Aastha Mehta

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My research interests lie in designing and building distributed systems with practical security guarantees.

EDUCATION

PhD student, Computer Science **Oct 2012 – Dec 2018 (expected)**
Max Planck Institute for Software Systems (MPI-SWS), Saarland University (UdS), Germany
Advisors: Peter Druschel, Deepak Garg (MPI-SWS)

Bachelor of Engineering (Honors), Computer Science **Aug 2007 – Jun 2011**
Birla Institute of Technology and Science (BITS) Pilani, India
GPA: 9.49/10.0 (Received Merit scholarship with 100% tuition fee waiver for one year)

All India Senior Secondary Certificate Examination (Class 12th) **Jun 2006 – May 2007**
Maharaja Agrasen Vidyalaya, Gujarat, India
Aggregate percentage: 94.2% (topped in school)

All India Secondary School Examination (Class 10th) **Jun 2004 – May 2005**
Maharaja Agrasen Vidyalaya, Gujarat, India
Aggregate percentage: 93.8% (topped in school)

RESEARCH EXPERIENCE

Eliminating I/O side-channels in the Cloud **Oct 2016 – present**
with Mohamed Wael Alzayat, Deepak Garg, Peter Druschel (MPI-SWS)
An ongoing project, where we explore a dynamic profiling technique to mitigate network traffic side-channels for cloud applications.

Qapla: Policy compliance in database-backed systems **Oct 2014 – present**
with Eslam Elnikety, Katura Harvey, Deepak Garg, Peter Druschel (MPI-SWS)
Project lead: designed a solution to enforce fine-grained access control policies on queries in database applications in a database-independent manner. The solution is also transparent to policy compliant applications.

Thoth: Ensuring policy compliance in a data retrieval system **Oct 2013 – Aug 2016**
with Eslam Elnikety, Anjo Vahldiek-Oberwagner, Deepak Garg, Peter Druschel (MPI-SWS)
Designed and implemented the policy language and enforcement logic for access control and dataflow policies on I/O channels in distributed data processing applications.

Guardat: A foundation for policy-proctected data **Oct 2012 – Apr 2015**
with Anjo Vahldiek-Oberwagner, Eslam Elnikety, Deepak Garg, Peter Druschel (MPI-SWS)
Worked on implementation of confidentiality, integrity, and accounting policies for persistent storage objects. Designed and implemented file system extensions to support policy compliant I/O access.

KeyVisor: Hypervisor-mediated attribute-based signing and encryption **Oct 2013 – Mar 2014**
with Deepak Garg (MPI-SWS), Aniket Kate (now at Purdue)
Built a hypervisor-level key management store to release application keys in a policy-controlled manner.

HDFS Space Consolidation **Jan 2011 – Jun 2011**
with Deepti Banka, Kartheek Muthyala, Priya Sehgal, Ajay Bakre (NetApp, Bangalore)
Designed and implemented a logical consolidation of idle and fragmented disk space in Hadoop cluster nodes, managed as a HDFS namespace and exported as a logical unit (LUN) to the clients.

WORK EXPERIENCE

Research Intern, Microsoft Research Cambridge, UK **Jun 2015 – Aug 2015**
Worked on SGX-based security in cloud computing. Defined the problem, designed multiple solutions.

Member of Technical Staff, NetApp Inc., Bangalore, India **Jul 2011 – Aug 2012**
Implemented optimizations in consistency checker tool for WAFL (Write Anywhere File Layout), to reduce file system downtimes.

Summer Research Intern, MPI-SWS, Germany **May 2010 – Jul 2010**
Explored the problem of, and designed solution for achieving deterministic replay in multi-core systems.

Project trainee, Bhabha Atomic Research Centre, Mumbai, India **May 2009 – Jul 2009**
Worked on mobile robot localization using a laser range finder. Implemented Douglas Peucker algorithm for generating line graphs of 2D interior spaces.

TEACHING EXPERIENCE

Teaching Assistant, UdS, Information Flow Control Systems (seminar) **Summer 2016**
Assisted students with preparing class presentations, instructed in a few classes, and graded the student presentations and reviews.

Teaching Assistant, UdS, Operating Systems (core course) **Summer 2013**
Managed and assisted students with the project component of the course through the semester, and graded the project and the examinations.

GRADUATE COURSEWORK

Core courses: Distributed Systems, Security, Verification of Reactive Systems, Optimization, Bioinformatics, Operating Systems (TA)

Seminars: Real-time Scheduling and Synchronization, Fault-tolerant Distributed Real-time Systems, Practical Cryptographic Systems, Operating System Design & Implementation (doctoral privatissima),

PUBLICATIONS AND POSTERS

Aastha Mehta, Eslam Elnikety, Katura Harvey, Deepak Garg, Peter Druschel (MPI-SWS), "Qapla: Policy compliance for database-backed systems", 26th USENIX Security Symposium, 2017.

Eslam Elnikety, **Aastha Mehta**, Anjo Vahldiek-Oberwagner, Deepak Garg, Peter Druschel (MPI-SWS), "Thoth: Comprehensive Policy Compliance in Data Retrieval Systems", 25th USENIX Security Symposium, 2016.

Olga Ohrimenko, Felix Schuster, Cédric Fournet (Microsoft Research), **Aastha Mehta** (Microsoft Research and MPI-SWS), Sebastian Nowozin, Kapil Vaswani, Manuel Costa (Microsoft Research), "Oblivious Multi-Party Machine Learning on Trusted Processors", 25th USENIX Security Symposium, 2016.

Aastha Mehta, Eslam Elnikety, Deepak Garg, Peter Druschel (MPI-SWS), "Qapla: Ensuring policy compliance in database-backed systems", Poster, Symposium on Operating System Principles (SOSP), 2015.

Anjo Vahldiek-Oberwagner, Eslam Elnikety, **Aastha Mehta**, Deepak Garg, Peter Druschel (MPI-SWS), Ansley Post (Google), Rodrigo Rodrigues (NOVA LINCS/Nova University of Lisbon), Johannes Gehrke (Cornell, Microsoft), "Guardat: Enforcing data policies at storage layer", 10th European Conference on Computer Systems (EuroSys), 2015.

Aastha Mehta, Deepti Banka, Karthik Muthyala, Priya Sehgal, Ajay Bakre, "HDFS Space Consolidation", Student Research Symposium, International Conference on High Performance Computing (HiPC), 2011.

AWARDS AND HONOURS

- Selected among 200 young researchers to attend 4th Heidelberg Laureate Forum 2016. Also awarded a Romberg fellowship, which covered the travel expenses.
- Received Goldman Sachs Global Leaders award in 2009, given to top 50 students in India across different fields including science, engineering, economics, and humanities.
- Received National Talent Search Examination (NTSE) scholarship from 2005 to 2011, given to top 1000 students in the country for excellence in science and engineering.
- Received excellence scholarship in 2007, given to top 50 students in the country in All India Engineering Entrance Examination
- Received Dhirubhai Ambani Foundation scholarship in 2007, given to top 10 students in the state in class 12th examination.
- Received Physical Research Laboratory scholarship for excellence in science from 2005 to 2007.