Michael K. Mabey

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EDUCATION

PhD Computer Science — Information Assurance *(expected) May 2017*
Arizona State University Tempe, AZ
Research Topics: Email forensics, Chrome OS forensics, Collaborative forensics

M.S. Computer Science — Information Assurance *Aug 2011*
Arizona State University Tempe, AZ
Committee: Gail-Joon Ahn (Chair), Stephen S. Yau, Dijiang Huang
Thesis: Collaborative Digital Forensics: Architecture, Mechanisms, and Case Study

> In order to catch the smartest criminals in the world, digital forensic examiners need a means of collaborating and sharing information that is not prohibitively difficult to use and that complies with standard operating procedures and the rules of evidence. In this work I present the design and implementation of the Collaborative Forensic Framework (CUFF) which is a cloud-based forensic analysis environment that facilitates collaboration among examiners and their trusted colleagues. CUFF makes a positive impact on forensic examiners' efficiency by helping them leverage their network of subject matter experts while also tapping into the scalability and power of the cloud.

B.S. Computer Science — Information Systems *May 2009*
Utah State University Logan, UT

EXPERIENCE SUMMARY

Research Assistant *Nov 2009 – Present*
Security Engineering for Future Computing (SEFCOM) Lab, ASU Tempe, AZ

Teaching Assistant *Aug 2010 – Dec 2015*
Arizona State University Tempe, AZ

SAT/ACT Instructor *Sep 2015 – Oct 2015*
Minerva Learning, LLC Chandler, AZ

Summer Intern *Jul 2015 – Sep 2015*
Arizona Cyber Threat Response Alliance (ACTRA) Phoenix, AZ

Teaching Assistant (Instructor of Record) *Aug 2011 – Dec 2014*
Arizona State University Tempe, AZ

Student Trainee (Civilian) *Jun 2013 – Aug 2013, Jun 2014 – Aug 2014*
US Army Fort Meade, MD

Graduate Student Summer Intern *May 2011 – Jul 2011*
Sandia National Laboratories Albuquerque, NM

Graduate Student Recruitment Specialist/Webmaster *Jul 2006 – Aug 2009*
Electrical & Computer Engineering Department USU Logan, UT

HONORS AND AWARDS

- DoD Information Assurance Scholarship Program (IASP) Recipient (4 years) *2012 – 2016*
- Inducted into Eta Kappa Nu (HKN) Engineering Honors Society *Nov 2010*
- Eagle Scout, Boy Scouts of America *2002*

RESEARCH INTERESTS

- Digital Forensics
  - Web and Email Forensics
  - Forensics on Non-Traditional Devices
- Cyber Security
  - Threat Intelligence Sharing
  - Web Security

RESEARCH EXPERIENCE

Research Assistant *Nov 2009 – Present*
Security Engineering for Future Computing (SEFCOM) Lab, ASU Tempe, AZ
Lab Directors: Gail-Joon Ahn, Adam Doupé

- Projects:
  - Researched forensic techniques for **Chrome OS**/**Chromium OS** by creating tools in **Python** and using **libvirt** to interface with a **KVM/QEMU** hypervisor. (In progress)
    Publications: [S1], [P1], [T1], [T2]
  - Developed a web email forensic acquisition approach that reestablishes persistent cookie sessions stored by a browser, and automated the process using **Python** and **Selenium**.
    Publications: [C1]
  - Designed and implemented the core components of a modular, highly scalable, collaboration-centric digital forensic framework built on the **OpenStack** cloud architecture. Functions of the components included distributed job scheduling, storage management, and concise evidence representation and transmission.
    Publications: [C3], [J2], [P3]
- Sponsors
  - Department of Defense Information Assurance Scholarship Program (IASP)
  - Department of Energy
  - National Science Foundation

PUBLICATIONS

Peer-Reviewed Conference Proceedings

[C1] Justin Paglierani, **Mike Mabey**, and Gail-Joon Ahn. "Towards Comprehensive and Collaborative Forensics on Email Evidence". In: *Collaborative Computing: Networking, Applications and Worksharing (Collaboratecom), 2013 9th International Conference Conference on*. October 2013, pp. 11–20. DOI: 10.4108/icst.collaboratecom.2013.254125.

[C2] Wonkyu Han, **Mike Mabey**, and Gail-Joon Ahn. "Simulation-Based Validation for Smart Grid Environments". In: *Information Reuse and Integration (IRI), 2013 IEEE 14th International Conference on*. August 2013, pp. 14–21. DOI: 10.1109/IRI.2013.6642448.

[C3] **Mike Mabey** and Gail-Joon Ahn. "Towards Collaborative Forensics: Preliminary Framework". In: *Information Reuse and Integration (IRI), 2011 IEEE International Conference on*. August 2011, pp. 94–99. DOI: 10.1109/IRI.2011.6009527.

Peer–Reviewed Book Chapters & Journal Papers

[J1] Wonkyu Han, **Mike Mabey**, Gail-Joon Ahn, and Tae Sung Kim. "Simulation-Based Validation for Smart Grid Environments: Framework and Experimental Results". In: *Integration of Reusable Systems*. Ed. by Thouraya Bouabana-Tebibel and Stuart H. Rubin. Vol. 263. Advances in Intelligent Systems and Computing. Springer International Publishing, 2014, pp. 27–44. ISBN: 978-3-319-04716-4. DOI: 10.1007/978-3-319-04717-1_2.

[J2] **Mike Mabey** and Gail-Joon Ahn. "Towards Collaborative Forensics". In: *Information Reuse and Integration in Academia and Industry*. Ed. by Tansel Özyer, Keivan Kianmehr, Mehmet Tan, and Jia Zeng. Springer Vienna, 2013, pp. 237–260. ISBN: 978-3-7091-1537-4. DOI: 10.1007/978-3-7091-1538-1_12.

Poster Presentations

[P1] **Mike Mabey**, Jeremy Whitaker, Gail-Joon Ahn, and Adam Doupé. *Towards Forensics for Web Thin Clients*. *Symposium on Information Assurance Research and Education, ASU*. November 2015.

[P2] Jeremy Whitaker, **Mike Mabey**, Gail-Joon Ahn, and Adam Doupé. *Forensic Analysis on Mobile Devices*. *Symposium on Information Assurance Research and Education, ASU*. October 2014.

[P3] **Mike Mabey**, Justin Paglierani, and Gail-Joon Ahn. *Towards Collaborative Forensics*. *Workshop on Information Assurance Research and Education, ASU*. April 2012.

Works Submitted (In Press)

[S1] **Mike Mabey**, Adam Doupé, Ziming Zhao, and Gail-Joon Ahn. "dbling: Identifying Extensions Installed on Encrypted Web Thin Clients". In: *Digital Investigation* (2016). The Proceedings of the Sixteenth Annual DFRWS Conference (In Press). DOI: 10.1016/j.diin.2016.04.007.

TEACHING INTERESTS

- Computer and Network Forensics
- Advanced Topics in Digital Forensics
- Information Assurance
- Security Toolkit Programming with Python
- Cryptography
- Software Security

TEACHING EXPERIENCE

Teaching Assistant *Aug 2010 – Dec 2015*
Arizona State University Tempe, AZ

- CSE 465 Information Assurance with Dr. Gail-Joon Ahn: Fall 2010, Fall 2015.
- CSE 469 Computer and Network Forensics with Dr. Gail-Joon Ahn: Spring 2015.
- FSE 100 Introduction to Engineering with Dr. Ryan Meuth: Spring 2014.
- CSE 423/424 Capstone I and CSE 485/486 Capstone II with Dr. Debra Calliss: Spring 2014.
- CSE 467 Data & Information Security with Dr. Gail-Joon Ahn: Spring 2011.

SAT/ACT Instructor *Sep 2015 – Oct 2015*
Minerva Learning, LLC Chandler, AZ

- Individual tutor for a high school student preparing for the PSAT.

Teaching Assistant (Instructor of Record) *Aug 2011 – Dec 2014*
Arizona State University Tempe, AZ

- CSE 465 Information Assurance: Fall 2014.
- FSE 100 Introduction to Engineering: Fall 2011 – Fall 2013 (5 semesters).

TECHNICAL STRENGTHS & QUALIFICATIONS

Programming Languages	Python, C/C++, HTML, CSS, LaTeX
Forensic Tools	FTK, Sleuth Kit & Autopsy, dd, HxD, etc.
Protocols & APIs	JSON, XML, REST, STIX/TAXII
Network Administration/Security	OpenVPN, Wireshark, ufw, Apache, lighttpd
Operating Systems	Windows, Linux, Chrome OS
Databases	MySQL, SQLite

SERVICE

Department

- Team Leader: ASU team in the UCSB International CTF — *2009, 2010, 2014, 2015*
- Panelist: PhD Open House Student Panel — *Feb 2014, Feb 2015*

Profession

- Student Program Committee Member:
  - IEEE Security & Privacy — *2016*
- Conference Proceedings Subreviewer:
  - ACM CODASPY — *2013, 2014, 2015, 2016*
  - SACMAT — *2014*
  - ASIACCS — *2014*
- Student Volunteer:
  - ACM CCS — *2014*

Technical Blog Posts

[T1] **Mike Mabey**. *How to check out an old version of Chromium OS*. http://mikemabey.blogspot.com/2016/02/how-to-check-out-old-version-of.html. February 26, 2016.

[T2] **Mike Mabey**. *Fixing repo init to check out Chromium OS code*. http://mikemabey.blogspot.com/2015/01/fixing-repo-init-to-check-out-chromium.html. January 30, 2015.

[T3] **Mike Mabey**. *Getting into Developer Mode on the HP Pavilion 14 Chromebook*. http://mikemabey.blogspot.com/2013/05/getting-into-developer-mode-on-hp.html. May 8, 2013.

[T4] **Mike Mabey**. *OpenVPN Update: Fixed!* http://mikemabey.blogspot.com/2012/06/openvpn-update-fixed.html. June 6, 2012.

[T5] **Mike Mabey**. *Debian on Android and my quest for a full-fledged terminal Python IDE*. http://mikemabey.blogspot.com/2012/06/debian-on-android-and-my-quest-for-full.html. June 23, 2012.

PROFESSIONAL EXPERIENCE

Summer Intern — *Jul 2015 – Sep 2015*
Arizona Cyber Threat Response Alliance (ACTRA) — Phoenix, AZ

- Designed an operationalized workflow for AZ Infragard member organizations to share **threat intelligence** through a common **STIX/TAXII** platform.

Student Trainee (Civilian) — *Jun 2013 – Aug 2013, Jun 2014 – Aug 2014*
US Army — Fort Meade, MD

- Summer internships in connection with DoD IASP scholarship.

Graduate Student Summer Intern *May 2011 – Jul 2011*
Sandia National Laboratories Albuquerque, NM

- Helped design a dynamic malware analysis framework built on **OpenStack**, allowing incident responders to define customizable analysis environments and use arbitrary analysis tools in triage or manual analysis mode.
- Wrote **Python** scripts to automate the setup process for using a SheevaPlug computer as a wireless intrusion detection agent running **Kismet**.

Graduate Student Recruitment Specialist/Webmaster *Jul 2006 – Aug 2009*
Electrical & Computer Engineering Department USU Logan, UT

- Primary responsibilities included maintaining and augmenting the department website using **PHP**, **MySQL**, and other basic web technologies like **CSS**, **JavaScript**, and an **SMTP** server.
- Completed multiple graphics design projects for the department using **Photoshop**, **Illustrator**, and **GIMP**.

PROFESSIONAL MEMBERSHIPS

- IEEE (Student Member)
- IEEE Computer Society

PROFESSIONAL DEVELOPMENT

- Preparing Future Faculty (GRD 791 at ASU) *Aug 2015 – Present*
  The Preparing Future Faculty (PFF) program is a year-long series of seminars, discussions and activities designed to expose graduate students and postdocs more fully to the realities of teaching, research and service in higher education.
- Writing Effectively: The Art of Argument (Workshop at ASU) *Oct 2015*

REFERENCES

Please feel free to contact any of my references.

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