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PRANAV RAJAN

Bio

I am a second year MSc. Machine Learning student at the KTH Royal Institute of Technology working on music synchronization and multimedia alignment in the RPL and TMH divisions. My interests lie in digital signal processing, machine learning, computer science, human-ai interaction with a focus on applications in the music information retrieval(MIR), sequential data, musicology and creativity domains.

Research Interests

digital signals(audio, music), sequential data modeling, music information retrieval, generative modeling, multimodal ai, human-ai interaction, creative aiml, interpretability, deep learning, agents

Education

KTH Royal Institute of Technology — Stockholm, Sweden
MSc. Machine Learning — Aug 2024 - Present(Expected Jan 2027)
Advisors: Bob Sturm, Hedvig Kjellström

University of Utah — Salt Lake City, Utah
BS Computer Science, MS Computing — 2017 - 2022

Research Experience

KTH Royal Institute of Technology — Stockholm, Sweden
Masters Thesis Student — Jan 2026 - Present
Mentors: Bob Sturm, Hedvig Kjellström

- Working on the problem of music synchronization and alignment for multi-instrument performance (score-following) using **Morton Feldman** *Piece for Four Pianos(1957)* as a case study
- Developing a score-following pipeline and package for tracking in non-traditional score representation
- Notated ground truth examples of Morton Feldman's *Piece for Four Pianos*(1957)

KTH TMH — Stockholm, Sweden
Summer Student Worker — Jun 2026 - Aug 2026
Mentors: Johan Boye (KTH), Matias Nyberg (Traton)

- Member of a three person student team responsible for building a useable neurosymbolic project management agent as part of the ongoing KTHxTraton **AI-Agent for Stochastic Adapative Planning(ASAP Project)**
- Responsible for the backend and agent deployment, software engineering practices, storage layer engineering
- Led efforts in testing, system design and investigating the capabilities of llms for domain specific tasks
- Agent was deployed into research testing at Traton(Scania)

University of Utah SCI Institute — Salt Lake City, Utah
Student Researcher — Oct 2021 - Dec 2021
Mentors: Bei Wang, Cathy Liu, Hilary Coon

- **Biomedical TDA (School of Medicine)**: Modeled and visualized high dimensional health data using techniques from Topological Data Analysis to aid clinical patient treatment analysis
- **Electric Transit (Civil Engineering/NSF)**: Architected data pipelines and a visualization tool for visualizing ArcGIS spatial and time-series data for a University of Utah-Utah Transit Authority bus electrification transit study

University of Utah SCI Institute - Visualization Design Lab(VDL) — Salt Lake City, Utah
Undergraduate Research Intern/Engineer — Jun 2020 - Sep 2021
Mentors: Roni Choudhury(Kitware), Jack Wilburn(VDL)

- Member of the MultiNet project team, an NSF sponsored project for building technical infrastructure and tools for interactive task drive analysis of multivariate networks

- Refactored prior MultiNet projects into MultiMatrix to support domain agnostic analytics tasks
- Researched new ways to wrangle, render and visualize dense network structures

Industry Experience

Peet's Coffee and Tea — Santa Clara County, CA
Barista — Mar. 2024 - Aug. 2024

- Handled financial transactions and mobile orders including use of the rewards program, DoorDash and Peet's App orders
- Prepared and served coffee beans, drinks and food, maintained workspace cleanliness and stocked displays
- Engaged with customers answering product and promotion questions

Rocket EMS — Santa Clara, CA
Business Intelligence Intern — Jun. 2022 - Aug. 2022

- Optimized SQL queries/stored procedures for 100K+ row datasets across MES and ERP systems
- Created PowerBI reports used in finance, quality, operations and supply chain departments

Publications

Pranav Rajan, Derya Akbaba, Jack Wilburn, Roni Choudhury, Alexander Lex. MultiAggr: A Technique for Aggregating Multivariate Networks In *Proceedings of IEEE VIS*, 2021

Presentations + Talks

MultiAggr: A Technique for Aggregating Multivariate Networks — New Orleans, Louisiana(Virtual)
Proceedings of IEEE VIS, InfoVis Posters Session — October 2021

Integrating Origraph into MultiNet: Aggregation for Multivariate Networks — Salt Lake City, Utah(Virtual)
University of Utah Undergraduate Research Symposium — May 2021

Teaching Experience

DD2417 Language Engineering - Teaching Assistant — Spring 2026
CS 6630 Graduate Visualization for Data Science - Teaching Assistant — Fall 2022
CS 1420 Accelerated Introduction to Computer Science - Teaching Assistant — Fall 2021, Spring 2022
CS 6017 MSD:Data Analytics and Visualization - Teaching Assistant — Summer 2021

Service

Student Volunteer
- ISMIR - 2026
- EYEO Festival - 2022

Organizer
- IEEE VIS Workshop on GenAI, Agents, and the Future of VIS (VISxGenAI) - 2025

Other
- KTH Datasektionen Chapter(International Student Committee) - 2024-2025
- Utah Data Science Club(Student Coordinator) - 2020-2022

Honors and Awards

NSF REU Supplement Grant NSF OAC 1835904 — 2020-2021
University of Utah UROP Scholarship — Fall 2020
University of Utah College of Engineering Non-Resident Academic Achievement Scholarship (4-year) — 2017

Skills

Domain Experience: audio digital signal processing(music), music synchronization, deep learning, information retrieval, systems engineering, human-ai interaction

Programming: Python, Java, C++, SQL, Javascript

AIML: PyTorch, Scikit-Learn, Torch-Audio, Torch-Codec, Unsloth

Audio: Librosa, Pretty_Midi, Mido, Music21, Verovio, Audacity, Musescore, Madmom

Tools: Docker, Git, Bash, Typst, LaTeX, Flask, D3, Svelte, claude-code

Languages: English(native), Swedish(A2/B1)

Relevant Coursework

KTH Royal Institute of Technology

advanced machine learning, deep generative models and synthesis, search engines,scalable deep learning,deep learning, language engineering

University of Utah

scientific-data computing, foundations of data analysis, advanced(ml) visualization, scientific visualization, linear algebra, music theory I (music major)

Personal

Books: Tomorrow and Tomorrow and Tomorrow, Stay True: A Memoir, The Worlds I See, When Breath Becomes Air

Movies and TV Shows: Past Lives, The Prestige, Minari, Oppenheimer, The Incredibles, Seymour: An Introduction, One Battle After Another, The Bear, Bosch, Parts Unknown, Hawaii Five-O

Hobbies: Piano, hiking, letterboxd, exploring the outdoors, cooking, improving my knowledge of swedish

Music: Lin-Manuel Miranda, Pearl Jam, U2, The Killers, Murray Perahia, Grigory Sokolov, Igor levit, Yeol-Eum Son, Alice-Sara Ott, Dan Tepfer, Charlie Parker, Keith Jarrett, Emanuel Ax, Mac Miller, Kendrick Lamar, Blink-182, Bach, Beethoven, Brahms