Evan Michael Matthews

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EDUCATION

MS Computer Science, UIUC | 2023 - 2025 | Urbana, IL
GPA: 3.62/4.00
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)
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

Contract Manufacturing Engineer, Haken Audio | Nov 2021 – Aug 2022 | Champaign, IL
- 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

Thesis: Text Recaptioning for Audio Diffusion Models
- Developed text modification method with **PyTorch** achieving **92% consistency** across 1,000+ diverse test cases
- Achieved **36% greater audio variation** compared to baseline methods with **minimal error rates**
- Built **systematic testing framework** using Stable Audio Open 1.0 to validate generation quality

PyRoomStudio
- Developed a **open-source simulation** with real-time data visualization for the **Pyroomacoustics** library
- Collaborated with industry experts, architecting a **user-friendly interface** for interior designers and architects
- Led software development lifecycle, decision-making and conceptualization with **AI agentic workflows** to split and delegate tasks

Lighting Inconsistency Detection for Generated Images
- Designed detection framework testing to identify lighting and shadow errors in AI-generated images with **PyTorch** and **OpenCV**
- Built **end-to-end image generation pipeline** with multiple AI tools to create controlled test datasets
- Processed benchmark datasets and created custom validation images to systematically test detection accuracy

A Case for Bayesian Grading
- Developed statistical grading method, **modeling student performance patterns** across thousands of simulated scenarios
- Reduced grading prediction errors by **77%**, compared to traditional methods, when detecting inconsistent performance
- Developed statistical grading system, reducing unnecessary proctored exams by **93%** through adaptive assessment

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: **1875** chess rating; 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, Jax, Cython*), C/C++, SQL, AI Agents, Agentic Workflows, Machine Learning Research/Theory, Digital Signal Processing (DSP), Linux, Statistical Modelling, Git/GitHub, Docker, Academic Writing (*LaTeX*)

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