PATTARAPORN TULATHUM

Robotics Engineer

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EXECUTIVE SUMMARY

- **Robotics engineer with five years of experience** designing, analyzing, and evaluating robotic systems and prototypes.
- Experienced **working with robot technology research through study and extra curriculum** (e.g., **object detection using YOLO**, **human pose estimation using OpenPose**) with various robotics platforms (e.g., TurtleBot, **Kuka**, **UR5e**).
- **Participated in international robotics challenges** (e.g., RoboCup Japan Open, and World Robot Summit).
- Ability to learn and adapt to **work with foreign colleagues**.
- **Proactive, empathetic, hard worker** who is eager to learn new things and uses a creative approach to solve challenging problems.
- Research interests include End-User Development (EUD) specifically software in robotic fields, and **Human-Robot Interaction (HRI)**.

TECHNICAL SKILLS

- **Programming Languages: Python** | **C/C++** | C# | Java | Bash | MATLAB | SQL | R
- **Libraries / Frameworks: ROS** | **OpenCV** | **OpenPose** | NumPy | SciPy | Scikit-Learn
- **Tools:** Git | Docker | Blender | **Gazebo** | Plotly
- **Operating System: Linux (Ubuntu)** | MacOS | Windows

KEY SKILLS

Innovative and adaptable | Debugging and troubleshooting | **Project management** | **Teamwork** | Leadership | Research methodology

PROFESSIONAL EXPERIENCE

- **Research Assistant at Nara Institute of Science and Technology** **May 2020 – Mar 2023**
  Nara, Japan
  - Design of robot programming system for non-expert users (PhD research)
    - Designed and developed a system that allows non-expert users in creating and debugging a robot behavior program using visual programming (i.e., drag-and-drop method). It also allowed users to test the program via simulated convenience store environment through **Gazebo**.
    - Utilized **RGB-D camera** to record human poses (e.g., waving action) and **estimated the poses with OpenPose library**. Utilized Blender to create 3D human models and simulated the poses in **Gazebo**.
    - Evaluated the proposed system with 24 non-expert users using quantitative evaluation (i.e., number of attempts, pass, and time to finish given tasks) and qualitative evaluation (i.e., System Usability Scale, and interview).
    - Visualized the results using Plotly which showed that more than 70% of non-expert users can utilize the proposed system to finish all tasks, and overall, of the system had a good level of usability.
- **Business Development at Learn Corporation** **Oct 2017 – Mar 2018**
  Bangkok, Thailand
  - Designed python programming language curriculum for teachers and high school students.
  - Evaluated the pilot courses with high school teachers and students for feedback and improvement.
- **Teaching Assistant at Kasetsart University** **Oct 2013 – Jun 2017**
  Bangkok, Thailand
  - Assisted first year students in faculty of engineering in the information technology and programming classes (e.g., C# and Java).
  - Supported the lecturers in checking assignments and exams.

QUALIFICATIONS AND AWARDS

- **Member of team NAIST-RITS-Panasonic at Nara Institute of Science and Technology** **Apr 2018 – Mar 2023**
  Nara, Japan
  - Main tasks:
    - Tested and deployed the program based on competition rules and troubleshooted when found errors.
    - Prepared actual environment for testing.

- Awards
  - Participated in the World Robot Summit 2020, Future Convenience Store Challenge (Nagoya, Japan): Overall winner prize and 1st place in two of three main tasks using UR5e platform.
  - Participated in the World Robot Summit 2018, Future Convenience Store Challenge (Tokyo, Japan): 2nd place in one of three main tasks using UR5e platform.

- **Member of Team Marketing at Thai Students' Association in Japan Under the Royal Patronage** **Apr 2018 – Mar 2019**
  Nara, Japan
  - Communicated with companies and organizations located in Thailand and Japan using Thai and English languages.
- **Exchange Student in Japan-Asia Youth Exchange Program in Science at Tamagawa University** **Jan 2017 – Jan 2017**
  Tokyo, Japan
  - Developed a program for operating the TurtleBot robot using **Robot Operating System (ROS)** and **Python**.
  - Modified the program for operating the robot manipulation.
- **Summer Intern at CT Asia Robotics** **Jun 2016 – Aug 2016**
  Bangkok, Thailand
  - Implemented a **human's face recognition** program on a Dinsaw Mini service robot using **C++** and **OpenCV**.
- **Member of team Skuba and Skuba-JR at Kasetsart University** **Jun 2015 – Jun 2017**
  Bangkok, Thailand
  - Main tasks:
    - Developed programs for robot manipulation, sound generation
    - Supported other members in navigation using SLAM, and **3D object detection in Point Cloud**s.
  - Awards
    - RoboCup Asia Pacific 2017, RoboCup@Home Education League (Bangkok, Thailand): 2nd place in the RoboCup@Home Education using TurtleBot platform.
    - RoboCup Japan Open 2017, RoboCup@Home Education League (Nagoya, Japan): 2nd place in the RoboCup@Home Education using TurtleBot platform.
- **President of Student Council at Department of Computer Engineering, Kasetsart University** **Apr 2015 – Mar 2016**
  Bangkok, Thailand
  - Managed internal events for computer engineering students and collaborate with faculty members.
  - Arranged social events such as BarCamp Bangkhen.

SELECTED PUBLICATIONS

- **Robot Behavior Debugger for Non-Expert Users in Convenience Stores using Behavior Trees:**
  Tulathum P, Usawalertkamol B, Garcia Ricardez GA, Takamatsu J, Ogasawara T, Matsumoto K.
  Advanced Robotics Journal, Sep 2022.
- **Autonomous Service Robot for Human-Aware Restock, Straightening and Disposal Tasks in Retail Automation:**
  Garcia Ricardez GA, Uriguen Eljuri PM, Kamemura Y, Yokota S, Kugou N, Asama Y, Wang Z, Kumamoto H, Yoshimoto K, Chan WY, Nagatani T, Tulathum P, Usawaleartkamol B, Hafi LE, Ikeuchi H, Yamamoto M, Takamatsu J, Taniguchi T, Ogasawara T.
  Advanced Robotics Journal, Aug 2022.
- **Human-Robot Interaction System for Non-Expert Users in Convenience Stores Using Behavior Trees:**
  Tulathum P, Usawalertkamol B, Garcia Ricardez GA, Takamatsu J, Ogasawara T, Matsumoto K.
  IEEE/SICE International Symposium on System Integration (SII), Jan 2022.

EDUCATION

- **Doctor of Engineering**
  - Information Science • Nara Institute of Science and Technology • Japan • April 2020 - March 2023
- **Master of Engineering**
  - Information Science • Nara Institute of Science and Technology • Japan • April 2018 - March 2020
- **Bachelor of Engineering**
  - Computer Engineering • Kasetsart University • Thailand • May 2013 - June 2017

MISCELLANEOUS INFORMATION

- **Nationality:** Thai
- **Languages:** Thai (Native), English (TOEIC 850), Japanese (JLPT N3), Chinese (Beginner)
- **Availability:** Immediate