Pongporn (Ken) Supa

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Education

University of Bristol   *Bristol, UK*
MSc in Robotics   *Sept 2024 – Current*

- **GPA:** 74/100, Expected Distinction
- **Thesis:** <u>Whisker-Inspired Tactile Sensing for Bumper Drone</u> under supervision of Dr. Basaran Bahadir Kocer 🔗
- **Selected Coursework:** Bio-inspired Aerial Robotics, Robotics Fundamentals, Robot Learning and Teleoperation, Swarm Robotics, Machine Vision

Chulalongkorn University   *Bangkok, TH*
BEng in Mechanical Engineering   *Aug 2017 – Aug 2021*

- **GPA:** 3.63/4.00, First Class Honour
- **Selected Coursework:** Mechatronics (**A**), Automatic Control Systems (**A**), Dynamic System Simulation (**A**), Statistics (**A**), Linear Algebra and Differential Equation (**A**), Computer Programming (**A**)

Work Experience

Robotics Software Engineer   *Bangkok, TH*
AI and Robotics Ventures, HORRUS project   *Apr 2022 – Aug 2024*

- Achieved 95% success rate of 24/7 PX4 Ardupilot autonomous UAVs system operations by implementing a robust and real-time middleware using MAVLink protocol with asynchronous programming
- Redesigned and implemented reliable and high-performance backend services and APIs for real-time control and video streaming from UAVs in security service 5G drones
- Developed drivers to interface with cameras and to integrate with real-time object detection models and traffic analysis in a £7K government projects
- Designed and developed a coverage path-planning for aerial photogrammetry and path planning with constraint-based static geofences

Research Assistant: ***Modular Temperature-Controlled Syringe Pump Extruder for Soft Material 3D Printer*** *under Assoc. Prof. Ratchatin Chancharoen* 🔗   *Bangkok, TH*
                                                                                                              May 2021 – Oct 2021
Department of Mechanical Engineering, Chulalongkorn University

- Transformed a cartesian robot into the syringe-based soft material 3D printer, which is capable of controlling the temperature of the syringe and printing bed, helping secure £67K funding from the National Research Council of Thailand (NRCT)
- Designed PCBs for soft material printing benefits, including a high-temperature extruder, dual-temperature controller printing bed, and nozzle calibration module to address complex behavior of viscoelastic materials.
- Extended open-source 3D printer firmware to create custom control interfaces and generate feature-based trajectories with computer vision integration for adaptive printing based on real-time shape detection, leading to the prototype showcase at Thailand Inventor's Day

Projects

Learning from Demonstration on Robot Manipulation   *Mar 2025 - Apr 2025*

- Applied discrete Dynamic Movement Primitives (DMPs) to robot manipulator for trajectory planning by learning from demonstration dataset
- Utilised Gaussian Mixture Models (GMM) and Gaussian Mixture Regression (GMR) to generate trajectories from input dataset
- Designed PD controller for Leader-Follower Teleoperation system

Human-like vs. robot voice. Who gives better encouragement? *Mar 2025 - Apr 2025*
- Integrated Text-to-Speech AI and Co-verbal gestures to NAO robot, enabling human-like behavior

Adaptive Point-Tracking Control of Multi-Robots Box Pushing *Github repo* ☑
- Proposed and developed Adaptive Point-Tracking Control algorithm in a cooperative multi-mobile robot system box-pushing problem to maintain straight line trajectory, and minimise deviation in box trajectory
- Employed PID speed controller on mobile robots and high-pass filter on gyroscopic data processing

Search & Rescue in Mobile Robot *Github repo* ☑ *Youtube* ☑
- Designed and Developed Finite-State Machine to perform sensor calibration routine, obstacle avoidance and search and rescue operation on a known map
- Implemented dead reckoning method for localisation, and pose correction using prior knowledge of the environment
- Employed PID speed controller on mobile robots and low-pass filter in speed estimation

Apple Counting in Orchards *Dec 2024 - Jan 2025*
- Compared the performance of apple counting, detecting, and localising tasks between conventional image processing and machine learning methods
- Designed and implemented image processing pipeline using color, geometric, and texture features for apples in orchards, which are susceptible to varying light conditions

Teachings

Teaching Support in Visual Analytics Course *Jan 2025 - May 2025*
- Demonstrated and led tutorial sessions on data visualisation and statistical methods

Teacher Assistant in Manufacturing Process Course *Mar 2022*
- Prepared courseware/engineering workshops. Lectured on how 3D printing settings and parameters affect printing quality

Skills

Programming languages: Python, C/C++, MATLAB, Simulink

Software: Git, Docker, ROS2, OpenCV, PyTorch, PX4, QGroundControl, RViz, Gazebo

Hardware: Proficient in digital fabrication for rapid prototyping, PCB design, CAD, Fusion360

Honors & Awards

Bristol Award Plus, *University of Bristol*	*Mar 2025*
Think Big Scholarship Award Recipient, *University of Bristol*	*Sept 2024*
PTTEP Innovation Award, *Silver Award, Autonomous Offshore Drone System*	*July 2024*
Spotlight on New Technology Awards, *OTC Asia 2024, AI and Robotics Solutions for Offshore Digitalisation*	*Feb 2024*
Invited speaker on Robotics & AI Bootcamp, *Chula Engineering NITAD 18*	*Mar 2022*

References

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