Jinhong Ni

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Education

Australian National University Jul 2018 - Dec 2022
Bachelor of Advanced Computing (Honours) GPA: 6.594/7.0 (with *First-class Honours*)

Research Experience

Research Intern, JD Explore Academy, Vision Group August 2022 - Jan 2023
Supervisors: Dr. Yalong Bai, Dr. Tao Mei Beijing, China

- Topic: 3D Point Cloud Registration, Single-shot 3D Imaging, Multimodal Fusion
- Submitted Patent Disclosure (*Under Review*): Dynamic Context Similarity Measurement for image-text Feature Pre-training.

Honours student, Australian National University July 2021 - June 2022
Supervisors: Dr. Liang Zheng, Yuchi Liu Canberra, Australia

- Honours thesis: *Controllable Eye Inpainting*. The thesis received a mark of 82/100 (High Distinction).
- My first-authored paper *Self-structuring Model: Encountering Facial Expression Recognition with Casper* co-authored with Yeu-Shin Fu was accepted to ICONIP 2021 (*withdrawal*). I did not publish it because of the high publication fee.

Projects

Deep Equilibrium Multimodal Fusion Nov 2022 - Present
Supervisors: Dr. Yalong Bai, Dr. Tao Mei JD Explore Academy

- Proposed a novel deep equilibrium fusion method for multimodal learning. The method aims to find an equilibrium state within and across all modalities, so that the fused feature purifies necessary information from all modalities to enable high-performance multimodal learning.
- This method achieved state-of-the-art performance on several multimodal benchmarks, including CMU-MOSI, MM-IMDB, and BRCA, surpassing the previous state-of-the-art by about 2-3% on all evaluation metrics.
- The paper is planned to be submitted to ICML 2023.

Single-shot 3D Imaging Oct 2022 - Present
Supervisors: Dr. Yalong Bai, Dr. Tao Mei JD Explore Academy

- Implemented a fast single-shot 3D imaging method using a monocular camera based on Fourier transform profilometry. The method achieved promising millimeter-level precision in real-time.
- Single-shot 3D imaging methods suffer from poor performance of the existing spatial phase unwrapping algorithm. In order to achieve robust single-shot 3D imaging, deep learning methods are used for spatial phase unwrapping. The method at the moment is capable of solving for absolute phase with only a minor error, leading to more satisfying 3D imaging results.

3D Point Clouding Registration Aug 2022 - Nov 2022
Supervisors: Dr. Yalong Bai, Dr. Tao Mei JD Explore Academy

- Proposed a fast and robust registration pipeline by combining learning-based and traditional ICP-based registration methods. The proposed pipeline reduces runtime and failure rate significantly compared to ICP-based methods: the number of iterations reduces by 86.6% on average; registration time reduces by 24.8%; the failure rate drops from 13.6% to 2.77%. This pipeline is now used in 3D cameras for JD Logistics.
- Proposed an end-to-end registration framework by modeling poses as probability distributions, targeting the issue that previous point cloud registration methods cannot be supervised by the pose signal directly.

Work Experience

DOBI Medical Dec 2021 - Jan 2022
Intelligence Developer Intern Hangzhou, China

- Experimenting with feature extraction methods from raw sequential data to train a classifier to detect malignant tumors.

ArcSoft Inc. Jun 2021 - Jul 2021
Quality Assurance Intern Hangzhou, China

- Reading and summarizing papers in CVPR 2020 related to image inpainting. Writing scripts and tools for Android software and hardware testing.

Headwater Investment Jan 2021 - Jun 2021
Analyst Intern Hangzhou, China

- Analyzing IT companies (e.g., Kuaishou Technology, Zoom, Spotify, etc) for investment.

Industrial and Commercial Bank of China Jul 2020 - Sept 2020
Project Design Intern Online

- My proposed project was international student financial helper which focused on helping international students oversea with daily financial concerns.

DueApe Feb 2019 - Nov 2019
Private Tutor Canberra, Australia & Online

- Tutoring COMP1100 externally, an introductory course in computer science at ANU.

Award

First-class Honours	Australian National University	Dec 2022
Chancellor's Letter of Commendation	Australian National University	May 2021
Honours with Great Dinstinction	Terry Fox Secondary	Jun 2017
November Student of the Month	Reed City High School	Dec 2015
Varsity Athletic Award	Reed City High School	2015-2016

Technical Skills

Programming: Proficient in Python; Had experience with Java, C++, Haskell, R, and Ada.
Language: English (proficient), Mandarin (mother tongue).
Machine Learning/Deep Learning: PyTorch, NumPy. Familiarity and high-level understanding of many ML/DL algorithms.
Academic Writing: LaTeX.

Selected Coursework

Machine Learning/Deep Learning: Document Analysis (91 HD), Deep Learning (87 HD), Computer Vision (86 HD).
Computer Science: Programming as Problem Solving (94 HD), Strucutred Programming (91 HD), Cyber Security Foundations (87 HD), Logic (85 HD).

Others

I was a course representative for COMP4650 Document Analysis S2 2021 at Australian National University.