Hwajung Yoo

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Education

University of California, Santa Barbara Sep. 2023 – Current
Master of Science in Computer Science *Santa Barbara, CA*

- Expected Graduation: June 2025 (flexible to start earlier if needed)
- Coursework: Scalable Web Services, Human-Computer Interaction, Software Engineering, Trustworthy ML in Security, ML for Networked Systems, Matrix Analysis and Computations, Computer Graphics

Hongik University Mar. 2018 – Feb. 2023
Bachelor of Science in Computer Engineering *Seoul, South Korea*

- Selected Coursework : Network Programming, Computer Network, Algorithms & Analysis, Data Structures, Database, Operating Systems, Automata, Computer Architecture, Data Communication, Logic Circuits and Lab

Professional Experience

Graduate Student Researcher [code] Jan. 2024 – Sep. 2024
University of California, Santa Barbara *Santa Barbara, CA*

- Automated data processing and analysis of efficacy and side effects across 42k+ clinical trials using REST APIs, incorporating key metrics like placebo effect differentials to assess drug innovation
- Optimized clinical trial data analysis by normalizing diverse measurements and units, reducing drug efficacy assessment time from hours to 15 minutes
- Enhanced data accessibility by exporting standardized datasets into CSV files, enabling non-technical stakeholders in the department to easily analyze clinical trial insights

Undergraduate Research Assistant Mar. 2022 – Apr. 2023
Hongik University *Seoul, South Korea*

- Proposed and implemented a defense mechanism using Deep Image Prior to reconstruct adversarially attacked fingerprint images without requiring training data
- Achieved up to 36.2%p higher reconstruction success rate compared to existing image reconstruction methods, with an average improvement of 16.5–24.2%p across datasets
- Demonstrated robustness against various adversarial attack types and fingerprint sensor variations, enhancing the security of biometric authentication systems

Projects

LitSummarizer [code] | *OpenAI API, Python, Pandas, Git*

- Developed an automated literature review tool, 'LitSummarizer', using OpenAI API to summarize research papers
- Extracted and cleaned text from research papers, removing irrelevant elements and standardizing formatting for academic literature reviews
- Boosted research productivity by simplifying large-scale paper analysis and key finding extraction

VELCRO [code] | *Python, Javascript, React.js, Django, PostgreSQL, Docker, Git*

- Developed a web service for neural network specification, enabling easy parameter adjustments without deep learning expertise
- Managed 50+ layers of YOLOv5 and VGG-16 models with 6 parameters per layer
- Presented the prototype at two workshops and contributed to a publication with enhanced features

StoryStash [code] | *Ruby on Rails, PostgreSQL, AWS Elastic Beanstalk, Tsung, Docker, Git*

- Developed a full-stack website enabling user registration, post creation, and comments to handle up to 1024 users per second
- Engaged in a Ruby on Rails project to understand the workings of the school's website and its MVC pattern
- Conducted load testing with Tsung and optimized HTTP response times by 30% using pagination and server-side caching

Technical Skills

Languages: Python, Javascript, C/C++, SQL, HTML/CSS, Ruby, R, JSON, SPARC Assembly
Frameworks and Libraries: React.js, Django, PostgreSQL, Ruby on Rails, Selenium, Pandas, Matplotlib, Pytorch, Tensorflow
DevOps and Cloud Platforms: Git, Docker, Kubernetes, AWS (EC2, Elastic Beanstalk), Jenkins, Ansible, Nagios

Publications

[1] Min Young Lim, Seong Hee Park, Soo-Hyun Lee, Jung Won Yoon, Pyo Min Hong, **Hwajung Yoo**, Kon-Woo Kwon, Jongwook Jeong, and Youn Kyu Lee. "VELCRO: A Visual-Based Programming Tool for Effortless Deep Learning Model Construction." SoftwareX, Feb. 2024.

[2] **Hwajung Yoo**, Pyo Min Hong, Taeyong Kim, Jung Won Yoon and Youn Kyu Lee. "Defending Against Adversarial Fingerprint Attacks Based on Deep Image Prior." IEEE Access, Jul. 2023.

[3] Soo-Hyun Lee, Min Young Lim, Seong Hee Park, **Hwa Jung Yoo** and Youn Kyu Lee. "Towards Cross-materials: Fingerprint Liveness Detection based on Style Transfer." The 13th International Conference on ICT Convergence, Oct. 2022.