Evan Michael Matthews

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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
- Implemented data-driven manufacturing improvements, increasing production efficiency by **25%**

RESEARCH PROJECTS

Text Recaptioning for Audio Diffusion Models
- Discovered high variability in generative audio models using statistical analysis
- Applied **deep learning and Digital Signal Processing (DSP) 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

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
- Imeplemented reproducible **statistical studies** to validate method accuracy on **4 years** of university course data

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, Java, Digital Signal Processing (DSP), Linux, Statistical Modelling and Analysis, Web Development (*JavaScript, HTML, CSS*), Git/GitHub, Docker, Academic Writing (*LaTeX*)

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