RUIKAI CUI

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EDUCATION

Australian National University   *Jul. 2019 – Jul. 2021*
Bachelor of Advanced Computing (Honours)
GPA: 6.9/7.0 | WAM: 86.7/100

Shandong University   *Sep. 2017 – Jul. 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 27th 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

· ANU PhD scholarship and ANU HDR Fee Remission Merit Scholarship   Jun. 2021
· 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