

Kangrui Wang

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RESEARCH INTEREST

Interpretable Neural Networks
Machine Learning Theory
Computational Linguistics and Computer Vision
Theoretical Foundation of Reinforcement Learning

EDUCATION

2022 - present
Pre-Doctoral MS in Computer Science
University of Chicago

2018 - 2022
Bachelor's Degree in Computer Science
Shanghai Jiao Tong University
GPA: **3.84/4.00 top 15%**

HONORS

Nominated to Ford Scholarship
[Outstanding Undergraduate Thesis](#)

SKILLS

Programming Languages	Python, C/C++, Java, Rust, MATLAB, Verilog, LaTeX
Framework	Pytorch, Tensorflow, Spring Boot, Hadoop, Spark, MySQL

PUBLICATIONS

- Bhatti, Shahzad, Jiahao Fan, **Kangrui Wang**, Xiaofeng Gao, Fan wu, and Guihai Chen (Apr. 2020). “An Approximation Algorithm for Bounded Task Assignment Problem in Spatial Crowdsourcing”. In: *IEEE Transactions on Mobile Computing* PP, pp. 1–1. DOI: [10.1109/TMC.2020.2984380](https://doi.org/10.1109/TMC.2020.2984380).
- Liu, Dongrui, Huiqi Deng, Xu Cheng, Qihan Ren, **Kangrui Wang**, and Quanshi Zhang (2023). “Formulating and Proving the Trend of DNNs Learning Simple Concepts”. In: *Submitted to The Eleventh International Conference on Learning Representations*. under review.
- Liu, Dongrui, Shaobo Wang, Jie Ren, **Kangrui Wang**, Sheng Yin, Huiqi Deng, and Quanshi Zhang (2023). “Temporary feature collapse phenomenon in early learning of MLPs”. In: *Submitted to The Eleventh International Conference on Learning Representations*. under review.

PROJECTS

Applying Online Continual Learning Methods in Cloud Computing System 2022–present

Research Member; Supervisor: Prof. Haryadi s. Gunawi, UCAREgroup, Uchicago

- Working on modifying Avalanche’s implementation of ICarL for our project

Trap of Feature Diversity in the Learning of Multi-layer Perceptrons (MLPs) 2021–present

Research Member; Supervisor: Prof. Quanshi Zhang, Explainable AI Laboratory, SJTU

- Explained a two-phase phenomenon discovered in the learning of MLPs and named it as the self-activated state
- Derived the learning dynamics of the MLPs
- Experimented different method to avoid self-activated state and verified that this effect could be eliminated by adding the Batch Normalization

Application of Data Analysis and Machine Learning 2019-2020

Individual Researcher; Supervisor: Prof. Pradeep Ravikumar, CMU

- Analyzed the performance of MobileNet and EfficientNet
- Implemented MobileNet and EfficientNet on Google Landmark Recognition Dataset, demonstrated the advances and potential improvements of the models

Task Recommendation System Design in Crowd-sourcing 2018-2020

Research Member; Supervisor: Prof. Xiaofeng Gao, Advanced Network Laboratory, SJTU

- Designed an approximation algorithm and got an efficient solution for the bounded and heterogeneous task in spatial crowdsourcing, maximized the sum of the rewards of workers that subjects to multiple constraints
- Experimented the algorithm on virtual and real data sets , cooperated to publish the paper An Approximation Algorithm for Bounded Task Assignment Problem in Spatial Crowdsourcing, IEEE Transactions on Mobile Computing

Study on Systemic Lupus Erythematosus (SLE) based on Machine Learning Fall 2018

Research Member; SJTU

- Developed DNN models to tell the presence of SLE Fundus Lesions
- Modified InceptionNet to get a better performance in time and accuracy