Sanjeev Kumar Das

Department of Computer Science
University of North Carolina at Chapel Hill
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RESEARCH INTERESTS	Software Security, System Security, Exploit Detection, Vulnerability Detection, Malware Analysis, Program Analysis, Reverse Engineering

PROFESSIONAL EXPERIENCE

Department of Computer Science, University of North Carolina at Chapel Hill, USA
Postdoctoral Research Associate — **Feb. 2017 - Present**

Cybersecurity Lab, NTU, Singapore
Research Assistant — **Aug. 2016 - Jan. 2017**

Cybersecurity Lab, NTU, Singapore
Research Scholar — **Aug. 2012 - July 2016**

IBM, Bangalore, India
System Engineer — **May 2010 - June 2012**

EDUCATION

Nanyang Technological University (NTU), Singapore
Ph.D., Computer Engineering — **Fall 2012 - 2016**
- Thesis: *Hardware-Assisted Online Defense Against Malware and Exploits*
- *Advisors:* Professor Yang Liu and Professor Wei Zhang
- GPA: 4.25/5

National Institute of Technology, Surat, India
B.Tech., Electronics Engineering — **Fall 2006 - 2010**
- Project: *Microcontroller based Remote Weather/Pollution Monitoring System*
- GPA: 8.64/10

PUBLICATIONS

Peer Reviewed Conferences & Journals

- **SoK: The Challenges, Pitfalls, and Perils of Using Hardware Performance Counters for Security**
  Sanjeev Das, Jan Werner, Manos Antonakakis, Michalis Polychronakis, and Fabian Monrose. To appear in *Proceedings of the 40th IEEE Symposium on Security & Privacy (S&P). May 2019, San Francisco, CA.*

- **SGXlinger: A New Side-channel Attack Vector Based on Interrupt Latency against Enclave Execution**
  Wenjian He, Wei Zhang, **Sanjeev Das** and Yang Liu. In *36th IEEE International Conference on Computer Design (ICCD), 2018.*

- **ROPSentry: Runtime Defense against ROP Attacks using Hardware Performance Counters.**
  Sanjeev Das, Chen Bihuan, Mahintham Chandramohan, Yang Liu, and Wei Zhang. *Computers & Security 73, 374-388 (2018). Impact Factor 2.849*

- **No-Jump-into-Basic-Block: Enforce Basic Block CFI on the Fly for Real-world Binaries.**
  Wenjian He, **Sanjeev Das**, Wei Zhang, Yang Liu. In *Proceedings of Design Automation Conference* (**DAC**) (**Best paper nomination**), *2017.*

- **Semantics-based Online Malware Detection: Towards Efficient Real-time Protection Against Malware.**
  Sanjeev Das, Yang Liu, Wei Zhang and Mahintham Chandramohan. *IEEE Transactions on Information Forensics and Security* (**TIFS**) *11.2 (2016): 289-302. Impact Factor 5.824.*

- **A Fine-Grained Control Flow Integrity Approach Against Runtime Memory Attacks for Embedded Systems.**
  Sanjeev Das, Wei Zhang, and Yang Liu. *IEEE Transactions on Very Large Scale Integration Systems* (**TVLSI**), *24.11 (2016): 3193-3207. Impact Factor 1.744.*

- **Online Malware Defense Using Attack Behavior Model.**
  Sanjeev Das, Hao Xiao, Yang Liu, Wei Zhang. In *Proceedings of IEEE International Symposium on Circuits & Systems* (**ISCAS**), *2016.*

- **Reconfigurable Dynamic Trusted Platform Module for Control Flow Checking.**
  Sanjeev Das, Wei Zhang, Yang Liu. In *Proceedings of IEEE Computer Society Annual Symposium on VLSI* (**ISVLSI**), *2014.*
- **FPGA Based Control Flow Checking.**
  Sanjeev Das, Wei Zhang, Yang Liu. In *Proceedings of Design Automation Conference* (**DAC**), *2014 (poster).*

TECHNOLOGY DISCLOSURE

- **Semantics-Based Online Malware Detection: Towards Efficient Real-Time Protection Against Malware.**
  Yang Liu, Thambipillai Srikanthan, **Sanjeev Das**. *Technology Disclosure for Nanyang Technological University* (**TD/098/16**), *2016.*
- **Malware Defense Using Attack Behavior Model.**
  Yang Liu, Thambipillai Srikanthan, **Sanjeev Das**. *Technology Disclosure for Nanyang Technological University* (**TD/099/16**), *2016.*
- **Runtime Security Protection Using Hardware Specific Features.**
  Yang Liu, Thambipillai Srikanthan, **Sanjeev Das**. *Technology Disclosure for Nanyang Technological University* (**TD/100/16**), *2016.*

PROFESSIONAL SERVICES

Journal Reviewer
- ACM Computing Survey
- Computer & security
- International Journal of Information Security
- IET Information Security
- IEEE Access
- IET Computers & Digital Techniques

CONFERENCE TALKS

Online Malware Defense Using Attack Behavior Model.
In *IEEE Int'l Symposium on Circuits & Systems (ISCAS), Montreal, Canada, May 2016.*

AWARDS & FELLOWSHIP

Singapore International Graduate Award (SINGA)   **Aug. 2012 - July 2016**
- Full scholarship to pursue PhD study at Nanyang Technological University.

Nepal Aid Fund Scholarship   **2006 - 2010**
- Selected in top 70 students (out of 10,000) to pursue undergraduate study by Ministry of External Affairs, India, with a full scholarship.

IBM
- **Roll of Honor** for the excellence in design and coding of the application.
- **GEM (Great Ericsson Minds)** award by the joint collaboration of IBM and the client Ericsson.

ACADEMIC EXPERIENCE

School of Computer Science and Engineering, NTU, Singapore
Teaching Assistant   **Jan. 2015 - April 2015**
- CZ2005: Operating Systems

TECHNICAL SKILLS

- Languages: ASM (x86, ARM), C, C++, Java, Python, Perl, Bash, JavaScript, LaTeX
- Debugger: WinDbg, Immunity Debugger, GDB, Valgrind
- Operating Systems: Linux, Microsoft Windows, Mac OS X, Kali
- Architectures: x86, x86-64
- Virtualization tools: VMware, Virtualbox
- Web Platform: J2EE (JSP & Servlet), WebSphere Portal, HTML, jQuery, XML
- IDE: Eclipse, Visual Studio
- Security tools: Metasploit, IDA Pro, Wireshark
- Device driver development on Windows/Linux
- API hooking, DLL creation, injection
- Vulnerability detection using Fuzzing

References   Dr. Fabian Monrose(Postdoc Advisor)
Professor, Department of Computer Science,
University of North Carolina at Chapel Hill
Email: fabian@cs.unc.edu

Dr. Yang Liu (PhD Advisor)
Assistant Professor, School of Computer Science & Engineering
Nanyang Technological University
Email: yangliu@ntu.edu.sg

Dr. Wei Zhang (Co-Advisor)
Assistant Professor, Department of Electronic & Computer Engineering
Hong Kong University of Science and Technology
Email: wei.zhang@ust.hk