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Genglin Liu

GitHub | LinkedIn

Education

University of Illinois, Urbana-Champaign 2022 - 2023
Master of Computer Science GPA: 3.9/4.0

University of Massachusetts, Amherst 2018 - 2022
B.S. in Computer Science and Mathematics (Dual Degrees) GPA: 3.8/4.0
Commonwealth Honors College Scholar

Publications and Preprints

[5] Zhenhailong Wang, Ansel Blume, Sha Li, **Genglin Liu**, Jaemin Cho, Zineng Tang, Mohit Bansal, Heng Ji Paxion: Patching Action Knowledge in Video-Language Foundation Models **NeurIPS 2023** (in submission) [arxiv]

[4] **Genglin Liu**, Yi R. Fung, Heng Ji. SemEval-2023 Task 3: An Augmented Multilingual NLI Approach Towards Online News Persuasion Techniques Detection. **SemEval 2023**

[3] Reece Suchocki, Mary Lynn Martin, **Genglin Liu**, Martha Palmer, Susan Brown. Schematic Event Representation: An Empirical Approach to Hierarchical Schema Curation **EMNLP 2023** (in submission)

[2] Sidong Zhang, Evan Fellman, James Ko, **Genglin Liu**, Madalina Fiterau. Forecasting Alzheimer's Disease Two Years Ahead from Longitudinal Multimodal Data. **Journal of Neuroscience, 2023** (in submission)

[1] **Genglin Liu**, Yulong Lu. Demystifying The Spectral Bias of Overparameterized Deep Neural Networks **UConn REU Conference, 2021**

Research Experiences

Graduate Research Assistant | UIUC Fall 2022 - Present

At the NLP Lab led by Prof. Heng Ji, I'm mostly interested and involved in the following research projects:

- Benchmarking and Mitigating Hallucination in Large Language Models
- Multi-modal understanding enhanced by physical knowledge from videos or simulators.
- Detecting framing and persuasion techniques on multilingual news articles.

Research Intern | BLENDER Lab, UIUC Summer 2022

- Worked on an NLP project as a graduate intern, focusing on multimedia misinformation detection.
- Generated contextualized multi-modal training data using prompt engineering on GPT-3.
- Explored video understanding techniques such as frame captioning using CLIP and OCR on subtitles. Wrote an end-to-end, video-to-text ASR pipeline using Baidu's PaddleSpeech and Facebook's Wav2Vec2 models.

Undergrad Research Assistant | InfoFusion Lab, UMass Amherst 2020 - Spring 2022

- Completed an undergraduate honors thesis: augmented the Pytorch implementation of Conv2D

layer in neural networks to enable a CNN to take both visual and tabular data as multimodal input.
- Involved in improving an Alzheimer's Forecasting framework, FLARe, specifically on processing brain MRI images and patient cognitive testing scores using the fusion method mentioned above.

Summer Intern | TRIPODS Institute, UMass Amherst Summer 2021

- Completed a summer project on deep learning theory, namely Neural Tangent Kernels and their spectral properties.
- Conducted numerical experiments on NTK with different activation functions, completed a technical report and gave a talk in the REU conference held by University of Connecticut.

Softwares and Personal Projects

Event Schema Curation Visualization Interface

- Developed a full-stack web application using ReactJS, Cytoscape.js, and Flask backend. The interface allows users to visualize and curate complex event schemas as interactive graphs.

Semantic Evaluation on News Articles (SemEval 2023 Competition)

- The latest model achieves top 1 macro-f1 score in English, and top 5 micro-f1 on the English and Russian leaderboard for the persuasion technique detection subtask.

Point Cloud Segmentation with Kernel Point Convolution (3D Vision Replication Study)

- Performed cloud segmentation tasks in PyTorch on the Shapenet-Part dataset in addition to indoor scene data. Studied the implementation of rigid and deformable convolution for Point clouds.

Mechanisms of Action (MoA) Prediction (Kaggle Competition)

- Trained linear models using SMOTE, Logistic Regression and Ridge Regressions, explored ensemble models with Random Forests and trained a fully-connected neural network model for the task.

SuDocu (Front-end UI Development for VLDB 2020 Demo Paper)

- Helped design the UI and developed the core frontend features for a personalized text summarization web demo. This demo paper won the Best Demo Runner-up Award at VLDB 2020.

Technical Skills

- General-purpose languages: Python, Java, JavaScript, C/C++
- Data Science/Machine Learning: SQL, R, Numpy, Pandas, Scikit-learn, Pytorch, Spark, Hive, Slurm
- Web Development: HTML, CSS, Bootstrap, React, NodeJS, Koa, Selenium
- Software Engineering: Unix/Linux, Git, VMWare, AWS, GCP, Docker, Agile Methodology

Mentoring and Teaching Experiences

Peer Mentor | UMass Amherst Fall 2019 - Fall 2022

- Worked to support over 170 first-year students in their transition to college life through academic success mentoring and an in-hall curriculum, supporting the overall mission of Residential Life.

Course Assistant | UMass CS Department Fall 2020 - Spring 2021

- Assisted in both Algorithms and Discrete Mathematics classes for two semesters.
- Held weekly tutoring sessions, led discussion sessions with graduate TAs, and graded assignments.

Undergraduate Teaching Assistant Fall 2019 - Spring 2020

- TA for introductory calculus lectures. Led exam review sessions in front of more than 300 students. Held office hours regularly at the Calculus Tutoring Center, and remotely since March 2020.

Awards and Honors

Chancellor's Award

- Was awarded a $56,000 academic scholarship in total over 4 years of full-time undergraduate study.

Dean's List at UMass Amherst

- Being placed on the University's Dean's List in Fall 2018, Spring 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022 academic semester, for obtaining a high grade-point average.

CS Departmental Honors

- As a member of the Commonwealth Honors College, I pursued the CS Departmental Honors by taking graduate-level courses and independent studies with Honors designations, as well as completing an individually-contracted Honors Thesis by graduation.

References

Heng Ji
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