# Michael Joseph Williams

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**Active Top Secret Security Clearance (TS/SCI Full Scope Poly)**

## Education

**University of Maryland, College Park**
August 2016 - Present

- GPA: 3.94
- Expected graduation date: May 2020
- Banneker/Key Scholar, Northrop Grumman Engineering Scholar
- Pursuing a Bachelor of Science in Computer Science, double Minor in Global Engineering Leadership and Cybersecurity
- University Honors Program, Advanced Cybersecurity Experience for Students (ACES)

## Languages & Platforms

- **Languages:** Java, Python, C, C#, Ruby, OCaml, SQL, R, Rust, Swift, JavaScript, TypeScript, Dart, HTML/CSS, MATLAB, Bash, Intel x86 Assembly, MIPS, WebAssembly
- **Software:** Splunk, ELK, Xcode, Android Studio, Flutter, Google Firebase, Git, Travis CI, Jenkins, Manuscript, JIRA/Confluence, LaTeX, VMware, VirtualBox, Eclipse, Visual Studio, IntelliJ, Vim, RStudio, Hibernate, Unity
- **Operating Systems:** Linux/Unix, Kali Linux, Mac OS X, Windows

## Coursework

- **Math:** Algorithms, Data Structures, Applied Probability and Statistics, Discrete Structures, Multidimensional Calculus
- **Programming:** Object Oriented Programming I & II, Computer Systems, Organization of Programming Languages, Reinforcement Learning, Human & Computer Interaction, Database Design, Game Programming
- **Engineering:** Reverse Engineering, Computer Integrated Manufacturing, Digital Electronics
- **Cybersecurity:** Foundations of Cybersecurity I & II, Advanced Digital Forensics, Cryptology, Data Analysis and Visualization for Cybersecurity
- **Leadership:** Engineering Leadership, International Business Cultures in Engineering and Technology, Advanced Entrepreneurial Opportunity Analysis in Technology Ventures, Discovering New Ventures

## Technical Projects

- **AWS Security Alert Filtering System**
  Worked with a team of AWS engineers to develop a centralized system for efficiently filtering and routing AWS CloudWatch Events. Utilized Python, Amazon Lambda, and DynamoDB.

- **Atari Centipede Reinforcement Learning Agent**
  Developed a DQN that trained an agent to maximize its score in the OpenAI Gym Centipede-ram-v0 environment. Created with Python, OpenAI Gym, and Keras.

- **WebAssemblyOS shell**
  Worked on my first open source project, implementing some IEEE standard Unix commands for the wasmos shell. Used TypeScript for development and AS-pect, Travis CI for testing.

- **Twaces Data Visualization**
  Utilized the Twitter API, Tweepy, and Python to perform spatial, social, and sentiment analysis on tweets mentioning the University of Maryland or Advanced Cybersecurity Experience for Students (ACES) Honors College.

- **Honeypot Research Project**
  Designed a team research project to analyze the true motivations behind cyber-attackers. Architecture, maintenance, and analysis scripts were developed with Linux, Bash, and Python.

- **NextNOW Fest Apps**
  Created iOS and Android mobile applications for the NextNOW Fest hosted by The Clarice at the University of Maryland, College Park. Apps were developed natively with Xcode, Swift, Android Studio, and Java.

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- **GroupHouse Productions Website**
  Developed an interactive website for GroupHouse Productions, displaying their media projects, team, and gear. Utilized HTML, CSS, and JavaScript.

- **Axiv Integrated Health App**
  Designed an application for users to track their health and fitness activity while competing with peers and earning rewards. Created using Android Studio, Java, and core principles of User and Task oriented design.

- **Island Survival**
  Created a party style multiplayer game from scratch where teams find themselves stranded on an island with conflicting objectives. Worked with the Unity game engine, Mirror networking platform, and C#.

**Work Experience**

**Software Engineering Intern, Next Century Corporation**

**January 2019**

- Prototyped functionality for exporting protective distance maps to Keyhole Markup Language (KML) using the Bing Maps V8 API and JavaScript.
- Formatted KML output for integration with popular mapping software such as Google Maps, MARPLOT, and IncidentView, adding labels and HTML pop up descriptions.

**June – August 2018**

- Designed backend database schemas for storing, searching, and querying data from the Hazardous Substance Data Bank (HSDB). Backend database created with MySQL and integrated with Java and Hibernate. Frontend database created with SQLite and C# for usage on mobile devices without internet access.
- Designed Android mobile application tool for the U.S. Department of Health and Human Services to assist first responders with hazardous chemical identification and decontamination procedures. Developed with Android Studio and Java.
- Integrated the backend database with the other platforms (Web and Windows), utilizing HTML and JavaScript to search and display the data.

**Teaching Assistant, University of Maryland, College Park**

**January – May 2018**

- Instructed students in class, teaching them core concepts of Object Oriented programming, Java, and Processing.
- Led review sessions for students prior to exams and quizzes.
- Assisted students in completing programming assignments in office hours and on Piazza.

**Computer Science Engineer Intern, Parsons Corporation**

**January 2018**

- Developed a utility to reduce Splunk query load by filtering down initial machine data with Elasticsearch and Logstash.
- Created a parser and lexer to handle queries, utilizing the Python elasticsearch library.
- Added a simple UI to the utility with Yad, Zenity, and Bash.

**January – August 2017**

- Conducted remote memory acquisition and analysis with F-Response, FTK Imager, EnCase, and the Volatility Framework. Automation scripts written in C# and Powershell.
- Designed dashboards and performed analytics for intrusion detection utilizing Splunk, ELK, Snort, and Bro.
- Created challenge modules for NSA's Cyber Defense Exercise (CDX) using Linux and Python.