

# Ping Wang

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## RESEARCH INTERESTS

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Music Information Retrieval, Music Generation, Automatic Music Transcription, Audio Representation Learning, Multimodal Learning, Reinforcement Learning, Symbolic Music Modeling, and Generative AI.

## EDUCATION

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### University of Washington

Seattle, WA

*B.S., Paul G. Allen School of Computer Science & Engineering; GPA: 3.9/4.0*

*Jun 2027*

- **Relevant Coursework:** Machine Learning, Natural Language Processing, Data Structures and Algorithms, Distributed Systems, Operating Systems, Computer Security, Computer Networks, Systems Programming, and Digital Design.

## PUBLICATIONS

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**Ping Wang**, Guang Yang, Nazif Can Tamer, Victoria Ebert, and Noah A. Smith. *A Dual Evaluation for Music Transcription*. arXiv:2608.04511, 2026. [PDF].

## RESEARCH EXPERIENCE

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### Music and AI Lab, National Taiwan University

Taipei, Taiwan

*Student Researcher — Advisor: Prof. Yi-Hsuan Yang*

*May 2026 – Present*

- **SheetSage-Pro:** Developing an improved audio-to-lead-sheet transcription pipeline for extracting melody, chords, beats, downbeats, meter, and musical structure from full-song audio. Investigated stronger beat tracking, pitch correction, and rhythm quantization to improve symbolic transcription quality and robustness across different musical styles.
- **Lyrics-to-Song Generation with MIDI-LLM and MIDI-SAG:** Developing an end-to-end lyrics-conditioned song generation pipeline by connecting symbolic lead-sheet generation with downstream arrangement and audio synthesis. Fine-tuning language models to generate melody, chords, rhythm, and lyric-aligned symbolic representations, including syllable-level lyric pointers, phonetic information, rests, breaths, and many-to-many lyric-note alignment for controllable generation.

### Noah's Ark Lab, University of Washington

Seattle, WA

*Student Researcher — Advisor: Prof. Noah A. Smith*

*Aug 2025 – Present*

- **A Dual Evaluation for Music Transcription:** Developed a dual evaluation framework for assessing both notation accuracy and performance fidelity in automatic music transcription. Evaluated 24 transcription pipelines composed of eight audio-to-MIDI models and three MIDI-to-score systems across 230 piano performances. Designed and analyzed an audio-only human listening study with 106 participants and 3,180 pairwise judgments, and compared human preferences against notation-based, signal-processing, and learned audio similarity metrics.
- **Rubric-Based Optimization for Text-to-Music Generation:** Developing post-training methods for text-to-music generation models using reinforcement learning and preference optimization to improve instruction following, musical quality, and audio fidelity. Built rubric-based reward and evaluation pipelines using multimodal audio-language models to assess generated music along dimensions including prompt adherence, semantic consistency, musical quality, and audio quality, and applied these signals to diffusion and flow-matching music generation models.

### UbiComp Lab, University of Washington

Seattle, WA

*Student Researcher*

*Sep 2024 – Oct 2025*

- **Embedded Gesture Recognition:** Designed and optimized lightweight neural networks for real-time gesture recognition on resource-constrained embedded devices, including model quantization and deployment for on-device inference.
- **Tuberculosis Screening from Cough Audio:** Applied transformer-based architectures, including Audio Spectrogram Transformer (AST) and MobileViT, to cough-based tuberculosis risk classification.
- **Cough Detection and Localization:** Developed machine learning models for cough-event detection and temporal localization in continuous audio recordings.

## INDUSTRY EXPERIENCE

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### Amazon

*Software Development Engineer Intern*

Taipei, Taiwan  
*Jun 2025 – Sep 2025*

- **Embedded Firmware Development:** Designed and implemented embedded firmware for inter-chip communication, camera-module integration, and Wi-Fi connectivity validation for smart-home devices.
- **Hardware–Software Integration:** Worked on board-level integration and debugging across embedded hardware, firmware, camera modules, and network interfaces.
- **Testing Infrastructure:** Developed automated unit tests and peripheral mock frameworks for validating firmware across hardware states, improving test coverage and reducing regression risk.

### Phison Electronics

*Machine Learning / Embedded Systems Engineer Intern*

Miaoli, Taiwan  
*Jun 2024 – Aug 2024*

- **LLM Memory Modeling:** Developed a parameter-calculation system for estimating large language model memory consumption, including model weights and activations, directly from model configuration files.
- **Transformer Architecture Analysis:** Analyzed LLaMA 2/3, CodeLlama, Falcon, Mistral, Mixtral, Breeze, Whisper, and Vicuna, with emphasis on attention architectures, model scaling, and memory requirements.
- **Large-Scale Model Training:** Worked with multi-GPU Linux infrastructure and Phison AI SSD systems for model training and experimentation.

## TECHNICAL SKILLS

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**Programming Languages:** Python, C, C++, Java

**Machine Learning:** PyTorch, TensorFlow, Transformers, Reinforcement Learning, Diffusion / Flow-Matching Models, LoRA, RAG

**Music and Audio AI:** Automatic Music Transcription, Music Generation, Audio Representation Learning, Symbolic Music Modeling, MIDI, MusicXML

**Systems and Tools:** Linux, Git, Distributed Training, Multi-GPU Computing, Embedded Systems, FPGA