Ruotong Jia (Rico)

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EDUCATION

Northwestern University, Evanston, IL   **December 2020**
   - **Masters of Science in Robotics, GPA 3.57/4.0**
University of British Columbia, Vancouver, BC, Canada   **May 2019**
   - **Bachelor of Applied Science in Electrical Engineering**

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, 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

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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, a 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 Phiget1040 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**
   - 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

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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 Sustaingineering
   - 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