

# William Frederick Koch III

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Brighton, MA

January 2018

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## RESEARCH AREAS

Flight control systems □ Cyber security □ Machine learning

## EDUCATION

**BOSTON UNIVERSITY**, Boston, MA  
PhD Candidate

Present

**STEVENS INSTITUTE OF TECHNOLOGY**, Hoboken, NJ  
M.S. computer engineering, concentration in intelligent systems  
GPA: 3.8/4.0

December 2013

Thesis: “A framework for assisting learners by incorporating knowledge to aid in predicting nerve guidance conduit performance”

**UNIVERSITY OF RHODE ISLAND**, Kingston, RI  
B.S. computer engineering, minor in mathematics  
GPA: 3.2/4.0

May 2008

## RESEARCH EXPERIENCE

**STEVENS INSTITUTE OF TECHNOLOGY**, Hoboken, NJ  
**Research Assistant**

1/2012 to 5/2013

- Developed novel machine learning algorithms to fuse prior domain knowledge with neural network output for increased accuracy when training samples are small.
- Worked directly with biomedical engineering department to predict the performance of nerve guidance conduits using developed algorithms.

## TEACHING EXPERIENCE

**BOSTON UNIVERSITY**, Boston, MA

9/2017 to 12/2017

**Teaching Fellow**

- Taught weekly classes for Computer Systems

**INTERNAL DRIVE TECH CAMPS**, Princeton, NJ

6/2012 to 8/2012

**Programming Instructor**

- Created lesson plans for wide range of skill levels. Topics included: object oriented fundamentals, polymorphism, exception handling and third-party library integration.
- Placed emphasis on coding style and best practices not enforced in academia.
- Advised students through final projects ranging from web crawlers to 2D video games.

**STEVENS INSTITUTE OF TECHNOLOGY**, Hoboken, NJ

1/2012 to 5/2012

**Teachers Assistant**

- Graduate class CPE 555 Real-Time and Embedded Systems
- Undergraduate class EE 250 Mathematics for Electrical Engineers

## PROFESSIONAL EXPERIENCE

**MIT LINCOLN LABORATORY**, Lexington, MA

1/2016 to 6/2016

**Security Researcher**

- Developed the novel Persona Hijacking attack which appeared in the top tier security conference USENIX Security 2017.

**CAPSULES, LLC**

6/2013 to 8/2014

**CEO / Co-founder**

- Managed team to create a geo-location based augmented reality mobile app.
- Lead mobile developer responsible for overall design and implementation.
- Designed web service API.

**SILA SG**, Shelton, CT

9/2010 to 1/2012

**Software Engineer**

*Subcontractor for Sikorsky Aircraft Corporation CH53-K Program*

- Responsible for system integration between Sikorsky CH-53K Integrated Support System (ISS), Sikorsky Engineering, and Goodrich Ground Support Software (GSS).
- Designed and implemented continuous integration environment.
- Software lead on seven projects built to support the Sikorsky CH53-K ISS.

**CT HACKERSPACE, INC.**, Watertown, CT

8/2010 to 8/2011

**Chairman / Co-founder**

- Planned, organized and built Connecticut's oldest and largest hackespace.
- Facilitator of monthly board meetings.
- Administrator for cthackerspace.com website.
- Volunteered teaching Arduino workshops.

**AIS CONSULTING INC.**, Shelton, CT

6/2006 to 9/2010

**Software Engineer**

*Subcontractor for Sikorsky Aircraft Corporation CH53-K Program*

- Designed, and developed Data Transfer System (DTS), a system to synchronize data between a master server and multiple clients
- Developed Virtual Test Environment (VTE), a web-based tool used to manage, create and deploy clones of virtual machines for testing software on different computer configurations.
- Developed Seek, a web-based testing tool for Interactive Electronic Technical Manuals (IETMs) distributed to the U.S. Navy and U.S. Army.
- Designed, and developed Electronic Work Cards (E-cards) Application, a web-based application comprised of a collection of procedures that enable a mechanic to work on an aircraft without carrying multiple manuals.

## PROJECTS

### **Android Leak Hunter**

<https://github.com/wil3/android-leak-hunter>

Perform automated batch analysis of Android applications to identify potential information leakages through network connections.

### **Lacus**

<https://github.com/wil3/lacus>

Reservoir computing library using publish-subscribe design patterns to decrease complexity and provide a framework in which neurons operate as autonomous agents.

## PUBLICATIONS

1. Koch, William, Abdelberi Chaabane, Manuel Egele, William Robertson, and Engin Kirda. "Semi-automated discovery of server-based information oversharing vulnerabilities in Android applications." In Proceedings of the 26th ACM SIGSOFT International Symposium on Software Testing and Analysis, 2017.
2. Kolodenker, Eugene, William Koch, Gianluca Stringhini, and Manuel Egele. "PayBreak: Defense against cryptographic ransomware." In Proceedings of the 2017 ACM on Asia Conference on Computer and Communications Security, 2017.
3. Samuel Jero, William Koch, Richard Skowrya, Hamed Okhravi, Cristina Nita-Rotaru, and David Bigelow. "Identifier Binding Attacks and Defenses in Software-Defined Networks", 26th USENIX Security Symposium, 2017.
4. William Koch, and Azer Bestavros. "Hyp3rArmor: Reducing Web Application Exposure to Automated Attacks", *Under review*.
5. William Koch, and Azer Bestavros. "Provide: Hiding from automated network scans with proofs of identity." Hot Topics in Web Systems and Technologies (HotWeb), 2016 Fourth IEEE Workshop on. IEEE, 2016.
6. Hoda Maleki, Saeed Valizadeh, William Koch, Azer Bestavros, and Marten van Dijk. "Markov modeling of moving target defense games." In Proceedings of the 2016 ACM Workshop on Moving Target Defense, 2016.
7. William Koch, Yan Meng, Munish Shah, Wei Chang, and Xiaojun Yu. "Predicting nerve guidance conduit performance for peripheral nerve regeneration using bootstrap aggregated neural networks", In International Joint Conference on Neural Networks (IJCNN), 2013
8. Munish B. Shah, Wei Chang, Kathleen McGuire, William Koch, Yan Meng, and Xiaojun Yu. "Using Bootstrap Aggregated Neural Networks for Peripheral Nerve Injury Treatment." In Proceedings of the International Conference on Data Mining (DMIN), p. 1. The Steering Committee of The World Congress in Computer Science, Computer Engineering and Applied Computing (WorldComp), 2014.

## LANGUAGES AND EXPERTISE

Java □ Python □ Perl □ Matlab □ C/C++ □ JavaScript □ SQL □ HTML □ XML □ LaTeX

Machine Learning □ Data Mining □ Software Design □ Network and Software Security □  
Android □ Web Services □ Web Applications □ Build Systems □ Version Control □ Linux □

Microsoft Windows □ Testing □ Integration

### **PERSONAL INTERESTS**

Drone racing □ Backpacking □ Snowboarding □ Surfing □ Cooking