**Jonathan E. Roof**

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# OBJECTIVE

My goal is to work in the field of Computer Engineering, applying my anticipated Master of Engineering (M.E.) in Computer Science degree as well as building off my strong technical background and over three years of research experience in data collection and data analysis.

# EDUCATION

**Virginia Tech**, Blacksburg, VA

* Master of Engineering, Computer Science *May 2023 (expected)*
* Bachelor of Science, Chemistry (Minor: Science, Technology, & Law) *May 2019, Summa Cum Laude*

# EXPERIENCE

**Computer Science Effort at VT**, Blacksburg, VA *Aug. 2021 – Current*

* Analyzed alternative lightweight cryptography against SHA-256 for use in blockchain technology
* Currently conducting analysis on USB-C authentication vulnerabilities across varied platforms
* Familiarization with techniques for analyzing large datasets

**Chemical Technician Specialist at W.R Grace**, Columbia MD *Oct. 2019 – Aug. 2021*

* Synthesized and analyzed catalyst and catalyst precursors using several reactors and instruments
* Collected and processed data to generate presentations for customers
* Acquired new instruments and evaluated their efficiency in multiple applications

**Undergraduate Teaching Assistant: Organic Chemistry**, Blacksburg, VA *Aug. 2018 – Dec.2018*

* Provided instruction and guidance for undergraduates taking organic chemistry
* Created lesson plans, test questions, and review materials for students
* Provided emotional and educational support for students struggling with the material

**Analytical Services Internship at W.R. Grace**, Columbia, MD *June 2018 – Aug. 2018*

* Researched artificial intelligence (AI) for opportunities to improve worldwide company system upgrades
* Implemented large scale chemical synthesis based on preliminary research and analysis
* Generated new safety procedures for different departments to increase workplace efficiency

**Undergraduate Research: Dr. Amanda Morris Group**, Blacksburg VA *Sept. 2017 – May 2019*

* Collaborated with peers to generate optimal characterization techniques of novel compounds
* Utilized multiple disciplines of chemistry to synthesize redox mediators in dye-sensitized solar cells
* Contributed analyzed data and conceptual input to a publication in *The Journal of Physical Chemistry*

# TECHNICAL SKILLS

* Java
* Data Structures
* Data Analysis
* Information Authorized User Certificate
* Adversarial Thinking
* Eclipse IDE
* Cryptography
* Analytical Laboratory Techniques
* Synthetic Laboratory Techniques
* Physical and Chemical First Aid
* Policy documentation
* Software Troubleshooting
* GitHub
* Chemical-Terrorism Vulnerability

# PUBLICATIONS

*Improving the Efficiency of the Mn2+/3+ Couple in Quantum Dot Solar Cells: The Role of Spin Crossover*

M. C. Kessinger, R. Langlois, J. Roof, S. M. Shaikh, J. M. Tanko, and A. J. Morris. The Journal of Physical Chemistry C ***2018*** 122 *(25), 14135-14149; DOI: 10.1021/acs.jpcc.8b01361*