Lixing Wang

+1 401-390-1215 | lixing_wang@brown.edu | lixing-w.github.io
69 Brown St, Box 5307 | Providence, RI 02912

Objective

Engineer with expertise in machine learning and end-to-end product development, seeking roles that combine technical depth with creative problem-solving. Passionate about building intelligent systems at the intersection of audio/music technology, real-time computing, and data science. Experienced in taking projects from conception through design, implementation, and optimization to deliver complete solutions.

Education

- **Brown University** *Sep 2023 - May 2027*
  Sc. B. Mathematics - Computer Science and A. B. Music Providence, RI
  - GPA: 4.00/4.00
  - Relevant Courses: Data Structures & Algorithms & Intractability, Computer Vision, Intro to Computer Systems, Deep Learning, Intro to Software Engineering, Seminar in Electronic Music: Real-Time Systems, Operations Research: Prob Mod, Abstract Algebra, Linear Algebra w/ Theory, Statistical Inference I, Math Analysis: Functions of One Variable, Multivariable Calculus w/ Theory, Graph Theory

Skills & Interests

- **Programming Languages: Python, C/C++, Java, TypeScript, JavaScript**
- **ML/AI & Tools: PyTorch, TensorFlow, Computer Vision, Deep Learning**; Development Tools: **Vim, GDB, VS Code, Git**; Web Frameworks: **Node.js, Next.js, React**
- **Audio & Music Tech: Max/MSP, Logic Pro, CEVIO AI, Real-time DSP**
- **Languages:** English (Proficient), Chinese (Native), Japanese (Beginner)

Research

- **4D Silicon Tracker Performance Characterization with ML** *Undergraduate Research Assistant* [IEEE poster] *Jun 2025 - Present*
  - Advised by Professor Gaetano Barone from European Organization for Nuclear Research (CERN)
  - Built a robust database management system with custom script language handling 400+ scan curves from 41 detectors.
  - Proposed and implemented RANSAC-based (RANdom SAmple Consensus) curve fitting and linear interpolation to achieve noise-robustness and better resolution in curve analysis.
  - Designed and trained conditional autoencoder to predict detector response across temperature, humidity, and bias voltages.
  - Model predictions showed $R^2 = 0.99$ on linear correlation between breakdown voltage and temperature.
  - Model reconstructs training curves with $RMSE = 0.090$ and showed a low 4.9% slope error.
  - Research presented on CERN Detector Research and Development Working Group 2 (DRD3 WG2) Meeting in Oct 2025, and Coordinating Panel for Advanced Detectors (CPAD) 2025 at Penn.

Projects

- **AI Rhythm Game Player for *DJMAX*** *Tools: Python, PyTorch* [demo][report] *May 2025*
  - Built a real-time AI player for the rhythm game DJMAX in 2 weeks. The system outstrips average human performance, consistently scoring above 97% accuracy in actual gameplay. Term project for Computer Vision course.
  - Collected and curated 139,500 training frames through gameplay.
  - Customized ResNet18 + GRU backbone with modified pooling layers and track-specific feature map splitting to predict multi-track keypresses in the game.
  - Designed a dynamic loss function with moving average smoothing to model timing tolerance, transient emphasis for keypress predictions, and class imbalance handling for robust training.
  - Optimized model to run at ~ 45 FPS in real time with 97% average accuracy.
- **Multi-effect Delay Loop** *Tools: Cycling '74 Max 9* [demo] *Oct 2025*
  - Built a Max patch for real-time signal processing and intricate sound design.
  - Includes random-sampling buffer; delay loop with adjustable EQ, overdrive, and pitch-shift feedback; stereo widening via pitch modulation; randomized EQ for creative jitter; and a one-knob reverb.
  - Produces rich, evolving soundscapes from simple audio sources and contributes directly to music production outputs. Prototype deployable to existing production workflows.

Leadership Experience

- **E-board Member** *Brown Organization of Producers and Songwriters (BOPS)* *Sep 2024 - Jun 2025*
  - Scheduling club activities and hosting bi-weekly workshop sessions
  - Building a community on Discord channel having 226 members, by sharing original music and engaging in technical discussions

Music Technology & Creative Systems

- **Composition & Production** *Logic Pro, CEVIO AI, Final Cut, Stable Diffusion* *2024 - Present*
  - Composed, produced, and wrote lyrics for original vocaloid work "Masquerade feat. KAFU", reaching 100K clicks in one week and ranked 14th on Bili_Board Vocaloid Charts (Week 24, 2025)
  - Released 2 full albums ("EVERWIND", "Telescope") on Spotify, Apple Music, and NetEase Music under artist name "KONOHA' Sakurai". Featured on collaborative album "Echoes of Summer".
  - Produced music videos with dynamic text animations and AI-generated visuals using Stable Diffusion.
  - Coordinated with Japan-based illustrators to produce album artwork and music video assets, managing timelines and feedback iterations across time zones.
  - Managed the entire production pipeline, from composition to final release, coordinating quality across mixing, mastering, and visual assets.

Honors and Awards

- **Finalist,** *International Mathematical Modeling Challenge* *2022*
- **Global Silver Award,** *British Physics Olympiad Round 2* *2022*
- **Top Gold,** *British Physics Olympiad Round 1* *2021*
- **Distinction (Top 5%),** *American Mathematics Competition 12* *2021*