Runyi Yang (杨润一)

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EDUCATION

Imperial College London, London, United Kingdom **Sep 2023 - Jun 2024**

Master of Research in Artificial Intelligence and Machine Learning, Computing (Exp. Jun 2024)

Research Topic: Quantifying Camera Relocalization Uncertainty via Conformal Prediction

Beijing Institute of Technology (BIT), Beijing, China **Sep 2019 - Jun 2023**

Bachelor of Engineering in Automation, GPA: 3.8/4.0, Score: 90.1/100

Awards: Outstanding Graduates of BIT, Outstanding Student Award, CASC Scholarship, Academic Excellence Scholarship × 7, Student Representation of School of Automation

Undergraduate Thesis: Deep Learning Based End-To-End Multi-instance Point Cloud Registration

PUBLICATIONS

Co-Author. MARS: An Instance-aware, Modular and Realistic Simulator for Autonomous Driving. *CAAI International Conference on Artificial Intelligence.*(Best Paper Runner-up Award, Oral Presentation, 2/348)

First Author. PMB: Compositional Attribute-object Understanding with Pronouns. (*In submission*)

Co-Author. AsyncNeRF: Learning Large-scale Radiance Fields from Asynchronous RGB-D Sequences with Time-Pose Function. (*In submission,* arxiv: 2211.07459)

Co-First Author. City-scale Incremental Neural Mapping with Three-layer Sampling and Panoptic Representation. (*In submission*, arxiv: 2209.14072)

Co-Author. Attitude Control Experiments of Cubic Rover on Low-Gravity Testbed. *Transactions of Nanjing University of Aeronautics and Astronautics.*

**Equal contribution, †Corresponding author*

EXPERIENCE

Xverse (Metaverse Company) **Shenzhen, China**

Strategy Analysis Intern *June 2022 - Present*

Artificial Intelligence | Computer Vision | LLMs | Data Analysis

- Conducting comprehensive research on large language models, read more than 30 papers and reports, and contributing to the company's understanding and application of these models.
- Specializing in the study of AIGC, with a focus on video and 3D elements, ensuring the company remains at the forefront of the metaverse industry.
- Analyzing and interpreting complex data and research related to AI and 3D technologies, providing strategic insights to guide the company's future initiatives.

DISCOVER Lab, Institute for AI Industry Research, Tsinghua University **Beijing, China**

Research Intern, Advised by Prof. Zhou Guyue and Prof. Zhao Hao. *April 2022 - May 2023*

Computer Vision | SLAM | Visual-Language Model | Deep Learning | Point Clouds | Detection

- **Compositional Attribute-object Understanding with Pronouns**
  - Introduce pronouns framework and reformulated the training framework;
  - Propose a FIFO memory mechanism, helps the model to better scale to larger backbones, and managed SOTA performance on three datasets.
- **Multi-scene Camera Re-localization**
  - Apply manifold gradient to optimize the regression of camera re-localization in multi-scene;
  - Design reprojection loss function and optimal method for camera re-localization task;
- **City-scale Incremental Neural Mapping**
  - Construct a neural network frame to represent a road map implicitly;

- Analyze and improve existing Signed Distance Function representation methods and sampling strategy, managed SOTA performance on semanticKITTI dataset.

Dynamics and Advanced Control Laboratory, Beijing Institute of Technology **Beijing, China**

Research Intern (Robotics Group), Advised by Prof. Zeng Xiangyuan *Jun 2021 - May 2022*

Dynamic Systems | Convex Optimisation | STM32 | Control Theory | Physical Simulator

◦ **Design and Construction of Ground Microgravity Platform**

- Establish a mathematical model of the microgravity platform, perform dynamic analysis of the microgravity system, and perform dynamic model analysis of the jumping, rolling, attitude adjustments and other actions of Cubic Robot.

◦ **Improve Controller of the Cubic Robot (Cubli)**

- Design sensing system to collect real-time data of Cubic Robot in collaboration with the microgravity platform experiment;

Research Intern (Machine Learning Group), Advised by Prof. You Yuyang. *Nov 2019 - Sep 2021*

EEG Signal Processing | Deep Learning | Machine Learning | Feature Engineering | BCI

◦ **A Non-destructive BCI Rehabilitation System and EEG Signal Processing**

- Preprocess of EEG signal data, use motor imagery to assist feature extraction and classification of EEG signals corresponding to different actions;
- Monitor sleep using BCI, collect sleep EEG signals, preprocess data and feature extraction.

HONORS & PRIZES

◦ Honorable Mention, Mathematical Contest In Modeling, Comap May 2022
◦ Third Prize, 13th National Mathematical Competition for College Students Dec 2021
◦ Third Prize,12th International Humanoid Robot Olympiad Oct 2021
◦ First Prize, BIT Balance Car Competition Jun 2021
◦ Second Prize, Electronic Design Competition Apr 2021
◦ Second Prize in Beijing, National Mathematical Contest in Modelling for College Students Oct 2020
◦ Second Prize, College Students' Physics Academic Competition of Beijing Aug 2020

STUDENT ORGANIZATIONS

◦ *Founder, President*, BIT Swimming Club Dec 2019-Jun 2022
◦ *Captain*, BIT Swimming Team Mar 2021-Jun 2022
◦ *Organizer,* First Swimming Match of BIT vs. Beihang University June 2021
◦ *Organizer*, Second Swimming Games of BIT Nov 2020
◦ *Class President* Sep 2020-Jun 2023

SKILLS and LANGUAGE

Programming: C & C++, Python, MATLAB, Web(PHP+JavaScript+html5), Kubeflow, Linux
Software: Proteus, Multisim, Simulink(MATLAB), AutoCAD, Altium Designer, MeshLab
IELTS: 7.0 (Listening 7.5, Reading 8.0, Writing 7.0, Speaking 6.0), CET-6: 557/710

Extracurricular Activities

I am passionate about traveling, hiking and sports, especially swimming, basketball and skiing.