

# Michael K. Mabey

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## EDUCATION

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**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

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

**Civilian Reserve/Intern** May 2016 – Aug 2016  
Arizona Department of Public Safety Phoenix, 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**

Electrical &amp; Computer Engineering Department, USU

Jul 2006 – Aug 2009

Logan, UT

**Technician Aid**

Electrical &amp; Computer Engineering Department, USU

Sep 2006 – Aug 2009

Logan, UT

**Store Attendant**

Electrical &amp; Computer Engineering Department, USU

Jun 2005 – Sep 2008

Logan, UT

**Lab Technician**

KWM Electronics Co.

May 1997 – Aug 2002

West Jordan, UT

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**HONORS AND AWARDS**

- DoD Information Assurance Scholarship Program (IASP) Recipient (5 years) 2012 – 2017
- Inducted into Eta Kappa Nu (HKN) Engineering Honors Society Nov 2010
- Eagle Scout, Boy Scouts of America 2002

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**RESEARCH INTERESTS**

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

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**RESEARCH EXPERIENCE****Research Assistant**

Security Engineering for Future Computing (SEFCOM) Lab, ASU

Lab Directors: Gail-Joon Ahn, Adam Doupe

Nov 2009 – Present

Tempe, AZ

- 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:* [J1], [P1], [BL1], [BL2]
  - 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:* [C2]
  - 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], [J3], [P3]
- Sponsors
  - Department of Defense Information Assurance Scholarship Program (IASP)
  - Department of Energy
  - National Science Foundation

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**PUBLICATIONS****Peer-Reviewed Conference Proceedings**

- [C1] Wonkyu Han, **Mike Mabey**, and Gail-Joon Ahn. "Simulation-based validation for smart grid environments". In: *Proceedings of the 2013 IEEE 14th International Conference on Information Reuse and Integration, IEEE IRI 2013*. IEEE Computer Society, 2013, pp. 14–21.
- [C2] 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 on*. October 2013, pp. 11–20. DOI: 10.4108/icst.collaboratecom.2013.254125.

- [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] **Mike Mabey**, Adam Doupé, Ziming Zhao, and Gail-Joon Ahn. "dbling: Identifying extensions installed on encrypted web thin clients". In: *Digital Investigation* 18 (August 2016). The Proceedings of the Sixteenth Annual DFRWS Conference, S55–S65. ISSN: 17422876. DOI: 10.1016/j.diin.2016.04.007.
- [J2] 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. (Extended version of [C1]). Springer International Publishing, 2014, pp. 27–44. ISBN: 978-3-319-04716-4. DOI: 10.1007/978-3-319-04717-1\_2.
- [J3] **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. (Extended version of [C3]). Springer Vienna, 2013, pp. 237–260. ISBN: 978-3-7091-1537-4. DOI: 10.1007/978-3-7091-1538-1\_12.

#### Invited Talks

- [T1] **Mike Mabey**. "dbling: Identifying Extensions Installed on Encrypted Web Thin Clients". Presentation given at the Sixteenth Annual DFRWS Conference on paper [J1]. August 2016.

#### 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.
- [P4] James Bridges, Kasimir Gabert, and **Michael Mabey**. *Cyber Tracer. University Day, Sandia National Laboratories*. July 2011.

#### TEACHING INTERESTS

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

#### TEACHING EXPERIENCE

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##### Teaching Assistant

Arizona State University

Aug 2010 – Dec 2015

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

Minerva Learning, LLC

Sep 2015 – Oct 2015

Chandler, AZ

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

**Teaching Assistant (Instructor of Record)**

Arizona State University

*Aug 2011 – Dec 2014*

Tempe, AZ

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

**TECHNICAL STRENGTHS & QUALIFICATIONS**

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

**SERVICE**

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**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**

- [BL1] **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 2016.
- [BL2] **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 2015.
- [BL3] **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 2013.
- [BL4] **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 2012.
- [BL5] **Mike Mabey.** *OpenVPN Update: Fixed!* <http://mikemabey.blogspot.com/2012/06/openvpn-update-fixed.html>. June 2012.

**PROFESSIONAL EXPERIENCE**

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**Civilian Reserve/Intern**

Arizona Department of Public Safety

*May 2016 – Aug 2016*

Phoenix, AZ

- Updated the content, layout, and topics of the security policy for the Arizona Counter Terrorism Information Center (ACTIC) for clarity and to be in compliance with recommendations from the Department of Homeland Security. Also created training slides to accompany the new security policy.

**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 &amp; 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 graphic design projects for the department using **Adobe Photoshop**, **Adobe Illustrator**, and **GIMP**.
- Replaced a **MS Access** database by porting the old data to a **MySQL** server and creating a set of **Python** programs with the **Dabo** framework that interfaced with the database.
- Created a testing environment using an **Apache** web server, **PHP**, **MySQL**, and **SVN**.
- Gathered statistics on web visitors, inquiries from students, and applicants' credentials for the purpose of improving the department's graduate student recruitment processes.
- Responded to inquiries from potential domestic and international graduate students.

**Technician Aid***Sep 2006 – Aug 2009*

Electrical &amp; Computer Engineering Department, USU

Logan, UT

- Built and maintained computers for department faculty and student labs.
- Installed and configured various software on Windows machines for faculty, staff, and students.
- Created and restored backup images of lab computers using **Norton Ghost** and **Acronis TrueImage**.
- Protected lab computers using **Faronics Deep Freeze**.

**Store Attendant***Jun 2005 – Sep 2008*

Electrical &amp; Computer Engineering Department, USU

Logan, UT

- Maintained equipment and instruments in the labs for electrical engineering students.
- Performed store duties including maintaining inventory, serving customers, cleaning rooms, and running errands.

**Lab Technician***May 1997 – Aug 2002*

KWM Electronics Co.

West Jordan, UT

- Worked closely with CEO/Head Engineer to build prototypes of electronic devices.
- Used various soldering techniques on both through-hole and surface-mount parts.

## PROFESSIONAL MEMBERSHIPS

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- IEEE (Student Member)
- IEEE Computer Society

## PROFESSIONAL DEVELOPMENT

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- Preparing Future Faculty (GRD 791 at ASU) *Aug 2015 – May 2016*  
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.

## REFERENCES

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*Please feel free to contact any of my references.*

### **Gail-Joon Ahn**

Director, Center for Cybersecurity and Digital Forensics [✉](#)  
Professor of Computer Science and Engineering  
Fulton Entrepreneurial Professor  
School of Computing, Informatics and Decision Systems Engineering  
Ira A. Fulton Schools of Engineering, Arizona State University  
Brickyard Engineering (BYENG) Bldg, Room 486  
699 S. Mill Avenue  
Tempe, AZ 85281  
Phone: (480) 965-9007  
Fax: (480) 965-2751  
<http://www.public.asu.edu/~gahn1/> [✉](#)  
[gahn@asu.edu](mailto:gahn@asu.edu) [✉](#)

### **Adam Doupe**

Assistant Professor of Computer Science and Engineering  
School of Computing, Informatics and Decision Systems Engineering  
Ira A. Fulton Schools of Engineering, Arizona State University  
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699 S. Mill Avenue  
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Fax: (480) 965-2751  
<http://adamdoupe.com> [✉](#)  
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### **Frank J. Grimmelmann**

President & CEO/Intelligence Liaison Officer  
Arizona Cyber Threat Response Alliance (ACTRA)  
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Fax: (623) 551-4221  
[fgrimmelmann@actraaz.org](mailto:fgrimmelmann@actraaz.org) [✉](#)

**Stephen S. Yau**

Director, Information Assurance Center ☞

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