# Ziming Liu, Master of Computer Science

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## Education

Sep 2018 – Jul 2020 **M.S.E. in Computer Science,**
Beijing Institute of Technology(**BIT**) (2021 ARWU world ranking: 151)
GPA: 3.44/4, average score: 85.35
Tongyou Scholarship 8.7%
Graduate with "**Outstanding Graduates**" 7%,
Admission exam ranking: 11/161.
Thesis (Score: 89.2): *Action Recognition with comprehensive context information*.

Sep 2014 – Jul 2018 **B.E. in Building Environment and Energy Application Engineering,**
Changsha University of Science & Technology (2021 ARWU world ranking: 701)
GPA: 3.22/4, average score: 82
First Prize scholarship 2%
Graduate with "**Outstanding Thesis Award**" (1%)
Thesis (Score: 93.0): *Multi-PCA fault detection system with prior knowledge of HVAC*.

## Employment History

Nov 2020 – **Algorithm Research Intern. INRIA.** Visual perception for the auto-driving, Sophia Antipolis, FRANCE.

July, 2020 – Oct, 2020 **Algorithm Research Intern. Meituan Inc.** Short-video understanding group, Visual Intelligence Center, AI platform, (Beijing, CHINA)

July, 2016 – August, 2016 **Operations Intern. Green Hunan (Non-Government Organization)**
Water Protection Group, (Changsha & Yueyang, CHINA)

## Research Publications

### Conference Proceedings

1. Liu, Z., Gao, G., Sun, L., & Fang, Z. (2021). Hrdnet: High-resolution detection network for small objects, In *Proceedings of the international conference on multimedia and expo ( **ICME Oral Presentation**)*. IEEE.
2. Liu, Z., Gao, G., Sun, L., & Fang, L. (2020). Ipg-net: Image pyramid guidance network for small object detection, In *Proceedings of the conference on computer vision and pattern recognition (**CVPR**) workshops*. IEEE.

3. Du, D., Zhu, P., Wen, L., Bian, X., Lin, H., Hu, Q., Peng, & Ziming, L. (2019). Visdrone-det2019: The vision meets drone object detection in image challenge results, In *Proceedings of the international conference on computer vision (**ICCV**) workshops*. IEEE.

4. Zhu, P., Du, D., Wen, L., Bian, X., Ling, H., Hu, Q., Peng, T., Zheng, J., Wang, X., Zhang, Y., Bo, L., Shi, H., Zhu, R., Dong, B., Reddy Pailla, D., Ni, F., Gao, G., Liu, G., Xiong, H., … Liu, Z. (2019). Visdrone-vid2019: The vision meets drone object detection in video challenge results, In *Proceedings of the international conference on computer vision (**ICCV**) workshops*. IEEE.

5. Liu, Z., Gao, G., Qin, A. K., Wu, T., & Liu, C. H. (2019). Action recognition with bootstrapping based long-range temporal context attention, In *Proceedings of the 27th acm international conference on multimedia (**ACM MM**)*. ACM.

### Journal Articles

1. Liu, Z., Gao, G., Qin, A. K., & Li, J. (2020). Dtg-net: Differentiated teachers guided self-supervised video action recognition [a new version is submitting to IEEE TNNLS.]. *ArXiv, abs/2006.07609*.

2. Liu, Z., Li, J., Gao, G., & Qin, A. K. (2020). Temporal memory network towards real-time video understanding. ***IEEE Access***, *8*, 223837–223847.

## Project List

2021 **Environment depth estimation and visual odometry for autonomous robots visual perception** (submitting a paper to ICRA2022 conference) (finished at INRIA).

2020 **Video action recognition with knowledge transfer from image data to video data** (submitting a paper to AAAI2022 conference) (finished at Meituan company, Beijing).

**Video action recognition with unsupervised contrastive loss** (submitting a paper to IEEE TNNLS) (finished at BIT).

**Temporal memory network towards real-time video understanding** | IEEE Access paper link (finished at BIT)..

2020-2021 **HRD-Net: Small object detection with High-resolution and Multi-scale** | ICME2021 paper link (finished at BIT).

2019-2020 **IPG-Net: Small object detection with image pyramid** | CVPRW2020 paper link (finished at BIT).

2019 **Small object detection for drone (UAV) image and video data** | ICCVW2019 paper 1, paper 2 | $2nd$ ranking in this workshop competition (finished at BIT).

**Video action recognition with long-range attention and bootstrapping sampling** | ACM MM2019 paper link (finished at BIT).

2018 **Multi-PCA based fault detection system for time-related building equipment data** | best thesis award | github, arxiv (finished at CSUST).

## Project List (continued)

### Talks and Posters

July, 2021 — **Oral presentation**, Session $O28$ multimedia analysis and understanding, ICME2021 Conference.

Oct, 2019 — **Academic Sharing**, UPM&BIT Academic Exchange Meeting.

— **Short Presentation & Poster**, Session $2A$: Knowledge Processing & Action Analysis, ACM MM2019 Conference.

## Skills

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|---|---|
| Coding | Good at Python, C++, C; Experienced in Java, Matlab |
| Deep learning Framework | Good at Pytorch, experienced in Tensorflow $1.x$ |
| Others | Linux, OpenCV, torch C++ lib |

## Miscellaneous Experience

### Language

- **English: Proficient.**
  Certified 6.5 in IELTS test: Reading 7.5, Writing 6.5, speaking 6.0.
- **Chinese: Native**.
- **French: Beginner**.

### Awards and Achievements

July, 2020 — **Tongyou Scholarship**, Awarded by Tongyou Tech. company and BIT.

June, 2020 — **the Title of Outstanding Graduates**, Awarded by BIT.

Oct, 2019 — **Ranking in the list of First Prize Scholarship**.

Aug, 2019 — **Completion of the international summer school on innovation with the $1st$ award**, Delivered by Beijing Institute of Technology(China) and Polytechnic University of Madrid (Spain).

Oct, 2019 — **2nd place & Honorable mention award**, Video Detection task, ICCV2019 VisDrone workshop challenge.

June, 2018 — **Outstanding thesis award 2/98**, Awarded by CSUST.

Mar, 2018 — **Honorable mention award**, in American Mathematical Contest In Modeling MCM/ICM.

## Miscellaneous Experience (continued)

Oct, 2017 — **3rd Prize** in China National mathematics contest in modeling.

Oct, 2016 — **2nd Prize** in Undergraduate student research project.

— **First Prize scholarship** .

### Teaching

summer 2015 — **Teaching Assistant of a course over 90 students**

### Student mentoring

2019 — Jinyang Li (master student, BIT)

2021 — Guangjun Zhang (master student, BIT)

— Hava Chaptoukaev (master student, UCA)

### Courses

- **Mathematics:** Matrix Analysis, Advanced Mathematics $A$ (calculus), Linear Algebra, Probability & Statistics.
- **Machine Learning:** Statistics Pattern Recognition, Matrix Analysis, Computer Vision, Artificial Intelligence and Big Data Module, Robot and Intelligent Manufacturing Module.
- **Architecture and Building Environment:** Descriptive Geometry & Mechanical Engineering Drawing, Architecture Introduction, Building Environment Theory, Building Energy System, Building Equipment: CAD Drawing, Building Equipment Automation.

## References

**Prof. Guangyu Gao**

(master supervisor, CHINA)

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