ATHARVA SEHGAL

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EDUCATION

University of Texas, Austin — August 2021 - Present

PhD in Computer Science (Advised by Swarat Chaudhuri)

University of Illinois, Urbana Champaign — August 2017 - May, 2021

B.S. in Computer Science w/ high honors (GPA: 3.87); Minor in Linguistics; James Scholar

EXPERIENCE

Trishul Lab, UT Austin — June 2021 - Present
Graduate Researcher

· Developing neuro-symbolic techniques for interpretable programmatic generation of mice behaviors. (neurosymbolic.org/cognitive.html)

Madhusudhan Parthasarathy's Research Group, UIUC — August 2020 - May 2021
Undergraduate Researcher

· Developed a synthetic dataset of visual discrimination puzzles (VDPs). Developed novel neuro-symbolic and neural architectures for solving VDPs.
· This necessitated developing and testing multiple novel CV models for few-shot classification including a scene-graph generator (Mask RCNN backbone), an object detector (YOLO backbone), a VAE based prototypical network, and a triplet loss deep ranking network.
· Paper submitted to NeurIPS'2021. Preprint: arxiv.org/abs/1907.05878

Sasa Misailovic's Research Group, UIUC — February 2020 - December 2021
Undergraduate Researcher

· Helped formulate and engineer a compiler for efficient low-precision probabilistic programming in C++17.
· Developed the experiments for the paper. Built a testbench that measured power usage, accuracy, and runtime on ARM based Arduino Due, Raspberry Pi 3b+, and PocketBeagle.
· Paper accepted to DAC'2021. misailo.cs.illinois.edu/papers/statheros-dac21.pdf

InMobi — May 2018 - August 2018
Intern Data Scientist — Bangalore, India

· Implemented three features for conversion rate and click-through rate prediction models extensively used within InMobi.
· Clustered geospatial data based on organic installs. Results and analysis used to improve CVR prediction models.

TECHNICAL STRENGTHS (IN ORDER OF PROFICIENCY)

Computer Languages	Python, C, C++14, Haskell, JavaScript, Lisp
Frameworks	PyTorch, Tensorflow, Eleventy, Pyro, Pandas/Dask, NetworkX

OVERFLOW SECTIONS

PROJECTS

Transcription Fiction April, 2021

· Group effort to create a visualization showcasing the technical errors made by state of the art speech recognition engines (Zoom, Azure) in an operating systems course and how crowd-sourced annotations help improve their performance (ClassTranscribe).
· Code: `github.com/dylanirlbeck/transcription-fiction`

Affect recognition for extreme weather events September, 2020

· Created a novel data-efficient NLP pipeline for predicting the emotional markup of tweets collected during Hurricane Sandy and Hurricane Harvey. Achieved $90-94\%$ accuracy using a LSTM + attention backbone (DeepMoji Architecture).
· Whitepaper and code: `github.com/atharvas/emosandy`

Indoor localization using multiple Amazon Echo devices April, 2020

· Modified the GCC-PHAT algorithm to estimate the Angle of Arrival for UMA-8 microphone arrays (used in Amazon Echo) to determine the location of a speaker to centimeter level accuracy (in best trials).
· Exploratory Notebook: `gist.github.com/atharvas/02c72c0dfe2b224098175d699cf2b14f`

TEACHING (UIUC)

CS 125 (Introduction to Computer Science) Undergraduate Teaching Assistant in Fall 2018. Helped students review and debug Java code.

CS 173 (Discrete Mathematics) Undergraduate Teaching Assistant in Fall 2020. Conducted office hours and graded assignments.

CS 225 (Data Structures and Algorithms) Undergraduate Teaching Assistant in Fall 2019, Spring 2020, Fall 2020, Spring 2021. Helped students review and debug C++ code and helped develop course material.

CS 225H (Honors:Embedded Systems) Undergraduate Teaching Assistant in Spring 2020. Developed course material and capstone project (Available here: `github.com/atharvas/audio-visualizer`).

CS 225H (Honors:Algorithms for String Processing) Undergraduate Teaching Assistant in Fall 2020, Spring 2021. Helped students review and debug their code in office hours and helped develop course material.

RELEVANT COURSEWORK

Computer Science	Advanced Computer Vision, Robot Learning, Deep Learning, Machine Learning, Mobile Computing, Trustworthy ML
Others	Affective Computing, Psycholinguistics, Phonology, Signal Processing