WANG Pengwei

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EDUCATION BACKGROUND

BSc in Software Engineering @ Northwestern Polytechnical University (NWPU, 985&211), China **09/2019-07/2023**

- **GPA**: 85/100 | **Rank**: 70/299

MSc in Robotics @ National University of Singapore, Singapore **08/2023-current**

RESEARCH EXPERIENCE

Graduation Paper | Research on Image Generation Methods Based on CNNs **12/2022-06/2023**

Advisor: Professor Chunwei Tian | ***Outstanding Graduation Paper/Design Award (Top 5%)***

- A new image generation method based on attention mechanism, generative adversarial networks and a self-designed residual connection
- A new image generation method based on diffusion and a self-designed loss function based on the importance prior of facial attributes against skin and background

Research Assistant | Intelligent Image Processing Algorithm Software **10/2022-01/2023**

Advisor: Professor Chunwei Tian | ￥200,000 funded by Xi'an Microelectronic Technology Institute

- Developed algorithm to find moving object from moving camera; developed the interface in C++, called modules from python
- Model selection, training, and tuning

Research Assistant | The Regularization Term of GAN Under Small Datasets **07/2022-11/2022**

Advisor: Professor Björn Schuller @ Imperial College London. GANs are prone to poor performance and earlier "mode collapse" in the case of small data sets. Therefore, I tried to devise a regularization term to resolve such problems.

- Proposed a novel regularization term to improve the image quality of DCGAN and alleviate mode collapse, the novel regularization term can achieve lower quantitative indicators (FID) and postponed the mode collapse
- Written the paper, and the paper was accepted by CONF-SPML 2023

NATIONAL PATENT

An anti-rolling device for double wishbone suspension of FSAE race car | Utility model patents | Patent No: ZL 2020 2 0578250.4

INTERNSHIP

Full-time Intern | Webpage development based on BIM | China Three Gorges Corporation **07/2022-08/2022**

- Completed model visualization development based on the BIM (Building Information Modeling) cloud platform
- Built a webpage for BIM system, including front-end, back-end and database

NATIONAL ACADEMIC COMETITIONS

Technical Director | Formula Student China Combustion Varsity of NWPU **12/2019-10/2021**

- Awarded **National 2nd Prize** in 2020-2021 season as Technical Director & Head of Suspension and Steering Group, helping the group to improve rank from 62nd to 24th; awarded National 3rd Prize in 2019-2020 season as Suspension and Steering Engineer

Team Leader | China Robot Competition, Advanced Vision, 3D Detection **04/2020-11/2020**

- Overall architecture design, Model tuning, GUI design and awarded **National 3rd Prize**

COURSE DESIGN

Team Leader | Recruitment Information Analysis Platform | Software System Development

- Responsible for more than half of the development tasks, the final manuscript production and reporting
- Algorithm development, Front-end design and implementation, model training
- The recruitment information can be displayed in real time, and job recommendation and salary prediction can be made by inputting professional description text, and scored 94

Member | Topology Optimization of Race Car Steering Stud | Structural Design

- Use optimization algorithm combined with finite element analysis to generate optimized geometry for structure, scored 98

SKILLS

- **Programming**: **Data Analysis, ML & DL based on Python**; Software Development based on Python, Java, or Web; C++, JS
- **Documentation**: LaTeX, MS Office, HTML; Language: **IELTS 7.5**, with writing and listening 8.5