Evan M. Matthews

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Champaign, Illinois - 61820, USA

Objective

To make a positive impact in the field of artificial intelligence and machine learning: developing signal-based models to optimize workflows, provide real-time predictions, and make large generative models more accessible and useful to a wider audience.

Education

- **University of Illinois Urbana-Champaign** *August 2023 - May 2025*
  MS in Computer Science Urbana, IL
  - GPA: 3.62/4.00
  - Thesis: ***Text Recaptioning for Audio Diffusion Models***
  - Advisor: Prof. Paris Smaragdis
  - Selected Courses: Machine Learning for Computer Vision, Computer Vision, Machine Learning for Signal Processing, Data Mining, Topics in Computer Education, Numerical Analysis
- **University of Illinois Urbana-Champaign** *August 2019 - May 2023*
  BS in Computer Science + Music, High Honors Urbana, IL
  - GPA: 3.76/4.00
  - Selected Courses: Machine Learning, Data Structures, Algorithms, Computer Vision, Music Theory, Music Composition
- **Metamora Township High School** *May 2019*
  High School Diploma, High Honors Metamora, IL

Professional Experience

- **CSLSC 2025 [🌐]** *November 2024 - February 2025*
  Session Co-Chair Urbana, IL
  - Organized and led the Machine Learning and Signal Processing (MLSP) session at the 2025 Coordinated Science Lab Student Conference (CSLSC).
  - Managed the session's schedule, including the selection of presenters, invited student speakers, and necessary travel accomodations.
- **Haken Audio [🌐]** *November 2021 - August 2022*
  Product Manufacturer Champaign, IL
  - Manufactured and tested electronic components for the Continuum Fingerboard, a unique electronic music instrument.
  - Managed by Lippold Haken, "one of five leading individuals to have remodeled the musical human-machine interface since 1900."
  - Helped to develop new procedures to increase efficiency and reduce waste in the manufacturing process.

University Appointments

- **Teaching Assistantships**
  University of Illinois Urbana-Champaign Urbana, IL
  - CS 448 Audio Computing Laboratory - Paris Smaragdis (Spring 2024, Spring 2025)
  - CS 545 Machine Learning for Signal Processing - Minje Kim (Fall 2024)
  - CS 340 Introduction to Computer Systems - G. Carl Evans (Fall 2023)
  - ECE 402 Electronic Music Synthesis
    - Zuofu Cheng (Fall 2022)
    - Lippold Haken (Spring 2022)

Additional Experience

- **Public Math Tutor** *June 2023 - May 2024*
  Illinois Tutoring Initiative Normal, IL
  ◦ Tutored high school students in Algebra I through a post-COVID state education initative.
- **Undergraduate Mentor** *Fall 2022, Fall 2024*
  ACM @ UIUC, WCS Urbana, IL
  ◦ Guided undergraduate students through college life, including schedule organization, work-life balance, and thriving in a new environment
- **Session Lecturer** *October 2022 - March 2023*
  CS SAIL, UIUC Urbana, IL
  ◦ Lectured high school students on productivity with popular organizational tool *Notion*
- **Private Math Tutor** *2018 - 2019*
  Metamora Township High School Metamora, IL
  ◦ Tutored middle, high school students in Algebra I and Geometry

Technical Projects

- **CLAIP: Output Comparison on Features of Differing Modalities** *Spring 2025*
  Python, PyTorch, HuggingFace
  ◦ Collaborator: Jay Mahajan
  ◦ Contrastive-Learning Model for comparing image and audio features
  ◦ Applications include modal comparison and cross-modal generation
- **Analyzing and Detecting Lighting Inconsistencies in AI-Generated Images** *Spring 2024*
  Python, Pillow, OpenCV
  ◦ Collaborators: Dwip Datal, Adheesh Juvekar, Jiachen Tu
  ◦ Training a model to detect inconsistent shadows and lighting, given AI-generated images and lighting fomrulas
- **A Case for Bayesian Grading** *Spring 2024*
  Python, Matplotlib, scikit-learn
  ◦ Collaborators: Craig Zilles, Yuxuan Chen, Chenyan Zhao, Matthew West
  ◦ Computing Bayesian probabilities for student cheating given a set of grades and known cheating occurrences
- **Nearest Neighbor Classication for Classical Image Upsampling** *Fall 2023*
  Python, Numpy, Scipy
  ◦ Collaborator: Nic Prate
  ◦ Implemented Nearest Neighbor classification for image upscaling in the classical domain
  ◦ Completed in parallel with a respective work on machine learning-based upscaling
- **Senior Capstone: Transcribing Monophonic Audio with Deep-Learning Data** *Spring 2023*
  Python, MIDI/Musicxml, MuseScore [🌐]
  ◦ Advisor: Zuofu Cheng
  ◦ Dataset collection and setup for Audio-to-MIDI models
- **Absentea** *Spring 2022*
  SQL, React.js
  ◦ Final project for CS 411; database webapp designed for comparing schedules and absences between members of an organization or group. Inspiration taken from scheduling sites like When2meet and Doodle.
- **DISSCO** *Fall 2021 - Spring 2022*
  C++, Linux [🌐 ]
  ◦ Advisor: Sever Tipei
  ◦ DISSCO, or Digital Instrument for Sound Synthesis and Composition, is a Linux-based program combining music composition and sound synthesis for the easier creation of stochastic and non-stochastic music.
- **Disklavier Echo Effect** *Fall 2021 - Spring 2022*
  Python, rtmidi, musx []
  ◦ Course project for MUS 305, under the course direction of Prof. Heinrich Taube. The program runs using the musx library and uses threading to run real-time outputs to a Yamaha Disklavier.
- **Pan-Lang** *Spring 2020*
  React, JavaScript [🌐 ]
  ◦ Second prize winner at PYGHACK 2020: a food pantry webapp designed providing translated lists and descriptions to patrons of Champaign and Urbana-area foodbanks.
- **Spotigraph** *Fall 2020*
  C++, Spotify API
  ◦ Final project for CS 225; makes use of graph traversal algorithms to find the kth degrees of a given Spotify artist.

PUBLICATIONS J=JOURNAL, T=THESIS

[T.1] **Evan Matthews**. "Audio Generation Improvement through Text Prompt Recaptioning".

[J.1] Craig Zilles, Yuxuan Chen, Chenyan Zhao, **Evan Michael Matthews**, Matthew West (2024). "A Case for Bayesian Grading". [🌐]

TECHNICAL PAPERS

[1] **Evan Matthews**. "Text Recaptioning for Audio Diffusion Models".

[2] Jay Mahajan, **Evan Matthews**. "CLAIP: Output Comparison on Features of Differing Modalities".

[3] **Evan Matthews**, Vikram Ramavarapu, Krishnaveni Unnikrishnan. "Untitled Predictive Model for Internet Addiction".

[4] Dwip Datal, Adheesh Juvekar, **Evan Matthews**, Jiachen Tu. "Untitled Analysis of Image Generative Shadows and Reflections".

[5] **Evan Matthews** (May 2023). "Optical Music Recognition for LilyPond File Generation".

[6] **Evan Matthews**, Nic Prate (December 2023). "Nearest Neighbor Classification for Classical Image Upsampling". [🌐, 🐙]

SKILLS

- **Data Science & Machine Learning:** PyTorch, Sklearn, Numpy, Scipy, Pandas, Matplotlib
- **Programming Languages:** Python, C/C++, Java, Rust, OCaml, Bend
- **Web Technologies:** Flask, Hugo, Discord
- **DevOps & Version Control:** Github, Git
- **Specialized Areas:** Audio Computation, Audio Production, Music Composition
- **Other Tools & Technologies:** LaTeX, MuseScore, LilyPond, Notion, Linux, Windows, MacOS

HONORS AND AWARDS

- **James Scholars Program** *May 2023*
  UIUC College of Fine and Applied Arts [🌐]
- **University Dean's List** *Fall 2019, Spring 2020, Spring 2021*
  University of Illinois Urbana-Champaign [🌐]
- **CS 125 Impressive Project** *Fall 2019*
  University of Illinois Urbana-Champaign [🌐]
  ◦ Awarded for Android Studio project *WarioWare!* during my first semester at UIUC.

LEADERSHIP EXPERIENCE

- **Co-Chair, SIGMusic** *August 2023 - Present*
  ACM @ UIUC [🌐]
  ◦ Organized and led lectures on topics in audio computation, signal processing
- **Treasurer** *May 2022 - May 2023*
  ACM @ UIUC [🌐]
  ◦ Managed finances for organization and two student-led conferences; led year-long room renovation project
- **Co-Chair, Social Committee** *August 2021 - May 2022*
  ACM @ UIUC [🌐]
  ◦ Led volunteer teams and organized social events for the CS/engineering community
- **Board Member, Student Advisory Board** *August 2021 - May 2023*
  UIUC School of Music
  ◦ Advised the School Director on decisions to enrich and engage with the music student community

PROFESSIONAL MEMBERSHIPS

- **IEEE, Signal Processing Society** *January 2025 - Present*
- **Association for Computing Machinery** *September 2023 - Present*
- **University of Illinois Alumni Association** *June 2023 - Present*

ADDITIONAL INFORMATION

Languages: English (Native), Spanish (Intermediate), Mandarin (Elementary)
Interests: writing music, hammocking, strategy games

REFERENCES

1. **Paris Smaragdis**
   Associate Head and Professor, Siebel School of Computing and Data Science
   University of Illinois Urbana-Champaign
   paris@illinois.edu
   Thesis Advisor, TA Professor

2. **Minje Kim**
   Associate Professor, Siebel School of Computing and Dat Science
   University of Illinois Urbana-Champaign
   minje@illinois.edu
   Research Mentor

3. **Lippold Haken**
   Professor Emeritus, Electrical and Computer Engineering
   University of Illinois Urbana-Champaign
   l-haken@illinois.edu
   (217) 333-4206
   Manager, TA Professor