Hanxu Hu

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Education

- **University of Edinburgh** — Edinburgh, Scotland
  *MSc(**with Distinction**) - Computer Science* — *Sept. 2021 - Nov 2022 (expected)*

  Core Courses: *Machine Learning Practical, Machine Learning Theory, Accelerated Natural Language Processing, Text Technology and Data Science*

- **Nanjing University of Science and Technology (NJUST)** — Nanjing, China
  BEng - Measurement and Control — *Sept. 2017 - June 2021*

  GPA: *3.5 (top **5%**)*
  Core Courses: *Signals and Systems, Error Theory, Data Structure and Algorithm*

Academic Employment

- **Westlake University** — HangZhou, China
  Research Internship - Yue Zhang's Group — *Sept. 2022 - present*

Honors and Awards

- IBM Third Place Prize for Best Project in MLP Course - April, 2022 (Top **2%**)
- First Class School Scholarship, 2019 (awarded to **5%**)
- Second Class School Scholarship, 2019 (awarded to **10%**)

Publications and Preprints

- **Meta-Learning For Multi-Modal Cross-Lingual Transfer**
  Master Thesis
- (Under Review)**Meta-Learning For Multi-Modal Cross-Lingual Transfer**
  Hanxu Hu and Frank Keller.
  submitted to EACL
- (Under Review)**Improving Controlled Table-To-Text Generation Robustness**
  Hanxu Hu; Zhongyi Yu; Yunqing Liu; Laura Perez-Beltrachini.
  submitted to EACL
- Yang Shen; Xuhao Sun; Xiu-Shen Wei; **Hanxu Hu**; Zhipeng Chen. A Channel Mix Method For Fine-grained Cross-modal Retrieval.
  IEEE ICME2022

Research Experience

- **Meta-Learning For Multi-Modal Cross-Lingual Transfer** — Edinburgh
  Master Thesis Project (Supervised by Prof. Frank Keller) — *May 2022 - Present*
  - Shown current state-of-the-art pre-train models have poor performance in languages other than English in multi-modal cross-lingual tasks.
  - Proposed a novel **contrastive meta-learning fine-tuning framework**, combining existing supervised X-MAML and our proposed unsupervised Contrastive-MAML.
  - Boosted performance of two pre-trained multi-modal models (xUNITER and UC2) in 4 multi-modal cross-lingual tasks in low-resource languages based on IGLUE benchmark

- Conducted a series of ablation studies to empirically proved the effect of each parts of the proposed method.
- Related paper is submitted to EACL.

- **Improving Controlled Table-To-Text Generation Robustness** Edinburgh
  Group Leader of Machine Learning Piratical Final Project *Jan. 2022 - Present*
  - Shown current state-of-the-art table-to-text methods have poor performance and robustness on noisy inputs
  - Proposed a novel training scheme by constructing noise in current controllable table-to-text dataset, then optimized it by reinforcement learning algorithm
  - Gained the results which are equal or even better compared with current state-of-the-art methods in the ToTTo dataset.
  - **IBM Third Place Prize** for Best Project in MLP Course
  - Related paper is submitted to EACL (Rebuttal Score: 4-3-3 in COLING22)

- **A Channel Mix Method For Fine-grained Cross-modal Retrieval** Nanjing
  Research Assistant in PCA Lab of NJUST *May 2021 - Sept. 2021*
  - Worked on Fine-grained Cross-Modal retrieval task, which cross four modalities. Leveraging Mix-Channel Method to improve the interaction between modalities.
  - Proposed a Mix-Channel Method to improve the interaction between modalities
  - Gain significant improvement in all modalities in the fine-grained retrieval benchmark based on CUB200 dataset.
  - Research results included a paper accepted by **ICME2022**

Other Projects

- **A Multi-Functional Fast Movie Search Engine**: We build a Movie Search Website, using VUE framework. Based on BM25 algorithm, we modified it, adding normalized score of authority computed by ratings and votes. Ranking the most related and qualified movies, celebrates for a given query. (March '22)
- **A U-net and K-Means Based Method For Brain Tumor Segmentation and Measurement**: Using U-net as baseline models for the tumor segmentation scenario, modified it for better matching this specific task, combining with K-Means methods for determining the severity of a tumor. (May '21)

Skills Summary

- **Programming Languages**: Python, JAVA
- **Frameworks**: Pytorch, NLTK, SpaCy, TensorFlow, Scikit
- **Skills**: SysAdmin (Linux, MacOS), Cloud Management (GCP)
- **Languages**: English (TOEFL 95), Mandarin