Tanapol Prucksakorn, Ph.D.

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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**:
  - **Rust**: My favorite programming language. Started since 2019. See projects below for my Rust experiences. Experienced with libraries: tokio, axum, tracing, actix-web, rocket, hyper, serde, sqlx, egui, ice, and more.
  - **Python**: My current go-to language for development. It is the programming language I am using at work and in research.
  - **TypeScript, JavaScript**: Experienced with React-TypeScript (at work), Vue-js (my homepage)
  - **C and C++**: Able to read/understand/modify
  - **Go, Java**: Able to read and understand
- **Development Experiences**:
  - **Clouds**: AWS: lambda, S3, EC2, SQS, SNS, API Gateway, Amplify, AppSync and Quicksight. Tools: Terraform
  - **Microservices**: Built and transformed part of legacy codes to microservices.
  - **Database**: PostgreSQL and SQLite
- **Machine learning**: Reinforcement learning, developmental learning, neural networks (Doctor, Master's). Able to read and implement things from academic papers.
- **Networking**: Experience of deploying an HTTPS server, a private DNS, and a private VPN in a small home-lab.
- **Learning**: Capable of adapting and learning new technologies quickly.
- **Miscellaneous**: GNU/Linux, Git, Docker, AWS services, NGINX, Computer Hardware, Photography
- **Languages**: English: Proficient, Japanese: Proficient (JLPT N2), Thai: Native

Experience

- **Dynamic Map Platform** — Tokyo, Japan
  Software Engineer — *January 2021 - Present*
  - **Development**: Develop software with people across countries between the team in the U.S., Australia, and Japan. Refactored the old code-base to be more readable and reusable. Create unit tests for the existing code. (Python, C++, PostgreSQL)
  - **Decoding the black box**: Understand and add small features to an internal-use system that was outsourced. This involved reading Go, Java (Spring framework), TypeScript. And connects the dots between services which involved AWS Labmda, S3, Batch, ECS, ECR, Code{Commit,Pipeline,Build}, RDS.
  - **Green Innovation Project (NEDO)**: Collaborate with the US side to build the HD-Map. The company is in the part of the government's project that tries to reduce the CO2 emissions. We provide the HD Map data for car's energy usage simulations. This project involves building an 7,000 kilometers worth of HD-Map. (Python, Problem solving)
  - **QGIS Plugins**: Internal-use QGIS plugins that is used for building the HD-Map. (Python, C++, PyQt, Qt, ZMQ, Protobuf, PostgreSQL, QGIS, AWS services, Terraform, GitHub Actions)
  - **Engineering**: Raise awareness of existing internal problems and find solutions. Make tools (software) to solve those problems. (Rust, Python)
  - **Researching**: Research for an algorithm to interpolate and fit the existing data to produce more meaningful information. (Rust, Python, B-Spline, Numpy, Egui)
  - **Other experiences**: Help teammates about coding problems and cloud services deployment problems. Set up CI/CD for a smooth development. Reduce the frictions introduced by language barriers.
- **QBIT Robotics** — Tokyo, Japan
  Software Engineer — *Mar 2019 - January 2021*
  - **Omotenashi Engine**: Design and implement the foundation of the Omotenashi Engine that is used in &robot café. Maintain and review the source code. (Python)
  - **Robot experiences**: Migrate the code base to microservices. Create an API for controlling a robot arm (wrapping the existing API) such as XArm, UR5 Robot Arm, Sawyer, and Melfa Assista. (Python)

- **Delivery Robot (NEDO)**: Develop the front-end web-interface, the back-end infrastructure for delivery robot with Serverless concept in mind. (React, TypeScript, Terraform, AWS, Amplify, GraphQL)
- **Machine Learning**: Integrate QVision, an image classifier, to the system. (Tensorflow, YOLO, RealSense, ROS)
- **Other experiences**: Refactor existing code to be more scalable and readable. Mentor juniors. Utilize the commonly available tools and practices: AWS services, CI/CD, Build Automation, Data Analysis, Event Sourcing, React, Django, Docker.

- **Japan Advanced Institute of Science and Technology** Ishikawa, Japan
  Research Assistant *Nov 2014 - Apr 2018*
  - **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
  Teaching Assistant *May 2012 – May 2013*
  - **Lecture&Teaching**: Give lectures on basic electronics. Teaching assistance on Mobile Application Programming Course. (Objective-C)

Projects

- **https://tanapol.dev**: My website. It is written in JavaScript powered by the Vue-cli framework. The website is self-hosted. (JavaScript, Vue-cli, CSS, Docker, NGINX)
- **https://belowthe.rocks**: github.com/zynaxsoft/belowtherocks, a blog that is entirely written in Rust.
- **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)**: The projects were done as a graduation project and course project respectively. The projected focused on building the UAVs from scratch by using Arduino, XBee, IMU, ESC, and brush-less motor (MATLAB, C)

Awards

- 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 Wachirarattanakornkul, 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.