RUIKAI CUI

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EDUCATION

Australian National University *Jul. 2019 – Jun. 2021*
Bachelor of Advanced Computing (Honours)
GPA: 7.0/7.0 | **WAM: 86.9/100**

Shandong University *Sep. 2017 – Jun. 2021*
Bachelor of Computer Science and Technology
GPA: 3.8/4.0 | **WAM: 90.2/100** | **Rank: 1st/36**

PUBLICATION

Declarative Residual Network for Robust Facial Expression Recognition
Ruikai Cui, Josephine Plested, Jiaxu Liu
The 27^{th} International Conference on Neural Information Processing (ICONIP 2020)

RESEARCH EXPERIENCE

Saliency Detection via Normalizing Flows Uncertainty Modelling Jan. 2021 - Present
RSCS, ANU, Canberra | Supervisor: Prof. Nick Barnes, Dr. Saeed Anwar

- Investigated the capability of flow-based models on complex distribution modelling
- Developed a competitive saliency detection model that can take advantage of both deterministic features from RGB-D info and stochastic features from a flow-based module
- Evaluated the proposed model on six saliency detection datasets against the baseline method

Conditional Random Fields as Deep Declarative Networks Jul. 2020 - Present
RSCS, ANU, Canberra | Supervisor: Prof. Stephen Gould

- Extended Conditional Random Fields(CRFs) to modern deep learning models with the Deep Declarative Networks framework
- Enabled robust CRF energy evaluation and minimization within end-to-end trainable models
- Derived and implemented efficient robust superpixel pooling layers that can be easily add to existing networks
- Evaluated the proposed methods on Semantic Segmentation benchmarks

De-Centralized Vehicle Movement Control System Sep. 2019 - Oct. 2019
RSCS, ANU, Canberra

- Designed a movement decision procedure for a de-centralized vehicle system which can stably handle up to 300 vehicles
- Investigated the possibility of utilizing Raft consensus algorithm to enhance the robustness
- Conducted extensive experiments to evaluate the proposed method

Auto-focus System for Laser-Induced Breakdown Spectroscopy Mar. 2020 - Apr. 2019
SMEIE, SDU, Weihai | Supervisor: Prof. Li Zhang

- Implemented a no-reference image blurriness evaluation system in C++
- Designed a decision marking procedure for finding the optimal Lens position and thus improve image sharpness
- Automated the the experiment equipment by developing a control software with the Microsoft Foundation Class Libraries and Open CV

OTHER EXPERIENCE

Research Assistant Dec. 2020 - Feb. 2021
RSCS, ANU, Canberra | Supervisor: Prof. Lexing Xie

· Explored the trade-off between data quantity and quality with the data defect index
· Analysed the bias inherent from twitter data sampling process with respect to some interested quantities

Academic Tutor Jul. 2020 - Dec. 2020
Course: Intro. to Machine Learning, Algorithm
Manager: Dr. Liang Zheng, Assoc. Prof. Hanna Kurniawati *Canberra, AU*

· Delivered weekly interactive tutorials to graduate-level courses
· Designing & marking assignments, answering quizzes, and coordinating examinations
· Collected student feedback to help the course convenor improve teaching quality

Team Leader Mar. 2019 - Apr. 20
Future Cup Supernova Search Challenge *Weihai, CN*

· Coordinated the cooperation of a team with 5 members
· Conducted data wrangling on a dataset with over 15,000 astronomy images and analysed it to find the pattern of potential supernova
· Developed a YOLO-based model to perform tiny object (few pixels in general) detection

AWARDS & SCHOLARSHIPS

· First Class Scholarship of Studying Abroad Nov. 2020
· Chancellor's Letter of Commendation Jul. 2020
· First Class College Merit Scholarship Sep. 2019
· First Class Scholarship of Studying Special Sep. 2019
· Province-Level Silver Medal of Lanqiao Programming Competition Mar. 2019
· First Class College Merit Scholarship Sep. 2018