

CHAINATEE TANAKULRUNGSON

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Portfolio: <http://ctanakul.github.io/chainatee-portfolio>



EDUCATION

Northwestern University

Master of Science in Robotics (GPA: 3.87/4.00)

Relevant Courses: Advanced Mechatronics, Computational Geometry, Machine Learning, ROS, Robot Kinematics, Lagrangian Dynamics, Nonlinear Optimization, Computer Vision

Evanston, Illinois
Sept 2016 - Dec 2017

Chulalongkorn University

Bachelor of Engineering in Mechanical Engineering (GPA: 3.56/4.00)

Bangkok, Thailand
Jun 2011 - Aug 2015

SKILLS

C/C++ OOP, ROS (Robot Operating System), Parallel Programming, Python, UR3/5, TCP/IP, OpenCV, MATLAB, Mathematica, Gazebo, Linux, git, CATIA, SolidWorks, EAGLE PCB CAD, Android (Basic), Microcontroller (PIC32, Arduino), Screw Theory

WORK EXPERIENCE

Olis Robotics, Inc. (Former Bluhaptics)

Robotics Software Developer

Seattle, Washington
Mar 2018 - Present

- Maintained Buildbot system on AWS for running unit tests
- Developed and maintained the codebase for the TCP/IP, serial, and MODBUS communication between robots including UR3/5 and users
- Created user interface for robot control using Qt
- Modified inverse kinematics optimization routine for collision avoidance using configuration control method
- Developed Damped Least Square, Cyclic Coordinate Descent, and Analytical Inverse Kinematics in C++ used by multiple robot models with real-time Jacobian calculation using Screw Theory
- Integrating and improving optimization routine for higher flexibility of robotic manipulation algorithm

Bluhaptics, Inc.

Robotics Software Engineering Intern

Seattle, Washington
Jun - Sept 2017

- Integrated the Bluhaptics robot control system with NASA Robonaut by developing numerical inverse kinematics in C++
- Simulated robot in Gazebo and validated controls

Human Robotics Lab, Chulalongkorn University and Hospital

Research Assistant, Mechanical Design and Market Research

Bangkok, Thailand
May 2015 – Jul 2016

- Developed prototype of static wrist holder in CATIA for exoskeleton with mobile transmission system for Brachial Plexus Injury (BPI) patients whose arm movements are limited due to nerve injury

Siam Kubota Corporation Co., Ltd.

Siam Kubota Challenge 2014 Production Engineering Intern

Chonburi, Thailand
Mar – Jul 2014

- Designed a robust PLC logic ladder to minimize defects in tractor engine assembly line
- Optimized engine assembly process with improved procedures resulting in 10-second reduction in production line

PROJECTS

Assistive Assembly Robot

- Reviewed and selected mobile base for swarm robot system for Boeing airplane assembly project
- Wrote C++ library for processing odometry of holonomic robot
- Conducted performance tests of robot's encoder odometry and compared against ground truth from HTC Vive

Evanston, Illinois
Sept – Dec 2017

Robotic Catching Project

- Used RGBD sensor in conjunction with OpenCV to detect 3D object position
- Designed algorithm to predict final position of a ball based on initial throwing trajectory, implemented in Python
- Designed Jacobian-based endpoint control algorithm for moving end-effector to catching position
- Integrated all functionalities using ROS

Evanston, Illinois
Jan - May 2017

Self-driving Mechatronics Car

- Designed a custom PCB with EAGLE PCB CAD for PIC microcontroller, and fabricated custom built chassis
- Wrote computer vision software for line tracking and low-level control code in C for motor control
- Associated code for communicating the output of computer vision over USB between Android phone camera and PIC

Evanston, Illinois
Mar - May 2017

Touchback Project: System for Recording and Replaying Textures on a Haptic Touchscreen

- Fabricated test samples with varying texture properties in SolidWorks
- Used record player phonograph needle and amplifier to record sample textures
- Played back surface feature on haptic touchscreen allowing users to feel virtual texture
- Prototyped sinusoidal grating panel for recording material texture that can be played back on a touchscreen with haptic feedback, allowing users to sense simulated surface roughness from vibration

Evanston, Illinois
Jan - Mar 2017