

# Junpeng Jing

## Curriculum Vitae

Beihang University, C.N.  
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Final-year Master's Student

## EDUCATION

- 2020.9 – **Master**, *Dept. of Cyber Science and Technology*, Beihang University, C.N..  
Present
  - GPA: 3.85/4.0 (1/26)
  - Group: Multimedia Computing Towards Communications (MC2 Lab)
  - Topics: **Stereo Image Super-Resolution, Reversible Image Conversion, Compression**
  - Advisor: Prof. Zhenyu Guan, Prof. Mai Xu, and Prof. Xin Deng

2016.9 – **Bachelor**, *Dept. of Electronic Information Engineering*, Beihang University, C.N..  
2020.7

## INTERNSHIP EXPERIENCE

- 2022.5 – **Research Intern**, *IS Group*, Megvii Research (also known as Face++ until July, 2016).  
Present
  - Topic: **Stereo Matching**
  - Advisor: Jiankun Li, Jiangyu Liu, and Prof. Shuaicheng Liu

## RESEARCH INTERESTS

Stereo Matching, Optical Flow, Reversible Image Conversion.

## PUBLICATIONS

The publications are also listed in my [Google Scholar Page](#).

- 2022 [1] Zhenyu Guan<sup>1</sup>, **Junpeng Jing**<sup>1</sup> (co-first author), Xin Deng, Mai Xu, Lai Jiang, Zhou Zhang, Yipeng Li. *DeepMIH: Deep Invertible Network for Multiple Image Hiding*. IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**). ([Paper](#)) ([Code](#))
- 2021 [2] **Junpeng Jing**, Xin Deng, Mai Xu, Jianyi Wang, Zhenyu Guan. *HiNet: Deep Image Hiding by Invertible Network*. Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**). ([Paper](#)) ([Code](#))

## COMPETITIONS

- 2022 [1] **Winner (1st place)** at Robust Vision Challenge 2022, **ECCV Workshop**. ([Link](#))  
– Stereo Matching Track **1st Author**
- 2022 [2] **6th place** at NTIRE Challenge 2022, **CVPR Workshop** ([Link](#))  
– Stereo Image Super-Resolution Track **1st Author**

## PATENT

- 2022 [1] An Image Hiding Technology and Method. C.N. 202011290006.9

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## RESEARCHES

### Reversible Image Conversion

- 2020.7 – **HiNet: Deep Image Hiding by Invertible Network**, ICCV2021.
- 2020.12
- We proposed a novel image hiding network, namely HiNet, based on invertible neural network for the task of large-capacity image hiding.
  - We designed two concealing and revealing modules with differentiable and invertible property, aiming to make the image hiding process fully reversible.
  - We proposed a low-frequency wavelet loss to control the distribution of secret information in different frequency bands, which significantly improves the hiding security.
- 2021.1 – **DeepMIH: Deep Invertible Network for Multiple Image Hiding**, TPAMI2022.
- 2022.1
- We proposed a novel invertible multiple image hiding framework, to hide multiple secret images into the same cover image in a new manner.
  - We investigated two important findings about image hiding, which laid solid foundation for the network and loss function design for multiple image hiding.
  - We proposed an importance map module to guide the current image hiding with the results of previous image hiding and to fully utilize the hiding potential of cover image.
  - We developed a new multi-stage training strategy with designed stage losses, to improve the training stability and the performance of multiple image hiding.

### Stereo Image Process

- 2022.1 – **StereoSRT: A Stereo Image Super-Resolution Transformer**, NTIRE2022 Challenge.
- 2022.4
- We proposed a transformer-based architecture for stereo image super-resolution, simultaneously leveraged the self and cross information between stereo image pairs.
  - We introduced a 2-stage training strategy and designed a U-Net based backbone, which re-used the original input to further enhance the output from super-resolution.
- 2022.5 – **CREStereo++: Cascaded Recurrent Network for Robust Stereo Matching**, Robust Vision Challenge 2022.
- Present
- We proposed a cascaded recurrent network for robust stereo matching, which had a simplified backbone without any attention mechanism and achieved better performance than CREStereo.
  - We introduced a learnable warping module to effectively alleviate the occlusion and mismatch problem caused by traditional warping operation.
  - We proposed a multi-scale patch match correlation module, to replace the pixel-based local correlation in the original version, achieving accurate matching results.
  - Our method CREStereo++\_RVC ranked 1st on ETH3D and Middlebury, and ranked 2nd on KITTI2015, achieving an overall 1st rank in the stereo matching task.
  - In preparation for CVPR 2023.

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## SCHOLARSHIPS

2022	Top-10 Graduate Students	<i>Top 0.5%, 10,000¥</i>
	– Highest Honor for the Postgraduates in Beihang University	
2021	National Scholarship	<i>Top 1%, 20,000¥</i>
	– Awarded by the National Ministry of Education	
2021	Postgraduate Academic Scholarship	<i>1st Prize, 7,500¥</i>
2020	Postgraduate Academic Scholarship	<i>2nd Prize, 5,000¥</i>
2018	Science and Technology Scholarship of Beihang University	<i>1st Prize, 2,000¥</i>
2017	Science and Technology Scholarship of Beihang University	<i>2nd Prize, 1,000¥</i>

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## HONORS & AWARDS

2021	Outstanding Graduate Student	<i>Top 5%</i>
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2021	Merit Student	<i>Top 5%</i>
2019	National College-student Electronics Design Contest	<i>1st Author &amp; 2nd Prize</i>
2019	29th Feng Ru Cup on "Nokia" Innovation Competition	<i>1st Author &amp; 2nd Prize</i>
2018	Beijing College-student Electronics Design Contest	<i>1st Author &amp; 2nd Prize</i>
2018	COMAP's Mathematical Contest in Modeling	<i>Honorable Winner</i>
2017	27th Feng Ru Cup on Innovation Competition	<i>1st Author &amp; 3rd Prize</i>

## PROJECT

2018 – 2019	National College Student Innovation and Entrepreneurship Training Program – Autonomous Tracking UAV Based on Deep Learning	<i>1st Author</i>
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## SKILLS

Programming: Matlab, Python (PyTorch)

Others: LaTeX, Microsoft Office, Adobe Illustrator

Languages: Chinese (Native), English (Proficient, IELTS: 7)

Interests: Chess, Basketball, Bodybuilding