RUYI ZHA

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EDUCATION

Australian National University, Canberra, Australia *April 2021 - Now*
1^{st} *in Australia and* 27^{th} *in the world according to QS 2022*
Doctor of Philosophy Candidate, Engineering and Computer Science majoring in Engineering
Referee: Professor Hongdong Li

Australian National University, Canberra, Australia *July 2018 - July 2020*
1^{st} *in Australia and* 27^{th} *in the world according to QS 2022*
Bachelor of Engineering (Honours), major in Mechatronics
GPA: **6.867**/7, *Weighted Average Mark*: **89.82**/100, ***First Class Honours***

Northwestern Polytechnical University, Xi'an, China *September 2016 - June 2018*
"985, 211" Project, "Double First-Class" Project University
Bachelor of Engineering, major in Automation
GPA: **91.9**/100, *Ranking*: **2**/122

RESEARCH PROJECTS

Neural Attenuation Fields for Computed Tomography *October 2021 - March 2022*
The goal of this project is to apply the technology of implicit neural representation to the medical application: cone-beam computed tomography. Classic tomography technologies fail to deal with sparse-view and measurement noise. Inspired by the recent work of neural radiance field, we introduced 'neural attenuation fields', which present the required density with a deep neural network and imitate the attenuation process in a trainable way. The outcome of this project is the research paper 'NAF: Neural Attenuation Fields for Sparse-View CBCT Reconstruction' which was accepted by MICCAI 2022 (Oral).

3D Modelling of Plants *November 2020 - April 2021*
This project is the subpart of a ANU-Medicago project which aims to use artificial intelligence to help develop plant-based vaccines and therapeutics. The goal of this sub-project is to develop an automatic system to reconstruct a 3-D model of a basil with RGBD cameras and hyperspectral cameras. At the same time, the system should be able to measure some traits such as leaf area and plant weight. I worked as the full-time research assistant in this project, and took charge of developing algorithms of 3-D reconstruction and trait prediction. We succeeded to produce a multi-sensor prototype which can reconstruct a detailed basil model and estimate its traits precisely.

Line-Based Pose Estimation Networks *June 2020 - November 2020*
This project aims at estimating pose between two 3-D line sets. It was led by ANU PhD candidate Liu Liu and I was the member of the research group. My work mainly focused on dataset generation and experiment verification. The final outcome is the research paper 'PlueckerNet: Learn to Register 3D Line Reconstructions' which was accepted by CVPR 2021.

Alice Benchmark Suite *November 2019 - February 2020*
This project was conducted when I was the summer research student under the supervision of Doctor Liang Zheng. It aims at building an online benchmark suite called *Alice*. *Alice* focuses on dealing with domain adaptation problems. It provides synthetic datasets for various computer vision tasks such

as person re-identification, vehicle re-identification and semantic segmentation. I was in charge of the person re-identification part, including building a person re-ID dataset, testing its performance and improving it to satisfy the project requirement. The project was completed in February 2020. The benchmark website is available here.

Automatic Calibration of Traffic Surveillance Cameras *August 2019 - July 2020*
This project is the undergraduate individual project (ENGN4200) under the supervision of Professor Hongdong Li and Doctor Liang Zheng. It is the subpart of a DATA61 project called "Spatial CCTV". It aims at realizing automatic calibration methods based on existing papers and improving them with deep learning technologies. The project was completed in July 2020. The final grade is 93/100. The full thesis is available here.

SCHOLARSHIPS & PRIZES

Australian Government Research Training Program Scholarship *ANU, April 2021*
National research scholarship funded by the federal government of Australia to support high-degree research students.

First Class Honours - H1 *ANU, July 2020*
I achieved First Class Honours at ANU, which is the highest honours grading scale.

Chancellor's Letter of Commendation *ANU, July 2020*
The Chancellor's Letter of Commendation commences students with outstanding academic performance over the course of the full academic year. I achieved a Grade Point Average of 7/7 in 2019 and therefore received this letter.

FYI Fellows' Prize *ANU, January 2020*
The FYI Fellows' Prize commences top students living in Fenner Hall.

Summer Research Scholarship *ANU, November 2019*
School level undergraduate scholarship funded by College of Engineering and Computer Science. It awards students with outstanding academic performance and strong research ambition. It offers 270 AUD weekly salary during the 8-week-long research.

Endress+Hauser Scholarship *NPU, October 2018*
School level undergraduate scholarship funded by the Swiss company Endress+Hauser. It awards students with strong competition experience and academic performance.

China National Scholarship *NPU, October 2017*
Top level undergraduate scholarship established and funded by the central government of China. It awards students with outstanding performance of all aspects.

COMPETITIONS

Mathematical Contest in Modelling (MCM/ICM), Xi'an, China *February 2018*
Hornoable Mention.

National College Student English Competition, Harbin, China *August 2017*
Third Price in the grand final. First price in the provincial level.

WORKING EXPERIENCE

Australian National Unversity - Medicago Inc., Canberra, Australia November 2020 - April 2021
Research Assistant

I worked as the full-time research assistant in this project, and took charge of developing algorithms of 3-D reconstruction and trait prediction. We succeeded to produce a multi-sensor prototype which can reconstruct a detailed basil model and estimate its traits precisely.

Good-Ark Electronics Co. Ltd, Suzhou, China November 2018 - February 2019
Assistant Hardware Engineer

· On-site internship under this one of the top 10 best-known semiconductor enterprises in China's electronics industry. I participated in a production line optimization project under the supervision of Manager Xuefeng Chen. We succeeded in increasing production efficiency by 15%.

STANDARD TESTS

CET4	652
CET6	607
IELTS	7 (Reading: 8, Listening: 7, Speaking: 6, Reading: 6)
TOFEL	101 (Reading: 29, Listening: 26, Speaking: 24, Writing: 22)

VISA STATUS

VISA Type	Student VISA (Subclass 500)
Stay Until	November 2025
Travel	Multiple Entries
Working Restrictions	No