

Tanapol Prucksakorn, Ph.D.

<https://tanapol.dev>

Email : contact@tanapol.dev

github.com/zynaxsoft

EXPERIENCE

- **Exawizards** Tokyo, Japan
February 2024 - Present
 - *Software Engineer*
 - **Product development:** Engage in the development and deployment of Exabase DX Assessment and Learning products. Designed and implemented REST APIs for a SaaS platform supporting over 2,000 corporate clients. Built intuitive and responsive frontend UI components using React, Recoil, and Styled-Components. Ensured software quality by writing comprehensive unit tests for Kotlin-based APIs using Kotest, and conducted both unit and end-to-end testing for the React UI using React Testing Library, Cypress, and MSW. (Kotlin, TypeScript, React, PostgreSQL)
 - **Team lead:** Acted as team lead, conducting regular one-on-one sessions to mentor and support team members in achieving personal and professional growth. Facilitated knowledge sharing through detailed code reviews and hands-on coaching, fostering a high-performing development team.
 - **Scrum master:** Led the implementation of Scrum methodologies and guided the team in agile best practices. Continuously improved development processes and tooling to enhance team efficiency. Promoted collaboration, nurturing a positive and productive team environment.
- **Dynamic Map Platform** Tokyo, Japan
January 2021 - January 2024
 - *Software Engineer*
 - **Development:** Collaborated with international teams across the U.S., Australia, and Japan to develop robust mapping software. Refactored legacy codebases to improve readability, maintainability, and reusability. Implemented unit tests to ensure code reliability and long-term scalability.(Python, C++, PostgreSQL)
 - **Decoding the black box:** Investigated and extended functionality of a complex, internally-used system originally developed by an external vendor. Gained proficiency in a diverse tech stack, including Go, Java (Spring), and TypeScript. Mapped interdependencies between AWS services such as Lambda, S3, Batch, ECS, ECR, CodeCommit, CodePipeline, CodeBuild, and RDS to enhance maintainability and transparency.
 - **Green Innovation Project (NEDO):** Partnered with U.S. engineering teams to contribute to a government-funded green innovation initiative aimed at reducing CO2 emissions. Built and delivered high-definition (HD) maps to support vehicle energy consumption simulations. Involved in constructing HD map data spanning 7,000 kilometers of roadway.
 - **QGIS Plugins:** Developed internal QGIS plugins to streamline the HD map production process. Integrated various technologies to support geospatial data workflows and automation. (Python, C++, PyQt, Qt, ZMQ, Protobuf, PostgreSQL, QGIS, AWS services, Terraform, GitHub Actions)
 - **Engineering:** Identified inefficiencies within internal workflows and proactively built custom tools to resolve them. Focused on optimizing developer experience and engineering velocity through automation and scripting. (Rust, Python)
 - **Researching:** Conducted research into curve-fitting and interpolation algorithms to enrich geospatial datasets. Applied mathematical models such as B-Splines to enhance the semantic accuracy of existing map data. (Rust, Python, B-Spline, Numpy, Egui)
 - **Cross-functional Support:** Assisted teammates in overcoming development and deployment challenges, especially in cloud infrastructure and CI/CD workflows. Helped bridge communication gaps across language and cultural differences, contributing to a more cohesive and efficient team environment.
- **QBIT Robotics** Tokyo, Japan
Mar 2019 - January 2021
 - *Software Engineer*
 - **Omotenashi Engine:** Designed and implemented the foundational architecture of the Omotenashi Engine, a core system powering the &robot café experience. Led code maintenance and performed rigorous code reviews to ensure long-term sustainability and performance. (Python)
 - **Robot experiences:** Migrated a monolithic robotics control system to a microservices-based architecture. Designed and built APIs to interface with multiple robotic arms, including XArm, UR5, Sawyer, and Melfa Assistia, by abstracting and unifying their control interfaces under a common API layer. (Python)
 - **Delivery Robot (NEDO):** Developed both the frontend and backend systems for a delivery robot platform as part of a government-backed NEDO initiative. Embraced serverless architecture principles to build scalable, maintainable solutions using modern web technologies and cloud infrastructure. (React, TypeScript, Terraform, AWS, Amplify, GraphQL)
 - **Machine Learning:** Integrated QVision, an image classification system, into the robotics platform. Enhanced the robot's environmental awareness using real-time object detection and classification powered by TensorFlow, YOLO, Intel RealSense, and ROS. (Tensorflow, YOLO, RealSense, ROS)
 - **Additional Contributions:** Refactored legacy code to improve scalability, maintainability, and performance. Mentored junior developers and promoted engineering best practices. Applied a wide array of modern tools and methodologies including AWS services, CI/CD pipelines, Docker, build automation, data analysis techniques, React, Django, and event sourcing patterns.
- **Japan Advanced Institute of Science and Technology** Ishikawa, Japan
Nov 2014 - Apr 2018
 - *Research Assistant*

- Japanese-German Collaborative Research on Computational Neuroscience: Autonomous Learning of Active Depth Perception: from Neural Models to Humanoid Robots: Implement a biological inspired active depth perception framework for robots. Main components of the research were **sensory coding**: active efficient coding theory, **reinforcement learning**, and neural network. (MATLAB, V-REP, Python)

- **Sirindhorn International Institute of Technology, Thammasat University** Pathum Thani, Thailand
May 2012 – May 2013
 - **Teaching Assistant**
 - **Lecture&Teaching:** Give lectures on basic electronics. Teaching assistance on Mobile Application Programming Course. (Objective-C)

EDUCATION

- **Japan Advanced Institute of Science and Technology** Ishikawa, Japan
Doctor of Philosophy (Ph.D.), Robotics, School of Information Science
Oct 2015 – Dec 2018
- **Japan Advanced Institute of Science and Technology** Ishikawa, Japan
Master's degree, Robotics, School of Information Science
Oct 2013 – Sep 2015
- **Sirindhorn International Institute of Technology, Thammasat University** Pathum Thani, Thailand
Bachelor's degree, Electronics and Communication Engineering
May 2009 – Apr 2013

SKILLS

- **Programming Proficiency:**
 - **Rust:** My primary and favorite language since 2019. Experienced with key libraries and frameworks including tokio, axum, tracing, actix-web, rocket, hyper, serde, sqlx, egui, ice, and more.
 - **Python:** My current go-to language, extensively used in both professional and research settings. Strong experience in backend systems, scripting, automation, and scientific computing.
 - **Kotlin:** Working experience in backend API development using Kotlin since 2024. Employed in production-grade SaaS services.
 - **TypeScript & JavaScript:** Proficient in modern frontend development. Hands-on experience with React, Recoil, Styled-Components (professionally), and Vue.js (personal homepage).
 - **C and C++:** Comfortable reading, understanding, and making targeted modifications in complex codebases.
 - **Go, Java:** Able to read and comprehend existing systems and contribute through targeted fixes and small feature development.
- **Development Experiences:**
 - **Clouds:** Experienced with a wide range of AWS services, including Lambda, S3, EC2, SQS, SNS, API Gateway, Amplify, AppSync, and QuickSight. Infrastructure-as-Code with Terraform.
 - **Microservices:** Led initiatives to refactor monolithic systems into microservices-based architectures for scalability and maintainability.
 - **Database:** Hands-on experience with relational databases such as PostgreSQL and SQLite.
- **Machine learning:** Background in reinforcement learning, developmental learning, and neural networks. Strong ability to understand, implement, and evaluate algorithms from academic research papers.
- **Networking:** Practical experience setting up and managing a home lab environment including HTTPS servers, private DNS, and VPN services.
- **Learning Ability:** Quick to adapt and learn new technologies and frameworks as required by evolving project needs.
- **Additional Skills:** Proficient with GNU/Linux environments, Git, Docker, NGINX, and AWS ecosystems. Interest and hobby in computer hardware and photography.
- **Languages:** English: Proficient, Japanese: Proficient, Thai: Native

PROJECTS

- **<https://tanapol.dev>:** Personal website built using JavaScript and Vue CLI. Fully self-hosted and containerized with Docker, served via NGINX.
- **<https://belowthe.rocks>:** A minimalist, self-authored blog platform fully written in Rust. Source code available on GitHub: github.com/zynaxsoft/belowtherocks.
- **Rust mini projects:** github.com/zynaxsoft/{smol_webhook, ray-tracing} and more.
- **mycraft-rs:** github.com/zynaxsoft/mycraft-rs. An attempt to build a Minecraft server from studying the Minecraft protocol.
- **Unmanned Aerial Vehicle (UAV) for Observing Landslide by using Quadrotor (2012-2013), UAV by using Tri-copter (2012):** Developed UAV systems as part of academic capstone and course projects. Built both a quadrotor and tri-copter from scratch, utilizing Arduino, XBee, IMU sensors, brushless motors, and electronic speed controllers (ESCs). (MATLAB, C)

AWARDS

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- Japanese Government Scholarship Student (Monbukagakusho:MEXT) *Oct 2014 – Oct 2018*
 - Young Scientist and Technologist Program (YSTP), Scholarship recipient by National Science and Technology Development Agenda (NSTDA) *May 2012 – May 2013*

PUBLICATIONS

Journal Paper

Tanapol Prucksakorn, Sungmoon Jeong, and Nak Young Chong, “A Self-Trainable Depth Perception Method from Eye Pursuit and Motion Parallax,” *Robotics and Autonomous Systems* (2018) Vol. 109, pp. 27-37.

International Conferences

Tanapol Prucksakorn, Sungmoon Jeong, and Nak Young Chong, “A Joint Learning Framework of Visual Sensory Representation, Eye Movements and Depth Representation for Developmental Robotic Agents,” in *International Conference on Neural Information Processing*, 2017 (pp. 867-876). Springer, Cham.

Tanapol Prucksakorn, Sungmoon Jeong, Jochen Triesch, Hosun Lee, and Nak Young Chong, “Self-calibrating active depth perception via motion parallax,” in *Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, 2016 Joint IEEE International Conference on (pp. 103-108). IEEE.

Tanapol Prucksakorn, Sungmoon Jeong, and Nak Young Chong, “Joint learning for smooth pursuit eye movement and motion parallax through active efficient coding,” in *Ubiquitous Robots and Ambient Intelligence (URAI)*, 2015 12th International Conference on (pp. 458-459). IEEE.

Tanapol Prucksakorn, Kriangkrai Wachirattanakornkul, and Itthisek Nilkhamhang, “Unmanned aerial vehicle for observing landslide with iterative feedback tuning,” in *Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2013 10th International Conference on. IEEE, 2013, pp. 1-5.