

# Lingyu Zhang

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## EDUCATION

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### Columbia University, New York, NY

Master of Science, Electrical Engineering

Sep 2021 — Dec 2022

GPA: 3.87/4.0

*Relevant Coursework:* Representation Learning, Computer Vision II, Advanced Deep Learning, Unsupervised Learning, Natural Language Processing, Reinforcement Learning

### Nanjing University, Nanjing, China

Bachelor of Engineering, Microelectronic Science and Engineering

Sep 2017 — June 2021

GPA: 4.16/5.0

*Relevant Coursework:* Computer Vision, Engineering Fundamental of AI, AI & project practice, Data Structure and Algorithms

### University of California, Berkeley, Berkeley, CA

Berkeley International Study Program

Aug 2019 — Dec 2019

*Relevant Coursework:* Introduction to Machine Learning, Efficient Algorithms and Intractable Problems, Optimization Models in Engineering.

## PRE-PRINTS

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**Lingyu Zhang\***, Chengzhi Mao\*, Junfeng Yang, Carl Vondrick. Robust Video Perception by Seeing Motion. [[arxiv](#), [project-page](#)]

## PUBLICATIONS

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Chengzhi Mao, **Lingyu Zhang**, Abhishek Vaibhav Joshi, Junfeng Yang, Hao Wang, Carl Vondrick. Robust Perception through Equivariance, ICML 2023. [[arxiv](#), [project-page](#)]

Bangpeng Xiao, Shen Yuan Ye, Xicai Li, Min Li, **Lingyu Zhang**, Yuanqing Wang. A Stereo Matching Method for Three-Dimensional Eye Localization of Autostereoscopic Display, ICIG 2021.

**Lingyu Zhang**, and Gang Song. Improved antireflection based on biomimetic nanostructures at material interface, Journal of Optics 2018.

**Lingyu Zhang**, and Gang Song. Thermo-responsive plasmonic nano hybrids with tunable optical properties, Journal of Modern Optics 2017.

## RESEARCH EXPERIENCE

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### Columbia University, Fu Foundation School of Engineering and Applied Science

*Research Assistant: Multimodal Learning*

Advisor: Prof. Shih-Fu Chang & Dr. Mingyang Zhou, Feb 2023 - present

Working on projects including visual language data understanding and detecting manipulated multimodal data.

*Research Assistant: Robust Action Recognition with Motion*

Advisor: Prof. Junfeng Yang & Prof. Carl Vondrick, June-Nov 2022

Designed a novel test-time adaptive adversarial defense for action recognition models using motion consistency. Based on the observation of adversarial examples collaterally disrupting

intrinsic temporal structures of videos, proposed to repair inputs by restoring motion. Consistently improved robust accuracy against a variety of attacks. Paper under review.

*Research Assistant: Robust Perception Through Equivariance*

Advisor: Prof. Junfeng Yang, Feb-Sept 2022

Conducted experiments on the performance of a novel adversarial purification method based on dense equivariant properties of neural networks. Adapted the algorithm to different tasks and datasets. Paper under review.

### **Nanjing University, School of Electronic Science and Engineering**

*Undergraduate Thesis: Learned Multi-scale Image Compression*

Advisor: Prof. Qiu Shen, Dec 2020 -June 2021

Implemented an end-to-end optimized image compression model based on an entropy-constrained variational autoencoder. Integrated a multi-scale encoder, achieving state of art compression performance. Investigated potential for latent space vision tasks without decoding.

*Research Intern: Designing Materials with Improved Optical Properties*

Advisor: Dr. Gang Song & Dr. Haodong Wu, 2017-2018

Designed nanomaterials with desirable optical properties based on the effective medium theory.

### **HONORS/AWARDS**

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Renmin Scholarship, 2018

Renmin Scholarship, 2019

FlyAI Excellent Algorithm Award (two tasks), 2021

### **LEADERSHIP/SERVICE**

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#### **Graduate Electrical Engineering Council, Columbia**

*Career Chair*, Jan 2022 - present

#### **Engineering Graduate Student Council at Columbia Engineering**

*Lead Department Representative of EE*, Jan 2022 - present

#### **Nanjing University Summer Social Practice Project**

*Team Leader*, June-Aug 2020

#### **The Berkeley Project**

*Site Leader & Volunteer*, Oct 2019

#### **Nanjing University Hip-Hop Association**

*President*, Aug 2018-June 2019

### **PROFESSIONAL TRAINING**

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#### **Karlsruhe Institute of Technology, Virtual**

*Industry 4.0 Training for Young Talent*, Sep-Oct 2020

Training covering Lean Production, Lean Line Design, Machine Learning, Data Analysis and Industry 4.0 of Production Planning and Control.

### **TECHNICAL SKILLS**

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**Programming Language:** Python, Matlab, C

**Frameworks / Tools:** PyTorch, OpenCV

### **TEST SCORES**

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**GRE:** 334 (V164 + Q170) + 4.0

**TOEFL:** 114