

Aolin You

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Beijing, China

Education

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| <p>Msc Hong Kong University of Science and Technology, Information Technology</p> <ul style="list-style-type: none"> • GPA: 3.63/4.3 • Coursework: Artificial Intelligence, Advanced Algorithms, Machine Learning, Recognition Systems. | <p>Hongkong, China
2018.09 - 2019.11</p> |
| <p>BS Beijing Institute of Technology, Telecommunication Engineering</p> <ul style="list-style-type: none"> • GPA: 3.5/4.0 • Coursework: Mathematical Analysis, Linear Algebra, Probability & Mathematical Statistics, Data Sturcture & Algorithm Design, Signal and Systems, Digital Signal Processing. | <p>Beijing, China
2014.09 - 2018.06</p> |

Research Experiences

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| <p>Tsinghua University, Department of Electronic Engineering</p> <p>Research Assistant to Prof. Fei Qiao</p> <ul style="list-style-type: none"> • Aligning Image Encoders with LLMs for Enhanced Visual Task Comprehension <ul style="list-style-type: none"> - Worked on Blip2-based training models, focusing on the quasi-linguistic embeddings encoder by freezing LLM to enable image input processing. - Developed a new training strategy to enhance the modality extension capability of text-trained LLMs starting with images, by adjusting the coupling between image encoders and LLMs to improve VLMs' comprehension capabilities. - Designed and implemented evaluation methods and metrics, ensuring innovative exploration and solution design for enhanced model performance. - Investigated the potential of fitting embeddings generated by GT text with those from the image encoder, aiming to extend this methodology to process multi-modal data. • Denoise on Sensor: A Near-Sensor Compute-in-Memory Macro for Visual Perception Denoising via Concatnation-Eliminating <ul style="list-style-type: none"> - Researched and implemented denoising algorithms closer to the image acquisition stage, improving resource efficiency and effectiveness. - Developed a near-sensor compute-in-memory (CIM) architecture for visual perception denoising, achieving 22.41 TOPS/W energy efficiency and high performance (around 30dB PSNR and 0.83 SSIM) on KODAK, BSD300, and SET14 datasets. - Designed and optimized the EDU neural network architecture for the CIM hardware, significantly reducing power consumption compared to FPGA or GPU-based approaches. - Led the project, discovering innovations, designing algorithms, conducting ablation experiments, and defining hardware design requirements based on algorithm needs. | <p>Beijing, China</p> <p>2024.7 - Present</p> <p>2023.10 - 2024.7</p> |
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Working Experiences

Huawei Technologies Co., Ltd.

Guangdong, China
2019.12 - 2021.10

Image Algorithm Engineer

- Designed testing and calibration equipment utilizing deep-learning algorithms to enhance the performance of smartphone screens and camera ISPs.
- Developed defect detection equipment using Mask R-CNN, reducing the missed defect rate at screen defect detection workstations from 4% to 1.5%.
- Created defect generation algorithms based on GANs to address the algorithm cold start problem caused by insufficient low-defect-rate samples.
- Developed a calibration process, equipment, and algorithm based on spectral response curves, reducing AWB color deviation to within 2%.

Mech-Mind Robotics

Beijing, China
2021.12-2023.8

Deep-Learning Algorithm Engineer

- Improved semantic segmentation algorithms to reduce the minimum defect detection area in industrial settings from 20 pixels to 8 pixels (1024*1024), while ensuring clear defect boundaries.
- Optimized CenterNet-based object detection and instance segmentation algorithms to achieve a mask edge error of less than 3 pixels in high-precision grasping tasks, and improve the aspect ratio detection of elongated objects to 1:7, meeting the requirements of industrial material handling scenarios.
- Utilized PPRNet for object pose estimation, circumventing challenges in acquiring point cloud annotations by leveraging synthetic data, resulting in pose estimation and grasping performance comparable to template matching.

Research Publications

Denoise on Sensor: A Near-Sensor Compute-in-Memory Macro for Visual Perception Denoising via Concatnation-Eliminating (Submitted to TCAD)

2024.03

Aolin You, Erxiang Ren, Daniel Zheng Fang, Li Luo, Hongwei Guo, Qi Wei, Fei Qiao

- **Brief Description:** Modern denoising models often demand significant computational resources for deployment. This study proposes relocating the denoising module closer to the sensor end. We designed a near-sensor compute-in-memory macro paired with a neural network architecture, offering faster and more energy-efficient denoising compared to traditional FPGA or GPU methods.
- **Responsibilities:** Motivated the research; designed and optimized network architecture for resource-constrained edge scenarios; managed deployment; authored the paper.

Chinese Patent

A Calibration Device and Electronic Equipment.

2022.03

Aolin You, Chunhui Cui, Qianglong Zhong, Guomin Zhan, Haiping Fu

CN216132666U (Huawei Technologies Co., Ltd.)

Skills and Competencies

Programming Languages: Python, C++.

Deep-learning Frameworks: PyTorch, Onnx, TensorRT, OpenMMLab (based on PyTorch).

Operating Systems: Windows, Linux

English Proficiency

Academic IELTS(7.0): Listening(7.0), Reading(7.0), Writing(7.0), Speaking(6.0)