p> <p><a href="https://www.comp.nus.edu.sg/~abhik">https://www.comp.nus.edu.sg/~abhik</a></p>	<p>Provost's Chair Professor, NUS</p> <p>Director, National Satellite of Excellence in Trustworthy Software Systems</p> <p>PI, Singapore Cyber-security Consortium</p>
---	--	--

## Research Interests

- Program Analysis, Software Security, Trustworthy Systems.

## Education

- Ph.D. in Computer Science, State University of New York at Stony Brook, 2000.

**Employment** National University of Singapore, School of Computing, since 2001.

- Provost's Chair Professor (2020 – now).
- Professor, Computer Science Department (2014 - now).
- Vice Dean of Graduate Studies overseeing ~500 graduate students (2013-16).
- Associate Professor, Computer Science Department (2007-2014).
- Assistant Professor, Computer Science Department (2001-2007).

## Recent Projects and Initiatives

- Software Recovery using Semantic Program Repair, DSO, PI, \$1.8M, 2020-22.
- FuzzInfer: Fuzzing Protocol Implementations, DSO, PI, ~\$500K, 2019-21.
- National Satellite of Excellence in Trustworthy Software Systems, PI, \$12M, 2019-23.
- [Trustworthy Systems from Un-trusted Component Amalgamations](#), PI, funded by National Research Foundation Singapore, 2015 – 2020, SGD 6.1M.
- Self-Healing Software, Office of Naval Research, USA, PI, 2018-20, USD120K.
- [Singapore Cyber-security Consortium](#), PI, 2016-22, SGD 4.8M, ~30 member companies.

## Selected Publications

- SemFix: Program Repair via Semantic Analysis, HDT Nguyen, D Qi, A Roychoudhury, S Chandra, ICSE 2013.
- Coverage-based Greybox Fuzzing as Markov Chain, M Böhme, VT Pham, A Roychoudhury, CCS 2016.
- Angelix: Scalable Multi-line Program Patch Synthesis via Symbolic Analysis, S Mehtaev, J Yi and A Roychoudhury, ICSE 2016.

## Recent Student Placement

- [Sergey Mehtaev](#), PhD NUS 2018 -> University College London, UK as Lecturer (2018).
- [Shin Hwei Tan](#), PhD NUS 2018 -> SUSTech, China, as Assistant Professor (2018).
- [Marcel Böhme](#), PhD NUS 2014 -> Monash University, Australia as Sr. Lecturer (2018).
- Van Thuan Pham, PhD NUS 2017 -> University of Melbourne as Lecturer (2020).
- Sudipta Chattopadhyay, PhD NUS 2014 -> Assistant Professor at SUTD since 2017.

**Teaching** Introduced several courses at NUS, and authored a textbook on software validation.

- *Software Testing*: Compare test-driven development with requirements driven development via hands-on projects
- *Software Security*: Introduce fuzzing, hardening and related topics.
- *Software Validation*: Range of techniques from testing, static analysis, dynamic analysis, model checking and theorem proving
- Authored a textbook “Embedded Systems and Software Validation” under Elsevier in 2009. Translated to Chinese by Tsinghua University Press in 2011-12.

### Recent Invited Talks and Keynotes

- Conference Keynote at 25<sup>th</sup> Australasian Software Engineering Conference 2018, 4<sup>th</sup> IEEE/ACM Intl. Conference on Mobile Software Engineering and Systems (MobileSoft) 2017, 21<sup>st</sup> Intl. Symposium on Real-time Computing (ISORC) 2018, ...
- Distinguished Lecture at University of Luxembourg (Jan 2017), Peking University (Dec 2017), Max Planck Institute of Software Systems (2019), KAIST (2020).

### Awards and Honors

- Distinguished paper award ESEC-FSE09, ICSE 2020.
- Distinguished reviewer award ASE 2018.
- ACM Distinguished Speaker 2013-19.
- IBM Faculty Award 2009.

### Translational Impact

- [AFLFast](#) and AFLGo as extended grey-box fuzzing tools, built on top of AFL, for detecting program vulnerabilities. AFLFast has been integrated to the regular AFL distribution after significant discussion within the AFL user group.
- [Angelix](#) tool for automated repair of C programs using symbolic execution, has been used for intelligent tutoring systems to teach programming to large cross-sections of students in India, in collaboration with Indian Institute of Technology (IIT) Kanpur.
- [Corebench](#), a benchmark suite of realistic regression errors has been widely used by the software engineering community for studying real-life complex regression errors.

### Recent Professional Service

- Program Committee (PC) chair, ISSTA 2016.
- General chair, ACM SIGSOFT FSE 2022.
- Co-organizer, Dagstuhl Seminar on Program Repair, 2017.
- Co-organizer, Shonan Meeting on Fuzzing and Symbolic Execution, 2019.
- Associate Editor, IEEE Transactions on Software Engineering, 2014-18, ACM Transactions on Software Engineering and Methodology (current), IEEE Transactions on Dependable and Secure Computing (current).
- PC member of several conferences including ICSE20 (Program Board), FSE20, ..

### Citations

<https://scholar.google.com.sg/citations?user=UxFWSJIAAAAJ&hl=en>