Evan Michael Matthews

Bloomington, IL
+1 (309) 256-9709 | evanmm3@illinois.edu

EDUCATION

MS Computer Science, UIUC | 2023 - 2025 | Urbana, IL
GPA: 3.62/4.00; **Thesis:** *Text Recaptioning for Audio Diffusion Models*
Courses: Machine Learning for Signal Processing, Numerical Analysis, Computer Vision, Data Mining

BS Computer Science + Music (Double Major), UIUC | 2019 - 2023 | Urbana, IL
GPA: 3.76/4.00; **High Honors**; James Scholar; Deans List (3x); **ACT:** 33; **SAT:** 1460;
Courses: Applied Linear Algebra, Differential Equations, Probability and Statistics, Artificial Intelligence

PROFESSIONAL EXPERIENCE

Quantitative Audio Researcher for Dr. Paris Smaragdis | Oct 2022 – May 2025 | Urbana, IL
- Collaborated with world-class researchers across various audio topics for sound optimization and applications
- Presented technical and state-of-the-art work, including optimizations and comparisons against existing research

Machine Learning & Signal Processing TA, UIUC | Jan 2022 – May 2025 | Urbana, IL
- Courses: Machine Learning for Signal Processing, Audio Computing, Computer Systems, Electronic Music Synthesis
- Developed automated grading systems for large-scale technical courses
- Held weekly office hours; guided students through clear, question-based approaches to learning

Manufacturing Engineer, Haken Audio | Nov 2021 – Aug 2022 | Champaign, IL
- Electronic instrument company of international acclaim with award-winning synthesizers
- Built, hand-tested and repaired **70+ synthesizers** for professional musicians and studios
- Accelerated production efficiency by **25%** by identifying production bottlenecks and implementing data-driven solutions

RESEARCH PROJECTS

Text Recaptioning for Audio Diffusion Models
- Discovered high variability in generative audio models using CLAP embedding similarity
- Applied **deep learning and Digital Signal Processing techniques** for cross-modal understanding between audio and natural language
- Generated and processed custom dataset of **4,000+ text prompts and audio files** with **40+ hours** of Linux GPU-accelerated experiments

PyRoomStudio
- Developed a **open-source simulation** with real-time data visualization for 3D spaces
- Collaborated with industry experts, architecting a **user-friendly interface** for interior designers and architects
- Led software development lifecycle, decision-making and conceptualization using **Agile methodologies** and weekly sprints

Lighting Inconsistency Detection for Generated Images
- Designed **physics-based ML models** to zero-shot detect anomalies in signal data
- Utilized **PyTorch** and **OpenCV** for ground-up dataset creation, model training, and evaluation
- Generated, cleaned and analyzed **1,000+ images** with **20+ hours of GPU-accelerated experiments** to validate model performance

A Case for Bayesian Grading
- Developed a **Bayesian-based inference algorithm** with NumPy for predicting exam cheating with high likelihood
- Implemented reproducible **statistical studies** to validate method accuracy on university course data
- Discovered **strong predictions** in cheating by analyzing patterns in homework assignment scores

Complete portfolio available at ematth.dev

PUBLICATION:

Craig Zilles, Chenyan Zhao, Yuxuan Chen, Evan Michael Matthews, and Matthew West. 2024. A Case for Bayesian Grading. In Proceedings of the 2024 on ACM Virtual Global Computing Education Conference V. 1 (SIGCSE Virtual 2024). Association for Computing Machinery, New York, NY, USA, 275–278. https://doi.org/10.1145/3649165.3703624

AWARDS: **1810** chess rating; **0:07s average** on Zip; ISMTA Achievement in Music: **Level 10**; ILMEA All-State Composition Contest: **2nd Place** in 2018, 2019; ILMEA All-State Band, 2019; Illinois Super State, 2016, 2019; Bradley Honor Band; WIU Honor Band

SKILLS: Python (*NumPy, Pandas, SciPy, PyTorch, TensorFlow*), C/C++, SQL, Machine Learning Research/Theory, Digital Signal Processing (DSP), Linux, Statistical Modelling, Git/GitHub, Docker, Academic Writing (*LaTeX*)

INTERESTS: Music Theory & Composition, Chess, Puzzles, Hiking