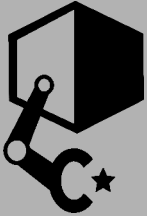


Andrew Price



Doctoral Candidate

Laboratory:

Space Robotics Laboratory
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Summary

Doctoral Candidate at Tohoku University, Japan studying machine learning systems for orbital debris capture applications. Software strengths in MATLAB and Python. Significant experience in flight data acquisition, large scale testing and computer vision pose estimation. Career objective to be part of the debris-removal solution in the near-Earth orbital environment.

Education

Doctoral Candidate, Aerospace **Tohoku University**
2019 - Present *Japan*
Dr. Kazuya Yoshida

Master of Applied Science, Aerospace **Carleton University**
2013 - 2015 *Canada*
Dr. Fred Nitzsche

Bachelor Engineering, Aerospace **Carleton University**
2009 - 2013 *Canada*
Dr. Jeremy Laliberté

Employment

Visiting Researcher **Ecole Polytechnique
Fédérale de Lausanne**
6DoF Pose Estimation,
Synthetic Rendering,
Network Compression
2022 - 2023 *Switzerland*
Dr. Mathieu Salzmann

Associate Researcher **National Research Council**
Large-Scale Testing,
Flight Measurement,
Aero-Acoustics
2015 - 2019 *Canada*
Dr. Sebastian Ghinet

Research/Teaching Assistant **Carleton University**
2012 - 2015 *Canada*
Data Acquisition,
Teaching
Professors F. Nitzsche,
M. Ahmadi and C. Merrett

Software Skills

MATLAB / SIMULINK
Python
Linux / Windows
NI LabVIEW
C++

Blender / SOLIDWORKS
GIMP/Kdenlive (Media Editing)
LaTeX
Visual Basic
Various Application Specific

Publications

1 Journal
16 Conf. Proceedings
12 NRC Public Reports
1 Trade Journal

Journal of Intelligent Material
Systems and Structures, CVPR,
IEEE Aerospace, AIAA Scitech,
Noise-Con, AHS, Inter-Noise

Awards

- CVPR2021 AI For Space Workshop Best Presentation Award
- Japan Monbukagakusho MEXT and Tohoku University GP-Mech Scholarships
- International Institute of Noise Control Engineering: Young Professional's Grant
- Various Carleton University Departmental and Dean's List Scholarships

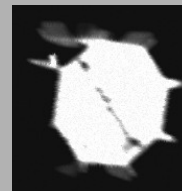
Projects

Hayabusa2 Minerva-II2 Pose Estimation 2021

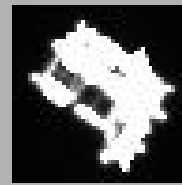
Given 61 real images of the Minerva-II2 rover taken by the Hayabusa2 ONC-W2 camera during deployment, estimate the 6DoF pose of the rover. This project posed particularly difficult challenges:

- 1) No training dataset
 - 2) Minerva rover is Order 16 Symmetric
 - 3) Image quality is poor by ML standards
- Workflow: Develop synthetic dataset, train detector, solve symmetric PnP problem.

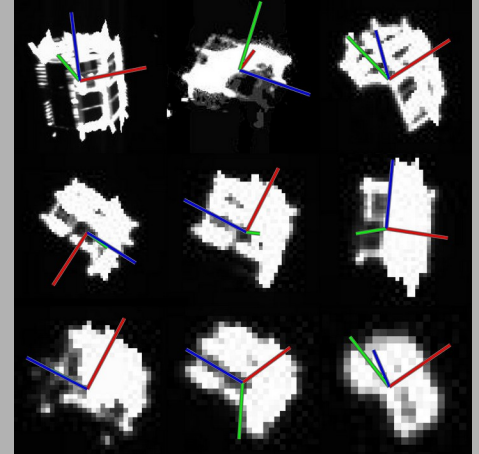
Right: Dataset and Pose Estimation



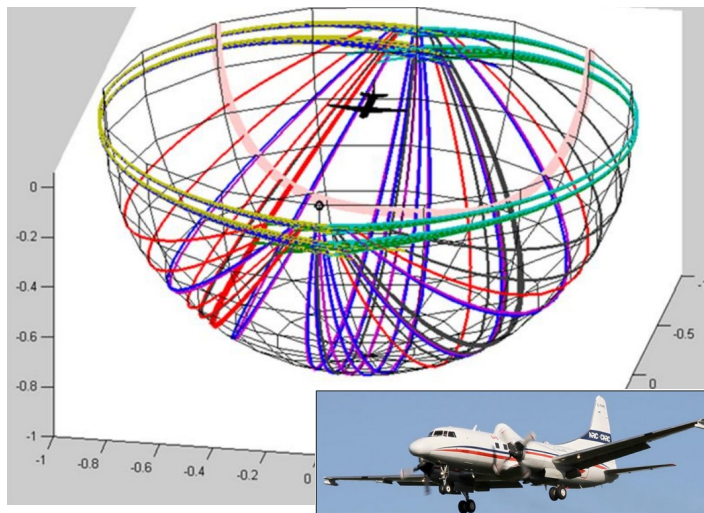
Synthetic



Real



Real Image Pose Estimation



GPS Time-Synchronized Array 2018

2018

Characterize the parameters that dominate the visual and acoustic detection of an aircraft. The project required a time synchronized microphone array and camera system spread over 1 square kilometre; too large for cables. Developed a LabVIEW system featuring five GPS time synchronized data acquisition stations. Custom autonomous post-processing algorithms had to be coded to work through several hours of data.

Left: Measured Flight Contours

Other projects include:

1. Creation of a synthetic dataset, pose estimation and network compression for spacecraft hardware for the JAXA Commercial Removal of Debris Demonstration.
2. The development and deployment of a data acquisition system on 4 Royal Canadian Air Force aircraft; subsequent analysis of all data.
3. Development of the real-time active noise controller for the National Research Council (NRC) new Centre for Air Travel Research (CATR) facility.
4. Subsystem subcontracting, validation testing and airworthiness review boards for the NRC Hybrid Electric Aircraft Testbed (HEAT) project.
5. Satellite qualification test engineer apprenticeship at the NRC Aeroacoustic facility.

Extra-Curricular

- Co-founder of the NRC Early Career Network (ECN)
- PADI open water diver certified
- Can speak beginner level Japanese and French