

Ruotong Jia (Rico)

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EDUCATION

Masters of Science in Robotics, GPA 3.62/4.0

December 2020

- Northwestern University, Evanston, IL

Bachelor of Applied Science in Electrical Engineering

May 2019

- University of British Columbia, Vancouver, BC, Canada

SKILLS

- Programming: C, C++, Python, MATLAB, Excel VBA
- Robotics: ROS, Rethink Intera, Microchip PIC, Arduino, PSIM, Circuit Maker
- Electrical Engineering: Control Systems, Signal Processing, Power Electronics
- Coursework: Machine Learning, Advanced Computer Vision, Robot Navigation, Kinematics, Dynamics

WORK EXPERIENCE

Research Intern

May - July 2018

National Laboratory of Robotics, Tecnológico de Moerrey, Mexico

- Successfully manufactured PCB and mounted electronics of a micro UAV, as long as the communication chain between the ground station, PIC microcontroller, and Sensor Network using Telnet, Serial Communication, I2C protocols
- Developed noise reduction algorithm for barometric altitude sensor using impedance matching and a first order low-pass filter, which resulted in a 2.7dB decrease in SNR ratio and a 0.7s step response time constant
- Assisted with dynamics simulation on SIMULINK for Sliding-Mode controller design using Newton-Euler's Approach

Engineering Co-op Student

September 2017 - May 2018

EWOS CANADA, CARGILL INC., Surrey, Canada

- Actively leading, managing, coordinating multiple industrial energy conservation projects, including air leak repair, compressed air system upgrade, and pneumatic valve replacement
- Surveyed plant motors for updated power rating, power factor and frame size and updated one-line MCC diagrams
- Independently proposed and accomplished a fully-functional data entry software for QA lab using Excel VBA
- Provided technical support to QA lab such as testing and sample management

TECHNICAL PROJECTS

Robot Artist

December 2019

- Successfully developed a painter robot algorithm on a Rethink Sawyer robot, which included a Depth-First-Search based path planning algorithm
- Built a robust linear trajectory planning algorithm with Rethink Intera's Inverse Kinematics tools (ROS Python), and a P force controller on the robot gripper

Rover for Outdoor Log Inspection

September 2018

- Implemented Phidget1040 GPS Driver Module on ROS Melodic in C++ and developed a linear Kalman Filter for localization realized by GPS + IMU sensor fusion on ROS Melodic in C++
- Designed PD Motor Control on driving wheels for rough terrains using state-space control techniques

Electrical Turbo-Fan Helicopter

April 2016

- Designed and established a PID-based dual-motor control system with 5% overshoot and a settling time of 2.2 seconds, with an infrared range sensor, an optical encoder, and a motor controller of two DC brushless motor and one Arduino Uno

DESIGN TEAM & COMPETITION EXPERIENCE

UBC Biomedical Imaging and Artificial Intelligence (BMIAI) Hackathon

November 2018

3rd Place

- Implemented Natural Language Processing (NLP) on Tweets for sentiment analysis using Google TensorFlow in Python 3.7, achieving 76.4% accuracy with 1000 features

Captain

July 2016 - May 2018

UBC Sustainingengineering

- Designed a Perturb & Observe (P&O) MPPT algorithm for a 6V-12V pico standalone solar system on Simulink, later implemented the controller in a Reverse-Buck DC-DC Converter topology
- Initiated and supervised Standalone Photovoltaic Project and Wireless Solar Pump Data Transmission System Project
- Implemented an Arduino-3G communication channel for a solar pump's wireless data transmission with its control computer