

Yiqi Wang

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Education

Carnegie Mellon University (CMU)

Master of Science in Electrical and Computer Engineering (Advanced)

GPA: **4.0**/4.0

Selected Coursework: Deep reinforcement learning and control, Speech recognition and understanding, Learning for manipulation.

Pittsburgh, PA

Aug 2022 – Present

University of Wisconsin, Madison (UW Madison)

Bachelor of Science in Computer Sciences, **distinction**.

GPA: **3.941**/4.0

Selected Coursework: Prob & info theory in ML, Matrix methods in ML, Big data system, Intro to AI, Intro to operating system

Madison, WI

Sept 2019 - May 2022

Research Experience

Prof. Yuejie Chi Group (CMU, ECE)

Aug 2022 – Present

Graduate Research Assistant, supervised by Prof. Yuejie Chi.

Pittsburgh, PA

- Led a project on offline reinforcement learning (RL).
 - Proposed to formulate offline RL as a multimodal sequence modeling problem.
 - Designed a multimodal model driven by the importance of modalities from attention analysis.
 - Proposed Decision-Transducer (DTd) becomes SOTA transformer on offline RL benchmark D4RL.
 - Only required 50% gradient steps to reach the performance of prior works.
 - Surpassed all prior art on average and 6 out of 9 cases compared to other transformers.
 - Published a first author paper at a peer-reviewed AI conference ([UAI 2023](#))
 - *A Trajectory is Worth Three Sentences: Multimodal Transformer for Offline RL.*
- Led a project regarding resource scheduling on cloud via a scalable RL scheduler.
 - Improved a DQN to fuse multimodal system states via feature-wise affine transformation (FiLM), resulted in 35% reduction on power consumptions (i.e., increase 35% episodic return).
 - Pretrained a DQN on hundreds of simulated short-horizon environments using Automatic Domain Randomizations. The resulted policy could meet all performance requirements on multiple unseen long-horizon environments without any online adaptations.
 - Work in progress.

Prof. Chris G. Atkeson Group (CMU, Robotics Institute)

Jan 2023 – Present

Graduate Researcher, supervised by Prof. Chris G. Atkeson

Pittsburgh, PA

- Leading a project on cost-effective skill acquisition for robots by leveraging data (prior) from human.
 - Scraping human activities from web (YouTube) to build offline data (prior) for skill learning.
 - Proposed to learn skill from human priors via:
 - Constructing skill learning priors by aligning human activity videos with text (transcriptions) via open-vocabulary action detection.
 - Building reward function to supervise skill learning by training contrastive model on the text-video pairs (text2human) and video-video pairs (human2robot).
 - Acquiring the skill of interest using deep RL (e.g., maximizing long-term reward).
 - Work in progress.

Individual Research Project (CMU)

Sept 2022 – Present

Project Lead

Pittsburgh, PA

- Exploring the effect of modality gap when leveraging text and audio pretrain models together.
 - Proposing a decoder-only ASR model that could be seamlessly initialized by a pre-trained LM.
 - Bridging the modality gap between speech and text-only pretrain models by adding grounding objectives and training extra models to connect frozen pretrain models.
 - Work in progress
- Managing weekly discussions with Jianyu Mao, Aditya Rathod from ECE and LTI department at CMU.

Informatics Skunkworks, (UW Madison)

Undergraduate Researcher, mentored by Prof. Dane Morgan

Feb 2021 – May 2022

Madison, WI

- Research on the out-of-domain (OOD) detection techniques for machine learning models.
 - Proposed contrastive metric learning for OOD detection on 4 material science data.
 - Results surpassed popular gaussian process regression variance on 3 material science datasets.
- Contributed to the development of the [software](#).
- Paper draft in progress (2nd author).

Cathaypath Institute of Science

- Group Project, supervised by Prof. Patrick Houlihan (Columbia University)* Oct 2021 – Dec 2021
- Designed a multimodal pipeline for image-caption matching on Wikipedia image/text dataset.
 - Leveraged the attention mechanism for a fine-grained image-text grounding.
- Group Project, Mentor: Prof. Bart Selman (Cornell University)* July 2018 – Aug 2018
- Devised a planning-based reinforcement learning software for Connet-4 game.
 - Experimented different heuristics for pruning search tree of a real-time game play agent.

Mentoring Experience

- Graduate Research Assistant, Prof. Yuejie Chi (CMU) Group** Aug 2022 – Present
- Guided an undergraduate student on the research project related to RL.
 - Led the weekly discussion on the concepts related to the project and introducing papers.
 - Providing weekly feedback on undergraduate student's progress, including technical support.

Student Mentor for Intro to Operating System (CS 537), Instructor: Prof. Yuvraj Patel Madison, WI

- Held weekly office hour to mentor undergraduate students on conceptual / coding assignments.

SKILLS & LANGUAGES & Certificates

- Computer Language: Python (expert), C (fluent), Java (familiar)
- Framework: Pytorch (expert), flax/jax (fluent), tensorflow (familiar)
- Robots: Ufactory xArm (fluent), Franka Emika (familiar)
- Languages: English, Mandarin, Cantonese
- Certificates: Deep learning specification ([coursera](#)), Natural language understanding([Stanford](#))

HONORS & AWARDS

- **Top 3%** Kaggle: CommonLit Readability Prize – Rate the complexity of passages. (75th / 3633, **Silver**)
- **1st Place** Campus Level (**Only Candidate** Selected for 2019 National Contest), Virtual Instrument Contest
- **Dean's list 3 times**, University of Wisconsin-Madison, 2021-2022
- **Graduated in distinction**, University of Wisconsin-Madison, 2019-2022
- **First Class Scholarship & Merit Student (Top 10%)**, Dalian Polytechnic University, 2017-2018