CHAINATEE TANAKULRUNGSON

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OVERVIEW

Driven robotics engineer with 2+ years of experience. Equipped with a strong background in Controls, Kinematics, and Motion Planning, and practical implementation with real robot systems. Very comfortable with object-oriented languages (C/C++), common robotics frameworks (ROS/Gazebo), as well as workflow tools such as git and Jira. Hard-working and detail-oriented. Attentive to timely project delivery of projects and team collaboration.

SKILLS

C/C++ , Python, ROS (Robot Operating System), Parallel Programming, URScript, TCP/IP, OpenCV, MATLAB, Mathematica, Gazebo, Linux, git, Jira, CATIA, SolidWorks, EAGLE PCB CAD, Android (Basic), Microcontroller (PIC32, Arduino), Screw Theory, AWS EC2

WORK EXPERIENCE

Olis Robotics, Inc. — Seattle, Washington
Robotics Software Developer — Mar 2018 - Feb 2020
- Developed and maintained adapters/drivers for robots including UR3, UR5, HDT Adroit, and MIR, using TCP/IP, and ROS
- Created user interface for robot control with Qt, and transitioned the user interface framework to a newer version of Qt
- Developed Analytical and Numerical Inverse Kinematics with concepts such as Damped Least Square, Configuration Control Method Collision Avoidance, and Cyclic Coordinate Descent in C++ for end-effector control
- Created a real-time Jacobian calculation framework from Denavit-Hartenberg configuration using Screw Theory
- Projected and planned the next steps and timeline for an introduction of a new robot to the system
- Maintained the buildfarm on AWS EC2 for unit tests

Bluhaptics, Inc. — Seattle, Washington
Robotics Software Engineering Intern — 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 — Bangkok, Thailand
Research Assistant, Mechanical Design and Market Research — 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. — Chonburi, Thailand
Siam Kubota Challenge 2014 Production Engineering Intern — 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

EDUCATION

Master of Science in Robotics (GPA: 3.87/4.00) — Evanston, Illinois
Northwestern University — Sept 2016 - Dec 2017
Relevant Courses: Advanced Mechatronics, Computational Geometry, Machine Learning, ROS, Robot Kinematics, Lagrangian Dynamics, Nonlinear Optimization, Computer Vision

Bachelor of Engineering in Mechanical Engineering (GPA: 3.56/4.00) — Bangkok, Thailand
Chulalongkorn University — Jun 2011 - Aug 2015

PERSONAL / SCHOOL PROJECTS (pictures and videos at: http://ctanakul.github.io/chainatee-portfolio)

Assistive Assembly Robot — Evanston, Illinois, Sept – Dec 2017
- 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

Robotic Catching Project — Evanston, Illinois, Jan - May 2017
- Used RGBD sensor in conjunction with OpenCV to detect 3D object position
- Designed algorithm in Python to predict final position of a ball based on initial throwing trajectory
- Designed Jacobian-based endpoint control algorithm for moving end-effector to catching position
- Integrated all functionalities using ROS

Self-driving Mechatronics Car — Evanston, Illinois, Mar - May 2017
- 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

Touchback Project: System for Recording and Replaying Textures on a Haptic Touchscreen — Evanston, Illinois, Jan - Mar 2017
- 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