Pithayuth (Will) Charnsethikul

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Research Interests

My research focuses on data-driven cybersecurity. Particularly, I am interested in applying NLP applications such as text classification and dialogue systems on text-based security problems including spam and phishing.

Education

University of Southern California, Ph.D., Computer Science — Los Angeles, California
Advisors: Dr. 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

Research Experiences

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

- **Phishing**: build a dialogue system that not only responses to the phishers but also elicits 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.

CSCI651: Computer Networking Research Project — August 2020–December 2020
Mentor: Dr. John Heidemann — *Remote*

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

Work Experiences

AT&T Labs Research — June 2022–August 2022
Mentor: Dr. Anestis Karasaridis — *Remote*

- DNS data collection and analysis, specifically 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

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

Graduate Coursework

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, Computer Networking, Security Systems

Certifications

- Deep Learning Specialization by DeepLearning.AI, Coursera

References

- Dr. Jelena Mirkovic, Research Assistant Professor, USC ISI, mirkovic@isi.edu