Jinank Jain

CONTACT
INFORMATION

Blog: http://jinankjain.github.io
Email: jjain@ethz.ch

LinkedIn: https://in.linkedin.com/in/jinankjain
GitHub: https://github.com/jinankjain

EDUCATION

ETH Zurich, Switzerland   **Sep 2016 − Present**

Masters of Science, Computer Science   GPA: 5.3/6

Indian Institute of Technology Jodhpur, India   **Jul 2012 − May 2016**

Bachelors of Technology, Computer Science and Engineering   GPA: 9.5/10

BACHELORS
THESIS

Topic: **Information Flow Control in Non Closed Networks**   **Jul 2015 − May 2016**

Supervised by: **Dr Deepak Garg**

- Developed an algorithm to detect information flow between particular nodes in a dynamically evolving network.
- Devised a method to give signature to verify the authenticity of a live video stream using low power devices like 8-bit micro-controllers.
- Mathematically formalize cross domain information flows and established theorems to detect information leaks, reducing the complexity from exponential to polynomial.

PREVIOUS
INTERNSHIP

Amazon Inc., Dresden, Germany   **Sep 2017 − March 2018**

Kernel and Hypervisor Team AWS

GOLANG,
KUBERNETES,
DOCKER

Shopify Inc., Ottawa, ON, Canada   **Jun 2017 − Sep 2017**

Infrastructure Security Team

- Worked on securely porting the current Shopify platform to Google Cloud using Kubernetes
- Developed an internal tool for auditing all the kubernetes configuration files from a security prospective

C++

Carnegie Mellon University, Pittsburgh, PA, USA   **Jun 2016 − Sep 2016**

Supervised by: **Dr. Lujo Bauer, Dr. Limin Jia**

Topic: **Information Flow Control in Dynamic Tree Structures**

- Studied about the vulnerabilities caused by malicious chrome extensions by exploiting APIs provided by Chromium.
- Developed a label model for preventing information leaks in dynamic tree structures like Bookmarks and implemented this model for Chromium browser.
- Working on extending this work for more richer Dynamic Tree Structures like Document Object Model (DOM).

C++

Max Planck Institute for Software Systems, Saarbrucken, Germany **May 2015 − Jul 2015**

Supervised by: **Dr. Deepak Garg**

Topic: **Information Flow Control in Browsers**

- Worked on developing a taint tracking framework in Webkit (Safari) Browser Engine to track flows of sensitive information at fine granularity.
- Implemented Label Checks for Information Flow Control in Webkit and achieved considerable overhead for Alexa Top 10 websites.
- Enhanced JavaScript Interpreter API calls to enable the support for dynamic runtime policies which could be expressed via Javascript itself.

SELECTED
PUBLICATIONS

Abhishek Bichhawat, Vineet Rajani, Jinank Jain, Deepak Garg, Christian Hammer "WebPol: Fine-grained Information Flow Policies for Web Browsers" *ESORICS 2017*

Jhuma Sen Gupta, Rajen K. Sinha, G. M. M. Reddy, Jinank Jain. "A Posteriori Error Analysis of Two-Step Backward Differentiation Formula Finite Element Approximation for Parabolic Interface Problems", *The Journal of Scientific Computing*.

OPEN SOURCE
CONTRIBUTIONS

C++   **Mozilla Firefox**
- Contributed to multiple bugs especially relating to Javascript Engine.
- Vouched by various senior member of the community with a level 2 commit access in the firefox repository.

RUBY   **Mozilla ssh_scan**
- Co-authoring this new initiative by Mozilla community for developing a tool SSH configuration and policy scanner
- Ruby gem of ssh_scan has over 21K downloads.

PROJECTS

JAVA, PYTHON, SHELL SCRIPT   **Middleware for Memcached**, ETH Zurich   **Sep 2016**

Supervised by: **Dr. Gustavo Alonso**
- Developed a middleware for balancing load on memcached server and deployed on Azure cloud platform.
- Performed some rigorous performance testing and bottleneck analysis using Queueing Theory

C   **Barrelfish - Research Operating Systems**, ETH Zurich   **Sep 2016**

Supervised by: **Dr. Timothy Roscoe**
- Wrote a complete operating system from scratch from physical memory management to spawning new processes, inter core communication.
- Compared different operating systems like Linux in terms of security guarantees and performance trade off.

C   **Fast Fractal Compression**, ETH Zurich   **May 2017**

Supervised by: **Dr. Markus Puschel**
- Redesigned the fractal compression to make it more cache friendly and embrace the power of SIMD instructions provided by modern architectures.
- Acheived speed up of around 14x on a single core.

PYTHON, DOCKER   **Privacy Preserving DNS (PageDNS)**, ETH Zurich   **May 2017**

Supervised by: **Dr. Adrain Perrig**
- Worked on the implementation of a novel approach to DNS Privacy and analyzed the privacy guarantees of the system
- Extensive evaluation of the system aganist the current DNS/DNSSEC in terms of performance and client side overhead

JAVA, RUST, PYTHON   **APSP Routing in SDNs using Differential Dataflow**, ETH Zurich   **May 2017**

Supervised by: **Dr. Timothy Roscoe**
- Interfaced Open Network Operating Systems (ONOS) with a distributed routing algorithm working on delta updates using differential dataflows
- Performed rigorous benchmarking using different emulated topologies in Mininet.

PYTHON, TENSORFLOW, KERAS   **Twitter Sentiment Analysis**, ETH Zurich   **May 2017**

Supervised by: **Dr. Thomas Hoffman**
- Developed an ensemble of CNNs, RNNs and Open AI features and achieved an accuracy of around 0.89
- Model was accquired first position in the Kaggle competition.