

# Sheryl Mathew

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## EDUCATION

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UNIVERSITY OF SOUTHERN CALIFORNIA, PHD IN COMPUTER SCIENCE

Los Angeles, CA

Advised by David Traum and Xiang Ren

Aug 2025 - Present

CARNEGIE MELLON UNIVERSITY, B.S. IN COMPUTER SCIENCE, 3.85 GPA

Pittsburgh, PA

*Concentration in Language Technologies*

Aug 2021 - Dec 2024

Selected Coursework: Multimodal Machine Learning, Advanced Natural Language Processing, Introduction to Deep Learning, Introduction to Machine Learning

## RESEARCH INTERESTS

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The goal of my research is to **make LLMs more natural and effective at communicating with humans** and align their behavior with human expectations, by leveraging **relevant social theories** such as conversational grounding. I want to improve LLM assistants' social interaction and task completion in the real-world settings of **1) long multi-turn conversations** and **2) group conversations with multiple humans**. Currently, I am working on applying **on-policy RL methods** to a **socially intelligent LLM tutor**.

## EXPERIENCE

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CONNECTING LANGUAGE TO ACTION AND THE WORLD (CLAW) LAB

Pittsburgh, PA

Research Intern | Advisor: Dr. Yonatan Bisk

Jan 2025 - May 2025

- Worked on project to predict Diplomacy player behavior from natural language messages sent between players during the game

SUMMER AT EPFL, NLP LAB

École Polytechnique Fédérale de Lausanne, Switzerland

Research Intern | Advisor: Dr. Antoine Bosselut

May 2024 - Dec 2024

- Accepted to Summer at EPFL competitive research program (1.6% acceptance rate)
- Constructed dataset and developed evaluation metrics for narrative-to-storyboard generation task using SOTA LLMs (Llama 3, Mantis-Idefics 2)
- Presented monthly updates to client team at Sony

HUMAN SENSING LAB

Pittsburgh, PA

Research Intern | Advisor: Dr. Fernando de la Torre

Jan 2024 - Dec 2024

- Ran classical machine learning model experiments to predict engagement from dyadic conversations with audio, video, gaze, and language modality data collected from Pupil Invisible smart glasses

MULTICOMP LAB

Pittsburgh, PA

Research Intern | Advisor: Dr. Louis-Philippe Morency

Dec 2021 - Dec 2023

- Modified MERLOT Reserve model for finetuning on the Social-IQ dataset, which contains text, audio, and video data and questions to probe model understanding of social situations
- Prepared and debiased Social-IQ 2.0 dataset challenge for ICCV '23 Workshop
- Implemented novel strategic masking technique in Difference Masking paper accepted to Findings of EMNLP '23

LOCKHEED MARTIN

Palo Alto, CA

Research Engineering Intern

May 2023 - Aug 2023

- Trained self-supervised vision transformer models for image segmentation tasks on satellite imagery

## SPOKEN LANGUAGE PROCESSING GROUP LAB (COLUMBIA UNIVERSITY)

**Research Intern | Advisor: Dr. Julia Hirschberg**

**May 2020 - May 2021**

- Identified and presented findings on impact of language and medium (text vs. audio) on sentiment labels of text and audio Bible samples using Python for multimodal sentiment analysis of low-resource languages
- Developed algorithm to identify unusable audio files by analyzing speech features using Parselmouth

## TEACHING

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CARNEGIE MELLON UNIVERSITY

**Pittsburgh, PA**

**Teaching Assistant**

**Jan 2023 - May 2025**

- Led weekly recitations and conducted office hours for 15-210, Parallel and Sequential Data Structures and Algorithms

## SKILLS AND AWARDS

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- Technical Skills: Python, C, C++, Java, Rust, Standard ML (Functional programming)
- Technologies: TensorFlow, PyTorch, OpenCV, Parselmouth
- Dean's List for Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024 semesters

## PUBLICATIONS

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"VinaBench: Benchmark for Faithful and Consistent Visual Narratives," Silin Gao, **Sheryl Mathew**, Sepideh Mamooler, Li Mi, Mengjie Zhao, Hiromi Wakaki, Yuki Mitsufuji, Syrielle Montariol, Antoine Bosselut. (CVPR 2024).

"Multimodal Fusion with LLMs for Engagement Prediction in Natural Conversation," Cheng Charles Ma, Kevin Hyekang Joo, Alexandria K. Vail, Sunreeta Bhattacharya, Álvaro Fernández García, Kailana Baker-Matsuoka, **Sheryl Mathew**, Lori L. Holt, Fernando De la Torre. (ICMI 2025).

"Difference-Masking: Choosing What to Mask in Continued Pretraining," Alex Wilf, Syeda Nahida Akter, Leena Mathur, Paul Pu Liang, **Sheryl Mathew**, Mengrou Shou, Eric Nyberg, Louis-Philippe Morency. Findings EMNLP 2023. ArXiv: [arxiv.org/abs/2305.14577](https://arxiv.org/abs/2305.14577)

## PROJECTS

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**Tangram Reasoning in VLMs, 11-711 Advanced Natural Language Processing class project** **Dec 2024**

- Explored prompting methods and multi-step reasoning strategies for vision-language models on the tangram identification task: given ten tangram images (abstract shape puzzles) and a text description, which image best matches the description?

**LLM Agents for Web Interaction, 11-777 Multimodal Machine Learning class project** **Dec 2023**

- Developed LLM agent inspired by CoALA cognitive framework with explicit memory and reasoning components; evaluated on Web Arena dataset

## ORGANIZATIONS

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**Women@SCS and SCS4All Outreach Lead and Member**

**Aug 2021 - May 2025**

- Lead weekly meetings and plan events for the CMU School of Computer Science community
- SCS4ALL and Women@SCS are sister organizations, part of CMU's Office of Diversity, Equity, and Inclusion