Christopher L. Choi

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RESEARCH INTERESTS

Visual Inertial Odometry (VIO)
Micro-aerial vehicles (MAVs)
Genetic Programming (GP)

EDUCATION

PhD Computer Science — September 2018 — Present
Imperial College, London.

Advisor: Prof Stefan Leutenegger
Concentration: SLAM, VIO, Multi-Sensor Calibration

MASc Mechanical Engineering — September 2015 — August 2018
University of Waterloo, Canada.

Advisor: Prof Steven Waslander
Concentration: Autonomous Systems
Modules: Deep Learning, Autonomous Mobile Robotics, Fuzzy Logic

MSc Advanced Computer Science — September 2011 — September 2012
University of St Andrews, Scotland

Concentration: Data mining, Software Engineering
Modules: Advanced Softare Engineering, Advanced A.I., Advanced Network and Distributed Systems, Softare Architecture, Language Perception.

BSc Computational Physics — September 2007 — June 2011
HeriotWatt University, Scotland

Concentration: Chaos Theory, Fast Fourier Transform
Modules: Remote Sensing and Energy Studies, Applied Quantum Theory and Spectroscopy, Physical Mathematics.

EXPERIENCE

Software Engineer Intern — September 2014 — September 2015 (1 year)
Silicon Valley Internship Programme (SVIP), San-Francisco, USA

At Cask Data I implemented an Integration Testing Framework in Python. My second and current experience is at LoopUp, a call conferencing company where I am creating a fraud notification system, the system is was implemented in Python and Flask.

Research Assistant — September 2012 — May 2013 (9 months)
University of St Andrews, St-Andrews, Scotland

Surveyed NoSQL databases such as MongoDB and CouchBase, and presented my work at the International Symposium on Grids and Clouds (ISGC) in Taipei, Taiwan.

Physics Summer Internship — July 2009 — September 2009 (3 months)
HeriotWatt University, Edinburgh, Scotland

Created a ruby script that would allow researchers perform physics simulations across a number of Linux machines.

Bioinformatics Summer Internship June 2009 — September 2009 (4 months)
University of Edinburgh, Edinburgh, Scotland

Helped Dr T.Waibel analyze his sequenced data to identify key gene regulators in Taxol bio-synthesis found in Yew trees. Taxol (a.k.a Paclitaxel) is one of the major chemotherapy drug used to treat patients with lung, ovarian, breast, head and neck cancer.

Physics Summer Internship June 2008 — August 2008 (3 months)
Queen Mary, University of London, London, England

Ported a computer program called Rivetgun to work under BOINC. The work required C/C++ programming and system administration under Debian Linux. I also built temperature sensors to monitor the High Throughput Cluster at Queen Mary. Temperature values were then logged to a web based system monitoring software called Zabbix.

PROJECTS

Encoderless Gimbal Calibration March 2017 — September 2017

Designed and built a custom quadrotor with a gimbal camera using off the shelf components. Additionally I collected over 50 different flight data used towards a novel camera to gimbal camera extrinsics calibration research paper.

Autonomous Tracking and Landing (ATL) Janurary 2016 — March 2017

Implemented combination of linear flight controllers and Kalman filters to perform vision-based autonomous quadrotor landing using C++ and ROS. Made performance tweaks to the vision processing of AprilTag detection for a 1.5x to 2x speed up, and added robustness under different lighting conditions.

playground September 2013 — September 2014

A meta-heuristic library implemented in python. The most impressive feature is symbolic regression where it regresses mathematical variables and constants, not just model parameters (Demo).

CRoPs July 2013 — Feburary 2013

A path planning algorithm that combines potential fields and probabilistic roadmaps to guide a swarm from an initial configuration to a final configuration. (Demo)

PUBLICATIONS

C. L. Choi, J. Rebello, L. Koppel, P. Ganti, A. Das, S. L. Waslander. "Encoderless Gimbal Calibration of Dynamic Multi-Camera Clusters". IEEE International Conference on Robotics and Automation (ICRA), Brisbane, 2018.

AWARDS

2nd Place, HackKings Hackathon Feburary 2014

My team and I created Streamy, a product that uses Twitter to locate and target users close to the news worthy locations to stream live video from their phone. Using only HTML5 and JavaScript we were able to access the user's phone camera directly and stream the video back to a centralized server without requiring the user download any phone specific app, check out this demo.