

# MIRZA BASIM BAIG

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Computer Science ◊ Stony Brook, New York 11790

## EDUCATION

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### **Stony Brook University**

*Graduation Expected 2016*

PhD in Computer Science

GPA: 4.0 (On a scale of 4.0)

Selected Coursework: System Security, Operating Systems, Analysis of Algorithms, Principles of Programming Languages

### **LUMS-SSE**

*Graduated 2011*

B.Sc. Honors in Computer Science

Major GPA: 3.99 (on a scale of 4.0) (Gold Medalist)

Overall GPA: 3.95 (on a scale of 4.0) (Silver Medalist)

Selected Coursework: Network Security, Operating Systems, Software Engineering, Cryptography

## RESEARCH INTERESTS

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Operating Systems, Network & System Security, Algorithms

## AWARDS AND HONORS

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- Secured the Renaissance Technologies Fellowship, awarded to two outstanding international students each year, Department of Computer Science, Stony Brook University, for academic years 2011-14.
- Secured Gold medal in Computer Science Department (1<sup>st</sup> out of 60 students) and Silver Medal in the entire outgoing class (2<sup>nd</sup> out of 400 students) of 2011.
- Secured LUMS merit scholarship which covers full tuition fee for one year and is awarded to the top three students in SHSSL/SDSB and SSE(School of Science and Engineering) (3 students out of 800). Scholarship was renewed for all subsequent years due to academic excellence.
- Placed on Deans Honor List (GPA above 3.6) consistently for all 4 undergraduate years.
- Awarded Merit Scholarship in National Grammar School which covers full tuition for two years of high school.

## PUBLICATIONS

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- Bhushan Jain, **Mirza Basim Baig**, Dongli Zhang, Donald Porter, Radu Sion "SoK: Introspections on Trust and the Semantic Gap", IEEE Symposium on Security & Privacy Oakland S&P 2014
- **Mirza Basim Baig**, Connor Fitzsimons, Suryanarayanan Balasubramanian, Radu Sion, Donald Porter, "CloudFlow: Cloud-wide policy enforcement using fast VM introspection", IC2E 2014
- Dawood Tariq, **Mirza Basim Baig**, Ashish Gehani, Salman Mahmood, Rashid Tahir, Azeem Aqil, and Fareed Zaffar, Identifying the Provenance of Correlated Anomalies, 26th ACM Symposium on Applied Computing (SAC), 2011.
- Ashish Gehani, Dawood Tariq, **Mirza Basim Baig**, and Tanu Malik, Policy-Based Integration of Provenance Metadata, 12th IEEE International Symposium on Policies for Distributed Systems and Networks (POLICY), 2011.
- Ashish Gehani, **Mirza Basim Baig**, Salman Mahmood, Dawood Tariq, and Fareed Zaffar, Fine-Grained Tracking of Grid Infections, 11th ACM/IEEE International Conference on Grid Computing (GRID), 2010.

## POSTERS & TALKS

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- **Mirza Basim Baig**, Dongli Zhang, Radu Sion, Gecko: Kernel Object Mapping with Semantic Classification of Memory *SOSP '13 Poster Session*
- **Mirza Basim Baig**, Conor Fitzsimons, Suryanarayan Balasubramaniam, Radu Sion, Don Porter, Cloudtracker: Cloud-wide policy enforcement with real-time VM introspection (IEEE Security & Privacy 2013 Poster Session).

## RESEARCH EXPERIENCE

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### Research Assistant, NSAC Lab, Stony Brook University (Sept 2012 - Dec 2013)

- **Gecko [C, Matlab]** Gecko (Generating semantic classification for kernel objects) is a system that leverages the KVM kernel module to track memory access patterns for a guest kernel running inside a virtual machine. Memory access patterns can be used for kernel object reconstruction, malware detection and integrity checking.
- **CloudFlow [C, Python, Java]** CloudFlow uses fast VM introspection (implemented using DMA interfaces inside KVM-QEMU) to provide a policy-based side-channel prevention mechanism for the cloud.

### Research Scholar, SRI International (August 2010 - December 2010)

- **SPADE [C, Java]** Support for Provenance Auditing in Distributed Environments. SPADE provides functionality to track and analyze the provenance of data that arises from multiple sources, distributed over a wide area, at varied levels of abstraction, and from both discrete and continuous systems.

### Coursework, Stony Brook University (August 2011 - December 2012)

- **JOS (64-bit) [C, Assembly]** Developed key modules for a working 64 bit operating system as part of Operating Systems course project including interrupt handler, virtual memory subsystem, SMP handling, network driver and reimplemented the Linux O(1) and CFS scheduler for the JOS operating system.
- **Image Based CAPTCHAs [Matlab]** Image based CAPTCHAs provide a human friendly alternative to existing text-based CAPTCHAs. The user is asked to remove distortions from a given image using a slider based interface. Response time was found to be better than text CAPTCHAs. Developed as part of System Security course project.

### Research Assistant, LUMS-SSE (May 2010 - August 2010)

- **Anomaly Detection [C++, Java]** Developing and optimizing fine grained auditing techniques for anomaly detection purposes in a Grid computing environment

## TECHNICAL STRENGTHS

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<b>Computer Languages</b>	C, C++, JAVA, ML, PHP, Javascript, HTML
<b>Protocols &amp; APIs</b>	XML, JSON
<b>Databases</b>	MySQL
<b>Tools</b>	KVM-QEMU, gdb, svn, git, MATLAB, Mathematica

## RELEVANT COURSEWORK

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<b>System Security</b>	Dr. R. Sekar
<b>Operating Systems</b>	Dr. Don Porter
<b>Analysis of Algorithms &amp; Advanced Algorithms</b>	Dr. Michael Bender
<b>Principles of Programming Languages</b>	Dr. C.R. Ramakrishnan

## **EXTERNAL REVIEWS**

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Oakland 2013, ACNS 2013, CCS 2013.

## **REFERENCES**

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Available on demand.