

# PARKER COLLIER

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## WORK EXPERIENCE

Graduate Researcher

**USER Lab**

2023 - 2024

University of Tennessee, Knoxville

- Usable security research focused on cryptography key management and usage on Github.
- Large scale data collection and analysis.

Undergraduate Researcher

**MABE Lab**

2020 - 2022

University of Tennessee, Knoxville

- Software development using the Kotlin language for applications on the Pepper Social Robot to help those with Alzheimer's disease.

Undergraduate Researcher

**MOA Lab**

2022 - 2023

University of Tennessee, Knoxville

- Security research on malware and development on a website made for parsing and reading certificates attached to Windows executable files.

Railcar Component Manufacturing

**Central Sales and Service, Inc.**

2015 - 2019

Waverly, TN

- Fabrication of parts for transit cars, freight cars, and locomotives.

## PROJECTS

Key Collection On Github

**UTK USER Lab**

- Collected information and public keys for all ~90 Million Github users.
- Performed quantitative analysis on collected data.

Certificate Extraction and Display Website

**UTK Moa Lab**

- Built a website allowing for the upload of Windows Executables or raw DER certificate files.
- Uploaded certificates are parsed and displayed.
- Website: [code-signing.utk.edu](https://code-signing.utk.edu)

## COURSE WORK

Advanced Software Engineering

Operating Systems

Applied Cryptography

Human Factors in Cybersecurity

Cyber-Physical Systems Security

Network Security

Foundations of Computer Science

Computer Systems Architecture

Biologically Inspired Computing

## LANGUAGES

Python



JavaScript



Kotlin



C++



Rust



## EDUCATION

Masters in Computer Science

**University of Tennessee at Knoxville**

Aug 2023 - May 2024

Thesis title: A Quantitative Analysis of Security Keys and Commit Signing on Github

Bachelors in Computer Science

**University of Tennessee at Knoxville**

Aug 2022 - May 2023

## ACCOLADES

- 4.0 GPA
- Member, Phi Sigma Theta National Honor Society
- Member, National Society of Leadership & Success
- Founder, President, Smokey Mountain Stone Skippers at UTK

# PUBLICATIONS

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## Journal Articles

- Z. Liu, P. Collier, E. J. Paek, *et al.*, “Multi-modal vision-and-language analysis of communication deficits due to alzheimer’s disease,” 2022.
- Z. Liu, L. Proctor, P. Collier, *et al.*, “Machine learning of transcripts and audio recordings of spontaneous speech for diagnosis of alzheimer’s disease,” *Alzheimer’s & Dementia*, vol. 17, no. S5, e057556, 2021. DOI: <https://doi.org/10.1002/alz.057556>. eprint: <https://alz-journals.onlinelibrary.wiley.com/doi/pdf/10.1002/alz.057556>.

## Conference Proceedings

- Z. Liu, P. N. Collier, R. Bray, *et al.*, “Estimating human attitude during robot-mediated referential communication tasks,” in *2022 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2022, pp. 66–77.
- Z. Liu, P. N. Collier, C. Wang, *et al.*, “A demonstration of human-robot communication based on multiskilled language-image analysis,” in *2021 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2021, pp. 126–127. DOI: [10.1109/CHASE52844.2021.00028](https://doi.org/10.1109/CHASE52844.2021.00028).
- Z. Liu, L. Proctor, P. N. Collier, and X. Zhao, “Automatic diagnosis and prediction of cognitive decline associated with alzheimer’s dementia through spontaneous speech,” in *2021 IEEE International Conference on Signal and Image Processing Applications (ICSIPA)*, 2021, pp. 39–43. DOI: [10.1109/ICSIPA52582.2021.9576784](https://doi.org/10.1109/ICSIPA52582.2021.9576784).