Pawissanutt Lertpongrujikorn

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SUMMARY

Computer Science and Engineering Ph.D. with 4+ years of research and development experience in distributed systems, serverless computing, and cloud-native architecture. Pioneered the novel Object-as-a-Service (OaaS) paradigm, with research published in multiple conferences, to streamline cloud application development. Proven expertise in system architecture, performance optimization, and solving complex challenges in scalable cloud environments using technologies like Kubernetes, Java, Rust, and Python.

EDUCATION

University of North Texas, Denton, TX   **2021-Present**
Doctor of Philosophy – PhD, Computer Science and Engineering
Master of Science – MS, Computer Science
(Program initiated at the University of Louisiana at Lafayette, 2021-2023)
Kasetsart University, Bangkok, Thailand   **2015 - 2019**
Bachelor of Engineering – BE, Computer Engineering

RELEVANT EXPERIENCE

ByteArk   **Jun 2019 – Jul 2021**
Software Engineer   *Bangkok, Thailand*
- Developed software for content delivery networks (CDN) and video streaming.
- Engineered and launched a low-latency HTTP live streaming (LL-HLS) service.
- Optimized software performance through extensive load testing, adhering to principles of system architecture and performance optimization, which improved reliability and performance for high-traffic video streaming.
- Designed and implemented an advanced, real-time queueing system for video transcoding, enabling dynamic task and customer priority adjustments for administrators.
- Automated CI/CD pipelines using **GitLab CI** and **Ansible** to streamline software deployment in an agile environment.
- Conducted in-depth research into video transcoding configurations to optimize transcoding time and streaming bandwidth.

HPCC Lab   **Aug 2021 – Present**
Research Assistant   *Denton, TX*
- Pioneered the design and development of Object-as-a-Service (OaaS)
- Engineered and implemented the OaaS prototype using **Java**, **Rust**, and **Python**, leveraging **Kubernetes** and **Knative** for robust deployment.
- Conducted rigorous performance evaluations on a distributed serverless system, using comprehensive load testing to diagnose and resolve complex technical bottlenecks, directly improving system scalability and reliability.
- Optimized system performance by strategically tuning parallelism and resource management, enhancing efficiency and reliability.
- Build automated scripts to streamline the creation of a research testbed in Chameleon Cloud using **Terraform** and **Ansible.**
- Researched into incorporating Large Language Models (LLMs) to automate the generation of serverless workflows, enhancing development efficiency.
- Mentored and onboarded multiple new Ph.D. students, providing technical guidance on distributed systems and research methodologies to accelerate their contributions to lab projects.

University of Louisiana at Lafayette   **Jan 2022 – May 2023**
Teaching Assistant   *Lafayette, LA*
- Assisted in teaching Distributed Computing Systems class (CSCE 533).
- Graded assignments and exams, providing constructive feedback to help students
- Help the student set up environments on the **AWS** cloud

SKILLS

- **Technical:** Cloud Computing, Microservices, Distributed Systems, System Architecture, Load Testing, Performance Optimization, Object-Oriented Programming, Algorithm
- **Programming Language:** Java, Rust, Python, TypeScript
- **Cloud & DevOps:** AWS, Chameleon Cloud, Kubernetes, Knative, Docker, Terraform, Ansible, GitLab CI, GitHub Action
- **Database & Storage:** MongoDB, ArangoDB, Redis, Minio (S3), Infinispan, SQL
- **Messaging**: Kafka, Zenoh, MQTT
- **Languages:** Thai (native), English

PUBLICATIONS

- **Lertpongrujikorn, Pawissanutt**, and Mohsen Amini Salehi. "Object as a service (OaaS): Enabling object abstraction in serverless clouds." 2023 IEEE 16th International Conference on Cloud Computing (CLOUD). IEEE, 2023.
- **Lertpongrujikorn, Pawissanutt**, and Mohsen Amini Salehi. "Tutorial: Object as a Service (OaaS) Serverless Cloud Computing Paradigm." 2024 IEEE 44th International Conference on Distributed Computing Systems Workshops (ICDCSW). IEEE, 2024.
- **Lertpongrujikorn, Pawissanutt**, Hai Duc Nguyen, and Mohsen Amini Salehi. "Streamlining Cloud-Native Application Development and Deployment with Robust Encapsulation." Proceedings of the 2024 ACM Symposium on Cloud Computing. 2024.
- Esashi, Akiharu, **Pawissanutt Lertpongrujikorn**, Shinji Kato, and Mohsen Amini Salehi, "Action Engine: Automatic Workflow Generation in FaaS," *Future Generation Computer Systems* (2026): 107947.
- **Lertpongrujikorn, Pawissanutt**, and Mohsen Amini Salehi. "Object as a Service: Simplifying Cloud-Native Development through Serverless Object Abstraction." *IEEE Transactions on Computers*, 2025, accepted in Oct. 2025, In press.

PROJECT

Object-as-a-Service (OaaS) (NSF-Funded Project)   Aug 2021- Present
- Developed a novel serverless paradigm, Object-as-a-Service (OaaS), to address the limitations of existing abstractions like Function-as-a-Service (FaaS).
- Streamlined cloud-native application development by encapsulating business logic, data, and non-functional requirements into a single, cohesive deployment package.
- Integrated with **Kubernetes** for deployment, **Kafka** and **Zenoh** for messaging, and **Minio** (S3) for storage.
- Accelerated the development process by reducing the need for extensive manual refinement and deployment adjustments, leading to enhanced performance and reliability in cloud solutions.
- Extended the platform for Edge-Cloud IoT applications, automatically managing function placement and data consistency to improve application responsiveness.

Action Engine   Jan 2023 – May 2025
- Developed a developer tool that automatically generates serverless workflows from natural language descriptions using Large Language Models (LLMs).
- Engineered a platform-agnostic system that outputs workflow definitions compatible with various cloud providers, reducing vendor lock-in and manual configuration.
- Designed the system to intelligently identify the correct functions and manage the data dependencies between them, abstracting away the complexity of serverless orchestration.
- This tool enables developers to build and deploy FaaS-based applications more rapidly, without requiring deep expertise in specific workflow services like AWS Step Functions or Google Cloud Composer.