Chenyu Zhang

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EDUCATION

Whiting School of Engineering, Johns Hopkins University (JHU), MD, U.S.A. Jan. 2021 – now
M.S.E. program in Robotics

- **Major**: General Robotics
- **Core Courses**: Robot Devices, Kinematics, Dynamics, and Control (A); Robot Motion Planning (A-); Kinematics (A-); Computer Vision (A); Algorithms for Sensor-based Robotics; Computer Integrated Surgery I (A+); Neural Networks (ongoing); Applied Machine Learning (ongoing).

School of Electronic Information Engineering, Beihang University (BUAA), Beijing, China
Bachelor of Engineering in Electronic Information Engineering Sep. 2016 – Jun. 2020

- **Major**: Electronic Science and Technology
- **GPA**: 3.67/4.0
- **Rank**: 2/35
- **Core Courses**: Calculus (96/100); C Language Design (96/100); Linear Algebra (99/100); Fundamental Physics (100/100); Complex Function (98/100); Control Theory; Digital Signal Processing; Stochastic Process Theory; Communication Theory; Information Theory.

National University of Singapore (NUS), Singapore Jul. 2019 – Sep. 2019
Visiting student, Department of Electrical and Computer Engineering

Rheinische Friedrich-Wilhelms-Universität Bonn (UBonn), Bonn, Germany Jun. 2022 – now
Visiting student, Institut für Informatik

RESEARCH PUBLICATIONS

1) **Chenyu Zhang**, Zhuowan Li, Alan Yuille. " Seq2Seq Scene Graph Generation Utilizing Vision-language Pretrained Model", *IEEE/CVF Conference on Computer Vision and Pattern Recognition* (CVPR 2023), plan to submit.
2) Vipul Gupta, Adam Kortylewski, Zhuowan Li, **Chenyu Zhang**, Yingwei Li, Alan Yuille. "SwapMix: Diagnosing and Regularizing the Over-Reliance on Visual Context in Visual Question Answering", *IEEE/CVF Conference on Computer Vision and Pattern Recognition* (CVPR 2022), accepted.

INDUSTRY EXPERIENCE

Momenta, Beijing, China | R&D Intern Aug. 2020 – Jan. 2021

- Designed proper algorithms in C++ to optimize the reprojection error of HD maps based on g2o framework
- Data processing and visualization in Python
- Cooperate with my colleagues to build a large engineering project

RESEARCH EXPERIENCES

Scene Graph Generation Using Seq2Seq Approach, CCVL lab, JHU Jan. 2022 – Now

Research Assistant | Advisor: Prof. Alan Yuille

- Traditional scene graph generation (SGG) usually use two-stage metrics, which are hard to be unified with other vision and language tasks
- Designed a SGG model use end-to-end Seq2Seq metrics
- Integrated SGG task to other Seq2Seq task to form a unified multimodal model, where the backbone structure is Transformer
- Will submit this work to CVPR and to be as my master essay

Semantic Scene Completion for LiDAR Point Cloud, UBonn Jun. 2022 – Aug. 2022

Research Assistant | Advisor: Prof. Jürgen Gall

- Modify the Point-Voxel Interaction part of JS3C Net to multi-head attention metrics
- Transformed the 3D features with spherical projection to do the feature augmentation
- Joined the 2D features with the 3D features to improve the results

Measure the Robustness of VQA Models, CCVL lab, JHU Sep. 2021 – Nov. 2021

Research Assistant | Advisor: Prof. Alan Yuille

- Discovered that recent VQA models rely too much on the irrelevant context
- Modified the LXMERT model by replacing the Faster RCNN features with scene graphs
- Compared the accuracy and robustness between the models trained on scene graphs and Faster RCNN features
- Visualized the attention weight of the model
- Collaborate with my colleagues and published a CVPR paper

Design of Scanning Sensor for Ground Flatness Measurement, NUS Jul. 2019 – Sep. 2019

Research Assistant | Advisor: Prof. Loh Ai Poh

- Designed and built scanning sensor based on Lidar, which can calculate ground flatness based on distances and angles of returned signal
- Performed detailed analysis on Lidar sensing resolution by developing program in MATLAB
- Constructed experimental system consisting of Lidar connected with Raspberry Pi, performed hardware experiment, and processed collected data
- Successfully demonstrated feasibility of developed sensor and achieved agreement between experimental results and theoretical analysis

An Improved K-means Algorithm in Multi-track Image Recognition, Tsinghua University

Research Assistant | Advisor: Professor Chun Zhang Mar. 2019 – Feb. 2020

- Identified deficiencies of traditional K-means algorithm and proposed new clustering algorithm to solve multi-track image recognition problem
- Implemented proposed algorithm, performed experiment, and benchmarked its performance with state-of-the-art clustering algorithm
- Analyzed down-sampling performance of proposed algorithm thoroughly
- Broadened algorithm into clustering circles and curves; analyzed thoroughly the anti-noise performance, accuracy and efficiency of total algorithm

AWARDS AND HONORS

Aug 2021, the LCSR Distinguished Scholarship

Jun 2020, University **Outstanding Undergraduate Student**

May 2019, Third Prize of Innovation and Entrepreneurship Scholarship by Ministry of Industrialization and Information Technology

Nov 2018, **PI** of National Undergraduate Training & Research Program for Innovation and Entrepreneurship, evaluated **Excellent Project**

Dec 2018, **Outstanding Award** of University Academic Scholarship (top 3%)

May 2018, **First Prize** of CUPT (China Undergraduate Physics Tournament) in North China Division, as the **Captain** of the Team II

Dec 2017, **First Prize** in the Physics Competition in University

Dec 2017, Outstanding Scholarship (top 5%)

Nov 2017, **First Prize** of University Outstanding Study Scholarship (top 5%)

Oct 2017, Competitive-world Scholarship (top 1%)

SKILLS AND INTERESTS

Language:	English (fluent), Chinese (native), German(A2), Japanese(beginner) **TOFEL:** 104 (29+25+25+25) | **GRE:** 323 (V156+Q167+3.0)
Computer:	C/C++, Python, MATLAB
Mathematics:	Calculus, Complex Analysis, Differential Equation, Linear Algebra, Probability Theory
Interests:	School band Ⅱ (violinist), school chorus; Social Sciences (Game Theory, Psychology); Volunteer as science teacher at the local primary school