

SEOYOUNG KWEON

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RESEARCH INTEREST

Internet Measurement and Network Security, Sociotechnical Security

EDUCATION

University of California, San Diego

Ph.D. in Computer Science & Engineering

Advisors: Stefan Savage, Geoffrey M. Voelker, Deepak Kumar

La Jolla, CA

Sep 2024 – 2029 (Expected)

Columbia University

M.S. in Computer Science

B.S. in Computer Science, Software System Track (3.89/4.0)

New York, NY

May 2024

May 2023

PAPER

[1] **Something to Talk About: Social Media as a Lens on Healthcare Ransomware Events**

Seoyoung Kweon, Paul Chung, Isabel Straw, Christian Dameff, Jeffrey Tully, Stefan Savage, Geoffrey M. Voelker, Deepak Kumar
The International AAAI Conference on Web and Social Media (ICWSM 27)

[2] **On the Performance Impact of HTTPS Resource Records**

Seoyoung Kweon, Stefan Savage, Geoffrey M. Voelker, Deepak Kumar
Under Submission

[3] **Long Story Short: Auditing Political Polarization in Recommendations for Long- vs. Short-form Videos on YouTube**

Shaokang Jiang, Arshia Arya, Seoyoung Kweon, Ivan Liang, Deepak Kumar, Kristen Vaccaro
The ACM Web Conference (WWW 26)

[4] **FOX: Coverage-guided Fuzzing as Online Stochastic Control**

Dongdong She, Adam Storek, Yuchong Xie, Seoyoung Kweon, Prashast Srivastava, and Suman Jana
Second Place in *SBFT 2024 Fuzzing Competition*
ACM SIGSAC Conference on Computer and Communications Security (CCS 24)

[5] **What Makes A Video Radicalizing? Identifying Sources of Influence in QAnon Videos**

Lin Ai, Yu-Wen Chen, Yuwen Yu, Seoyoung Kweon, Julia Hirschberg and Sarah Ita Levitan
Preprint, 2024

POSTER

[4] **Unveiling the Influencers of Radical Content: A Multimodal Analysis of QAnon Videos**

Lin Ai, Yu-Wen Chen, Yuwen Yu, Seoyoung Kweon, Julia Hirschberg and Sarah Ita Levitan,
International Conference on Computational Social Science (IC2S2 23)

EXPERIENCE & PROJECTS

University of California, San Diego

La Jolla, CA

Graduate Research Assistant, Sysnet and STSLab

Use and Spread of AI-Generated Images

May 2026 – Present

- Investigating the use of grok-generated images on the social media (X) and the possible harm that may be caused.
- Measure how widely spread these images are outside of X with reverse image searches.

Cyberdoping

Jun 2025 – Present

- Investigating network vulnerabilities in MassLynx software, which processes mass spectrometry data, to evaluate potential exploitation and manipulation of performance-enhancing substance detection outcomes.
- Reverse-engineered MassLynx DLLs to understand the network connection setup and decode packet data structures.

DNS HTTPS Resource Record [2]

Sep 2025 – April 2026

- Empirically characterized the nature of HTTPS RR optimizations from the standpoint of a web browser.
- Explored the extent to which modern browsers support the full range of performance measures allowed by the HTTPS record.
- Measure the performance benefits of each feature using “optimization complete” browser.

Healthcare Ransomware Event [1]

- Designed pipelines to ingest 1.7B Facebook and Reddit posts and automatically identify ransomware-related posts.

- Investigated ransomware disclosure practices, identifying differences in upload timing and impact discussion between healthcare organizations and individuals.

Auditing Political Polarization in YouTube Recommendations [3]

- Comparing behavior of YouTube recommender systems for long- and short-form videos with respect to the political orientation of recommended videos.
- Designed a pipeline to classify YouTube videos' political orientation using video title, description, and channel title.

Columbia University

New York, NY

Undergraduate/Graduate Research Assistant

Coverage-guided Fuzzer [4]

Jan 2023 – May 2024

- Enhanced AFL++, the current state-of-art fuzzer (software testing program), with a probabilistic decision-making framework.
- Modified LLVM instrumentation to extract metadata and insert a coverage guide into the binary.
- Parallelized LLVM instrumentation to reduce overhead in metadata generation and facilitated scalable multicore compilation.
- Curated an evaluation set to ensure comprehensive assessment and reflected real-world program scenarios.
- Identified a performance degradation resulting from a faulty implementation during the evaluation and propose a fix, resulting in a 20% improvement in coverage performance.

Online Radicalization in Video-Sharing Platform, Spoken Language Lab [5]

Jan 2022 - Dec 2022

- Analyzed multimodal features (facial motion/transcripts) of 6K+ videos related to politically radical domestic organizations uploaded on video-sharing platforms.
- Identified which multimodal features contribute to a video's popularity and likability with video metadata (likes/views).
- Analyzed the correlation between patterns in metadata (video uploads or comments) and real-life events.

ClouZen

Gyeonggi Hwaseong-si, KOR

Software Developer Summer Intern

May 2021 - Sep 2021

- Developed an initial prototype application with 10+ functionalities to parse and display data for user interaction.
- Designed frontend and backend of an application and the server, to improve the user interface and data processing efficiency

NON-RESEARCH PROJECTS

Malware Analysis & Reverse Engineering

New York, NY

Sep 2023 – May 2024

- Analyzed the behavior of real-world malware (e.g., WannaCry) using various static and dynamic analysis tools such as IDA Pro, FakeNet, Wireshark, and CFF Explorer
- Unpacked and restored malwares packed with various packers and anti-reverse engineering techniques

Programming Language Translator

New York, NY

DABOR [[github](#)]

Feb 2023 - Apr 2023

- Led a group of 5 members in designing a new language and compiler using LLVM and OCaml
- Built a scanner and parser for the language to parse code, and developed algorithms for generating AST, SAST, and code execution for 10+ behaviors
- Created a test set with 30+ cases to thoroughly test all implementations and error outputs

Linux Operating System

New York, NY

OS Project [[github](#)]

Sep 2022 - Dec 2022

- Led a group of 3 members and established a communication system for the effective distribution and sharing of work
- Implemented three different lock mechanisms in custom system calls to facilitate concurrent execution of multiple processes
- Built 5+ modules to add system calls, demonstrating an understanding of task_struct and virtual address translation
- Created a simplified round-robin scheduler and file system, replacing the existing ones

TEACHING EXPERIENCE

Columbia University, Teaching Assistant

New York, NY

COMS 4181, Security I

Sep 2023 – May 2024

Korean Community Services of Metropolitan New York, Tutor

New York, NY

Smartphone Class for Seniors

Sep 2023 – Dec 2024

Columbia University, Tutor

New York, NY

PHYS 1402, Electricity & Magnetism

Jan 2023 - May 2023

COMS 4701, Artificial Intelligence
COMS 4118, Operating Systems I

Jan 2023 - May 2023
Sep 2022 - Dec 2022

LANGUAGE AND IT SKILLS

C, C++, Java, Python, JavaScript, TensorFlow, PostgreSQL, LaTeX, IDA Pro, Ghidra, Docker, Wireshark

HONORS

Dean's List

Fall 2020, Spring 2021, Fall 2021, Spring 2023

Cooper Union Half Tuition Scholarship

Fall 2019, Spring 2020