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Education

Doctor of Philosophy, Computer Science Jan. 2020 – Dec. 2026 (expected)

Texas Tech University, Lubbock, TX | Advisor: Susan A. Mengel, Ph.D. | GPA: 4.00

Dissertation: *Data-Driven Cybersecurity for Connected Devices: Traffic, Provenance, and Behavioral Threat Detection*. Defense: October 2026.

Bachelor of Engineering, Computer Engineering 2015 – 2019

Mahidol University, Bangkok, Thailand | GPA: 3.90

Awards / Distinctions

- **Best Presentation, Session 3** — 2025 4th Asia-Pacific Computer Technologies Conference (APCT 2025), Bangkok, Thailand, January 2025. For *A Web-based Interactive Visualization Tool for Astronomical Time Series*.
- **The Engineering Student Talent Award, first runner-up** — June 2017. Selected to one of the teams representing Thailand at the ASEAN programme in India.

Research Interests

Cybersecurity for connected devices — passive traffic fingerprinting, provenance-based authentication, and behavioral ransomware detection — and visual analytics for network attacks, HPC operations and incident forensics, and astronomical time series. Across both, matching the detection mechanism to the cost structure of the problem rather than defaulting to model complexity, and making results interpretable to the analyst who has to act on them.

Publications

Eight peer-reviewed publications: six full conference papers and two short papers. First author on all eight.

Peer-Reviewed Conference Papers

1. **Roemsri, P.**, McCarver, A., Maccarone, T., Shaw, A. W., Gandhi, P., Kaplan, D., & Dang, T. (2026). A web-based interactive visualization tool for astronomical time series. In *AIP Conference Proceedings* (Vol. 3378, No. 1, Article 040001). AIP Publishing. <https://doi.org/10.1063/5.0306001>
2. **Roemsri, P.**, Ribeiro, A. H., & Dang, T. (2025). PowerMap and time-indexed PCA trajectories: Interactive visual forensics for HPC incidents. *International Conference in Cybersecurity, IoT, Data Science, and Digital Forensics (CIDDF)*. Advances in Computer Science Applications and Research, Vol. 5, 178-197. Springer, Cham. https://doi.org/10.1007/978-3-032-19488-6_12
3. **Roemsri, P.**, & Dang, T. (2023). Visualization of attack behavior data in IoT network traffic. *Proceedings of the 2023 5th International Conference on Big-data Service and Intelligent Computation (BDSIC)*, 1-8. <https://doi.org/10.1145/3633624.3633625>
4. **Roemsri, P.**, Puangpontip, S., & Hewett, R. (2023). On detecting crypto ransomware attacks: Can simple strategies be effective? *2023 6th International Conference on Information and Computer Technologies (ICICT)*, 138-143. <https://doi.org/10.1109/ICICT58900.2023.00030>
5. **Roemsri, P.**, & Hewett, R. (2021). Device identification for IoT security. *2021 IEEE 6th International Conference on Signal and Image Processing (ICSIP)*, 866-870. <https://doi.org/10.1109/ICSIP52628.2021.9688598>
6. **Roemsri, P.**, & Hewett, R. (2020). Provenance location-based authentication in cloud computing. *Proceedings of the 11th International Conference on Advances in Information Technology (IAIT)*, Article 24, 1-8. <https://doi.org/10.1145/3406601.3406629>

Short Papers

7. Roemsri, P., & Dang, T. (2023). An interactive multi-degree analysis approach. *2023 IEEE VAST Challenge*, 9-10. <https://doi.org/10.1109/VASTChallenge60523.2023.00010>
8. Roemsri, P., & Dang, T. (2023). Effective dynamic network layout for transaction analysis. *2023 IEEE VAST Challenge*, 7-8. <https://doi.org/10.1109/VASTChallenge60523.2023.00009>

Presentations

- **A Web-based Interactive Visualization Tool for Astronomical Time Series.** 2025 4th Asia-Pacific Computer Technologies Conference (APCT 2025), Bangkok, Thailand — January 2025. Presenter.

Experience

Graduate Teaching Assistant

Jul. 2026 – Present

Department of Computer Science (Susan A. Mengel, Ph.D.), Texas Tech University, Lubbock, TX

Twelve-month departmental appointment supporting dissertation research.

- Dissertation research unifying four lines of work — provenance-based authentication, IoT device identification, crypto ransomware detection, and attack-behavior visualization — under one evaluation framework that weighs detection accuracy against deployment cost.
- Manuscripts in preparation on the JWST frame-quality review interface and on an HPC benchmark study rebuilt on the REPACSS cluster.

Graduate Teaching Assistant

Fall 2024 – Spring 2025

Department of Computer Science, Texas Tech University, Lubbock, TX

- Advanced Operating Systems Design (CS 5352), graduate — Fall 2024 and Spring 2025, ten hours per week; the Spring assignment covered the in-person section and the online section (D01).
- Parallel Processing (CS 5379) and Parallel and Concurrent Programming (CS 4379), cross-listed graduate and undergraduate sections meeting together — Spring 2025, ten hours per week, alongside the CS 5352 assignment.

Graduate Research Assistant

2023 – 2026

Interactive Data Visualization Lab (iDVL), Texas Tech University, Lubbock, TX

Research assistantship Feb. 2023 – Aug. 2024 and Jun. 2025 – Jun. 2026; the lab work continued during the 2024–25 teaching assistantship.

- Built the monitoring and visual analytics web application for the REPACSS HPC cluster, covering the full cluster of **110 CPU and 8 GPU nodes**, with Slurm job state, node telemetry, and power data integrated for operational analysis and job-outcome prediction.
- Published the case study (PowerMap and time-indexed PCA trajectories) that **traced a cluster-wide thermal event to its originating jobs** and the user account behind them.
- Developed a JWST NIRCcam photometry and frame-quality pipeline for the eclipsing binary ZTF J153932.16+502738.8 (PID 1666), producing **eclipse-timing measurements** for a Physics & Astronomy collaboration.
- Built the collaboration's review-and-flagging interface, ported from Dash to Next.js: multi-reviewer support, exportable flags, repeatability checks, and sigma clipping.
- Built the technical support platform for TxDOT Research Project 0-7147 (Phase III), Task 9, a project-level performance database for rigid pavements in Texas.
- Rebuilt the TxCRCP-ME design engine from a legacy Electron/Excel system into a Next.js application with interactive dashboards, geospatial visualization, and performance analytics.
- Designed visualization systems (D3.js, React) for IoT network attack behavior and multi-stage incident data.

Graduate Research Assistant

2020 – 2023

CapE Lab (Rattikorn Hewett, Ph.D.), Department of Computer Science, Texas Tech University, Lubbock, TX

- Developed passive traffic-fingerprinting methods that identify IoT devices from the device-characteristic strings in the DNS, mDNS, NUPnP, and SSDP traffic they already emit, with no active probing.
- Built and evaluated a component-based crypto ransomware detector from simple thresholds on performance indicators: **0.91 detection accuracy at a 0.08 false-alarm rate**, and easy to change as attacks evolve.
- Designed a provenance location-based authentication scheme for cloud computing: **100% accuracy** on synthesized data where a decision-tree model averaged 83.5%, with no training set.

Intern

2018 – 2019

ExxonMobil Thailand, Bangkok, Thailand

- Collected requirements and assigned coding tasks to teammates; delivered two to three small web applications.
- Designed and built the first prototype of a smart locker the company planned to adopt company-wide.

Software Projects

2016 – 2019

Bangkok, Thailand

- **National Medicinal Product Catalogue Database** (2019) — member of the development team: built UI pages and part of the database, and tested the delivered program against the user requirements.
- **Material Management Information System (PMIS) for Hospitals** (2018–2019) — designed the database, corrected other teams' database designs, and developed the backend; built the data management pipeline (CSV ingestion, validation, and conflict resolution over SQL Server and FastAPI); ran team meetings, prioritized and assigned work, and reported progress to the project manager; accountable for the quality of each application delivered against customer orders.
- **Automatic Weapon Detection for Knives and Guns** (deep learning, 2017–2018) — part of the development team: collected the data and trained the detection model.
- **Logistics Infrastructure and Integrated Information System, Healthcare Big Data for Thailand's Digital Economy** (2016–2018) — designed the database and the UI, and developed the assigned components; directed team meetings, planned code direction, assigned tasks, and collected requirements directly from the customer.

Technical Skills

- **Languages:** Python, JavaScript, TypeScript, R, SQL, HTML/CSS, LaTeX
- **Visualization and web:** D3.js, React, Next.js, FastAPI, Electron
- **Data and systems:** MySQL, SQL Server, Linux, Git, Slurm/HPC environments
- **Domains:** network traffic analysis, machine learning for classification, astronomical photometry pipelines

Languages

Thai — native | English — professional working proficiency