



和瑞 Rui He

PHD CANDIDATE IN MACHINE LEARNING · UOB & SUSTECH

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Personal Profile

A highly motivated **PhD candidate** jointly enrolled at the University of Birmingham (UoB) and Southern University of Science and Technology (SUSTech). Solid academic foundation in **Computer Science** and **Physics** with research endeavors primarily concentrated on **machine learning**, specifically in **active learning** and **multi-domain learning**. Strong ability to **quick and independent learn**, with a proven track record of delivering high-quality research outcomes. In-depth experience from multiple teaching assistantships in AI-related fields demonstrates solid **presentation skills** and **knowledge-organization skills**. Motivated by the rapid advancements in AI and its practical applications, and powered by **a passion for problem-solving**, the aim is to secure a challenging role that fully utilizes AI's capacity to confront and resolve significant real-world problems.

Education

University of Birmingham (UoB)

Birmingham, UK & Shenzhen, China

PH.D. IN COMPUTER SCIENCE AND ENGINEERING (SUSTECH JOINT PROGRAM)

Sep. 2018 - Dec. 2023 (Expected)

- **Supervisor:** Prof. Ke Tang (SUSTech), Dr. Shan He (UoB)
- **Research Fields:** Active Learning, Multi-Domain Learning, Domain Adaptation, etc.
- Thesis title: Advancing Multi-Domain Active Learning: Strategies and Techniques Using Neural Networks
- Crucial growth: Problem-Driven Thinking, Critical Thinking, Presentation Skill

Southern University of Science and Technology (SUSTech)

Shenzhen, China

B.Sc. IN PHYSICS GPA:3.65/4

Sep. 2014 - July 2018

- Supervisor: Prof. Hu Xu, Prof. Haizhou Lu
- Courses: Quantum Mechanics, Statistical Physics, Probability and Statistics, Data Structure and Analysis, etc.
- **Honours:** Outstanding Graduate in Shuren College, Outstanding Freshman Scholarship, Government Innovation Scholarship
- Crucial growth: Strong ability to learn independently and quickly

Temple University

Philadelphia, USA

SEMESTER EXCHANGE PROGRAM GPA:3.93/4

Aug. 2016 - Dec. 2016

- Courses: Problem Solving and Programming with Python, Computing for Scientists, Atomic Nuclear & Partical Physics, etc.
- Crucial growth: Overcoming the fear of the unfamiliar

Publication

2022 **Multi-Domain Active Learning: Literature Review and Comparative Study**, First author

JOURNAL - IEEE TRANSACTIONS ON EMERGING TOPICS IN COMPUTATIONAL INTELLIGENCE (TETCI)

- Building classifiers on multi-domain data is common in real-world applications, but it still faces high annotation burden.
- We propose a pipeline to incorporate active learning and multi-domain learning, termed as multi-domain active learning (MDAL).
- We provide the first literature review and the formal definition for MDAL, and conduct a comprehensive comparative study.

2023 **Multi-Domain Learning From Insufficient Annotations**, First author

CONFERENCE - 26TH EUROPEAN CONFERENCE ON ARTIFICIAL INTELLIGENCE (ECAI)

- Multi-domain learning from insufficient annotations is under-explored in the literature but common in real-world applications.
- We propose a contrastive learning-based MDL method by utilizing both insufficient labeled data and abundant unlabeled data.

2023 **Perturbation-Based Two-Stage Multi-Domain Active Learning**, First author

CONFERENCE - 32ND ACM INTERNATIONAL CONFERENCE ON INFORMATION AND KNOWLEDGE MANAGEMENT (CIKM)

- Conventional active learning strategy is not suitable for MDAL due to the negligent of cross-domain information evaluation.
- We propose a perturbation-based two-stage MDAL method and evaluate the cross-domain information for further annotations.

2023 **Large Language Models can be Guided to Evade AI-Generated Text Detection**,

- We propose an in-context learning based method to guide LLMs to generate texts with less injection of model characteristics.

- We propose a dataset condensation method for recommendation under a bilevel optimization paradigm.

Work Experience

Southern University of Science and Technology

Shenzhen, China

POSTGRADUATE TEACHING ASSISTANT - INTELLIGENT DATA ANALYSIS CSE5002 (SPRING SEMESTER EACH YEAR)

Jan. 2020 - PRESENT

- **Deliver laboratory courses** for graduate-level students, including the training of **machine learning models, data processing, feature engineering, non-convex optimization**, etc.
- Responsible for designing laboratory materials (slides & codes), assignments and projects.
- Key personal growth: In-depth teaching skills, the ability to connect knowledge.

POSTGRADUATE TEACHING ASSISTANT - ARTIFICIAL INTELLIGENCE CS303 (FALL SEMESTER EACH YEAR)

Sep. 2019 - Jan. 2022

- **Conducting remote laboratory classes** for an international undergraduate students, including **searching, optimization, machine learning**.
- Responsible for preparing teaching materials (demo codes and Python tutorial materials) for laboratory.
- Key personal growth: Remote communication skills and technical support skills.

University of Birmingham

Birmingham, UK

POSTGRADUATE TEACHING ASSISTANT - DATA STRUCTURES AND ALGORITHMS

Feb. 2019 - June 2019

- Responsible for project guidance and coding assignment correction for undergraduate students.
- Key personal growth: Communication skills.

POSTGRADUATE TEACHING ASSISTANT - SOFTWARE WORKSHOP (JAVA)

Oct. 2018 - Dec 2018

- **Deliver tutorial sessions** and grade coding assignments for graduate students.
- Key personal growth: Demonstration skills in English, public presentation.

Skill

Soft Skills	Problem-Oriented Thinking, Result-Oriented Mindset, Quick Learner with Knowledge Reorganization, Teaching Skills
Programming	Python (PyTorch, Numpy, Matplotlib, Scikit-learn, etc.), Java, 四X
Large AI Models	Hugging face, ChatGPT API, Stable Diffusion
Development	Hexo (static website generator), Git, Nginx + Tencent Cloud (web page deployment)
Languages	Chinese (native language), English (business communication)

Project

Awesome Active Learning

Github Open-Source Repository

FOUNDER & WRITER

Feb. 2020 - PRESENT

- A well-structured active learning all-in-one knowledge library.
- Including taxonomy, papers, codes, and other resources.
- Until August 2023, about 500 stars.

Multi-Domain Active Learning: a Pipeline

Github Open-Source Repository

FOUNDER & DEVELOPER

Jan. 2022 - Dec. 2022

- A general pipeline for multi-domain active learning (MDAL).

Others

Certificate for CPR & AED

CHINESE RED CROSS SOCIETY - 中国红十字会

- Proficient in performing cardiopulmonary resuscitation (CPR) and using an automated external defibrillator (AED).