

# Ziyi ZHAO

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## RESEARCH INTERESTS

|                         |                       |                           |
|-------------------------|-----------------------|---------------------------|
| <b>Computer Vision:</b> | Medical Imaging,      | 3D Modelling              |
| <b>Deep Learning:</b>   | Graph Neural Network, | Trustworthy Deep Learning |

## EDUCATION

|   |   |
|---|---|
| <b>Tongji University</b><br>M.Eng College of Electronics and Information Engineering<br>GPA: 4.61/5.0, Rank: top 5%                                   | <b>Sep 2020–July 2023</b><br>Shanghai, China        |
| <b>École polytechnique fédérale de Lausanne (EPFL)</b><br>Exchange School of Computer and Communication Sciences<br>GPA: 5.875/6                      | <b>Feb 2022 - Dec 2022</b><br>Lausanne, Switzerland |
| <b>Jilin University</b><br>B.Eng College of Instrument and Electrical Engine<br>GPA: 3.25/4.0, Outstanding Undergraduate's Paper Award (Departmental) | <b>Sep 2016 - July 2020</b><br>Jilin, China         |

## PUBLICATIONS

- [1] Zhao, Z., Kiciroglu, S., Vinzant, H., Cheng, Y., Katircioglu, I., Salzmann, M., & Fua, et al. "3D Pose Based Feedback For Physical Exercises." Proceedings of the Asian Conference on Computer Vision.2022.
- [2] Zhao, Z., Liu, H., Li, S., Pang, J., Zhang, M., Qin, Y., ... & Wu, Q., et al. "A Review of Intelligent Music Generation Systems" arXiv preprint arXiv:2211.09124 (2022). Under review by Applied Intelligence
- [3] Ziyi Zhao, "Chinese Patent: An automatic control device for window shades", China National Intellectual Property Administration. (under review) 2022. Application No.202223147747.9.
- [4] Ziyi Zhao, "Software Copyright: Automatic colour recognition system based on HSV algorithm", Issued by China National Intellectual Property Administration 2020. Registration No.2020SR0314601.

## RESEARCH EXPERIENCE

|   |  |
|---|--|
| <b>6D Pose Detection for Visual Navigation   CodaLab Competition</b><br>Supervisor: Dr. Mathieu Salzmann(Senior Scientist) and Chen Zhao(PhD Candidate) <ul style="list-style-type: none"><li>• Goal: Democratizing aerial navigation through robust and data-scalable computer vision</li><li>• Key points: 1.Limited or even no real/domain specific data (zero-shot) 2.From coarse to fine (Image retrieval, NetVLAD) 3.Structure from motion (SFM), Colmap</li></ul>  | <b>Sep.2022–Dec.2022</b><br>CVLab, EPFL, Switzerland |
| <b>3D Pose Based Motion Correction for Physical Exercises   Published thecvf.com</b><br>Supervisor: Prof.Pascal Fua and Sena Kiciroglu(PhD) <ul style="list-style-type: none"><li>• Goal: Safer and more effective unsupervised self-rehabilitation exercises and physical training</li><li>• Key points: 1.A double branches learning-based framework 2.Graph Convolutional Network (GCN) architecture + Feedback module 3.A dataset with ~120K annotated frames</li></ul>   | <b>Feb.2022–Jun.2022</b><br>CVLab, EPFL, Switzerland |
| <b>Ultra Wide Band (UWB) Pinpointing in the Presence of Interference   National Third Prize</b><br>Huawei Cup The 18th China Post-Graduate Mathematical Contest in Modeling <ul style="list-style-type: none"><li>• Goal: Research into how ultra-wideband (UWB) systems can achieve precise positioning in the face of signal interference</li><li>• Key points: 1.Data pre-processing, statistical feature extraction 2.Support Vector Machine(SVM), k-Nearest Neighbor(KNN), Extreme Learning Machine(ELM) 3.Yield 85.0523mm localization accuracy</li></ul> | <b>Sep.2021–Oct.2021</b><br>Tongji University, China |
| <b>COVID-19 Diagnosis based on CT images Using a Transfer Learning approach</b><br>Supervisor: Prof.Mingyu You  | <b>Sep.2020–Dec.2020</b><br>Tongji University, China |

- Goal: Detect COVID-19 in early stage using CT images and contain its spread.
- Key points: 1. Few-shot learning 2. Data augmentation 3. Transfer learning: pretrain on LUNA16 dataset 3. Model architecture inspired by: CRNet in CVPR 2020

## INDUSTRY EXPERIENCE

### Intern | Immersive Interaction Research Group

**Aug.2022–Sep.2022**

Supervisor: Dr. Ronan Boulic, EPFL

EPFL, Switzerland

- Responsibility: Run controlled experiment in Virtual Reality, Interact with the experiment participants
- Contributions: 1. Collected data from 50 subjects (over 50 million rows of movement track data)
- Tools: Unity3D, RStudio

### Intern | NIO, Shanghai

**Dec.2020–May.2021**

Supervisor: Mrs. Wen Su, Quality Department

Shanghai, China

- Responsibility: Data analysis, Management of software development
- Contributions: Jointly developed driver assistance software is used on NIO's latest Model ET&
- Tools: SQL, Jira, Zeppelin, Confluence

### Intern | Air Products, Shanghai

**Jul.2020–Dec.2020**

Supervisor: Mr. Wenlong Shen, Asia Technique Operation Support (ATOS), Air Products

Tongji University, China

- Responsibility: Mobile application development based on Microsoft Power Platform
- Contributions: Improving paperless working in factories across Asia and impacting over 1000 people
- Tools: Power Apps, Power Automate, Office365

## HONORS

**Membership** | Chinese Association for Artificial Intelligence, CAAI

*Oct.2020–Dec.2024*

**Membership** | Chinese Society of Optimization, Overall Planning and Economic Mathematics

*Sep.2019–Dec.2024*

**Certificate of Professional Development** | China Instrument and Control Society

*Sep.2019–Dec.2024*

**National Third Prize** | "Huawei Cup" The 18th China Post-Graduate Mathematical Contest in Modeling,

*Dec.2021*

**National Second Prize** | The 9th MathorCup Mathematical Modeling Competition for College Students

*Jun. 2019*

**Provincial Second Prize** | Mathematical Modeling Competition of Jilin Province

*May 2019*

**Jilin Scholarship of Excellence**

*2016-2020*

## SERVICES

**Teach Assistant** | Course: Advance Artificial Intelligence, Tongji University

*Sep.2021-Jan 2022*

**Conference Volunteer** | The China Automation Congress(CAC) 2020

*Nov.2020*

**Outstanding Member Award** | The Graduate Student Union of the College of Electronic and Information Engineering, Tongji University

*Sep.2020-Sep.2021*

**Volunteer** | Blood donation overall 1200ml

*2016-2021*

**Volunteer** | Science Popularization Support Service in Museum of Jilin University

*Feb.2019- Oct.2019*

## MISC

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|-------------|---|
| Language    | English: <b>IELTS 7.0 / Sep.2022</b> , French: A1 |
| Programming | Python, C, RStudio, JavaScript, HTML, CSS         |
| Library     | Torch, NumPy, OpenCV, SciPy, Matplotlib           |
| Hobbies     | Guitar, Photography, Chess                        |