Pithayuth (Will) Charnsethikul

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Research Interests

My research focuses on understanding human behaviors and perception around cybersecurity through variety of data such as client (i.e., user study), system, and social media. The goal is to apply my findings by integrating my expertise in machine learning, specifically in NLP, and the field of security to enhance users' online security and privacy experiences.

Education

University of Southern California, Ph.D., Computer Science — Los Angeles, California
Advisors: Jelena Mirkovic — *2021-present*

University of Southern California, M.S., Computer Science — Los Angeles, California
Specialization: Computer Networks — *2019-2021*

Kasetsart University, B.Eng., Computer Engineering — Bangkok, Thailand
2014-2018

Academic Experiences

Graduate Research Assistant — August 2021–Present
USC Information Sciences Institute (ISI), STEEL: Security Research Lab — *Marina Del Rey, California*

- **Privacy Setting**: conduct a user study that investigates how social media users adjust their default privacy settings.
- **Anti-Scam**: develop a dialogue system that not only engages with scammers but also extracts their information.

Student Worker, Research — August 2019–May 2021
USC Information Sciences Institute (ISI), STEEL: Security Research Lab — *Marina Del Rey, California*

- **Venmo**: build a neural classifier that categorizes Venmo public transactions into multiple sensitive classes.
- **Cloud Misbehavior**: identify which /24 network prefixes are "cloud", then quantify the amount of bad traffic originated from these networks.
- **DDoS Detection**: implement various anomaly detection approaches and evaluate them with the captured traffic.

Directed Research — August 2020–May 2021
Mentor: John Heidemann — *Remote*

- **DNS latency**: modify DNS servers to solicit TCP from selected clients, allowing us to determine RTTs.

Teaching Assistant — January 2023-Present
USC Viterbi Department of Computer Science — *Los Angeles, California*

- **CSCI 430: Introduction to Computer and Network Security**, Fall 2023, Instructor: Jelena Mirkovic
- **CSCI 567: Machine learning**, Spring 2023, Instructor: Yan Liu

Industry Experiences

Applied Scientist Intern — May 2023-August 2023
Amazon, SCOT-IPC: Specialized Selection — *Bellevue, Washington*

- Analyze customer's search data and calculate basket (i.e., online shopping cart) abandonment probability.
- Comprehensively investigate what drive basket abandonment, e.g., basket size, free shipping threshold, etc.
- Develop a neural network model that predicts the basket abandonment probability given an input of customer basket.

Technical Intern II — June 2022-August 2022
AT&T Labs Research, Mentor: Anestis Karasaridis — *Remote*

- DNS data collection and analysis, specifically for DNS-over-TLS (DoT) and DNS-over-HTTPS (DoH).
- Add DNS source code (PowerDNS dnsdist) to extract session ID and user-agent from DoT/DoH queries and create a data pipeline to transfer and enrich data between Azure environment and Snowflake.
- Analyze collected data on Azure Databricks.

Publications

- GLOBECOMM 2022: AMON-SENSS: Scalable and Accurate Detection of Volumetric DDoS Attacks at ISPs; Rajat Tandon, **Pithayuth Charnsethikul**, Michalis Kallitsis, Jelena Mirkovic
- PETS2022: I know what you did on Venmo: Discovering privacy leaks in mobile social payments; Rajat Tandon, **Pithayuth Charnsethikul**, Ishank Arora, Dhiraj Murthy, Jelena Mirkovic
  Acceptance Rate : 21.02% (33/157)
- PAM2022: Old but Gold: Prospecting TCP to Engineer and Live Monitor DNS Anycast; Giovane C. M. Moura, John Heidemann, Wes Hardaker, **Pithayuth Charnsethikul**, Jeroen Bulten, João M. Ceron and Cristian Hesselman
  Best Paper Award
- CloudNet2020: Quantifying Cloud Misbehavior; Rajat Tandon, Jelena Mirkovic, **Pithayuth Charnsethikul**

Technical Skills

Languages: Python, C, C++, Bash, HTML, CSS, PHP, JavaScript, Typescript, SQL, JAVA, Perl, LaTeX
Frameworks: scikit-learn, PyTorch, Torch, TensorFlow, Keras, Huggingface, Angular, Node.js, Spark
Packages and Tools: NumPy, Pandas, SciPy, Git, Docker, MySQL
Platforms: Linux, macOS, Windows, Arduino, Raspberry, GCP, Azure, AWS
Networking: tcpdump, Wireshark, Nmap, Knot DNS, dnsdist

Graduate Coursework

Advanced Analysis of Algorithms, Applied Cryptography, Foundations of Artificial Intelligence, Machine Learning, Advanced Natural Language Processing, Robustness and Generalization in Natural Language Processing, Advanced Operating Systems, Advanced Computer Networking, Security Systems

Certifications

- Deep Learning Specialization by DeepLearning.AI, Coursera

References

- Jelena Mirkovic, Research Associate Professor, USC ISI, mirkovic@isi.edu
- Genevieve Bartlett, Senior Computer Scientist, USC ISI, bartlett@isi.edu