Jaehoon Ahn

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EDUCATION

Sogang University — Seoul, South Korea
PhD Candidate in Media Engineering (ML/AI Focus) *Mar 2023 – Present*
- Advisor: Prof. Moon-Ryul Jung. Coursework completed as of August 2025.

MS in Media Engineering (ML/AI Focus) *Sep 2020 – Feb 2023*
- Thesis: “Adapting object detection techniques for beat tracking in musical audio.”

Stony Brook University — Stony Brook, United States
BS in Computer Science *Aug 2016 – May 2020*

PUBLICATIONS

SMC Blind Spot: Beat tracking failure mode analysis of hard music audio samples. arXiv 2605.12287, 2026. Under review at ISMIR 2026.
BeatFCOS: Adapting object detection architecture for beat tracking in music audio. arXiv 2510.14391, 2025.
ConTEXTure: Text-driven 3D texture generation via diffusion-based multi-view inverse rendering. arXiv 2407.10558, 2024.

EXPERIENCE

AI Research Engineer (Contract) Dec 2025 – May 2026
Paralov — Grimstad, Norway (Remote)
- Extended an AI-powered game generation pipeline for Roblox, integrating multimodal LLMs and image embeddings while engineering workarounds for closed-platform constraints.

Game Developer Jul 2021 – Jun 2024
Dubit — Leeds, United Kingdom (Remote)
- Shipped Roblox experiences for clients including Viacom, Samsung, and SM Entertainment, accumulating tens of millions of unique player visits.
- Improved internal development pipelines and standardized Lua coding practices across the team.

Software Engineering Intern Jun 2019 – Nov 2019
Roblox — San Mateo, United States
- Implemented a redesigned mobile app landing page and login flow using Lua and React, with platform-specific fixes in Java, Objective-C, and C++.

Software Engineering Intern May 2017 – Aug 2017
DribbleUp — Brooklyn, United States
- Developed features for a cross-platform React Native mobile app used by thousands of consumers.

SELECTED RESEARCH

Extending LMs to Low-Resource Languages — Extending multilingual language model to support low-resource languages with unseen scripts (Coptic, Syriac, Gothic, OCS Glagolitic, Samaritan). Results yield higher pseudo-perplexity (PPPL) reduction over conventional fine-tuning. Paper in preparation.
VBPM (Variational Bar Pointer Model) — Replaces the traditional Dynamic Bayesian Network in beat tracking pipelines with a fully differentiable variational model over structured latent variables, allowing for end-to-end training.
KineGuard — Skeleton-based content safety classifier for real-time unsafe motion detection. Built multi-GPU video processing pipeline with WHAM inference.

SKILLS

ML / DL: PyTorch, diffusion models, VAEs, transformers, object detection, LLM orchestration
Languages: Python, JavaScript/TypeScript, Lua/Luau, Java, C#, C/C++; Frameworks: React, Node.js, React Native
Infrastructure: Multi-GPU training/inference, CUDA, Docker, Git/GitHub, REST APIs, cloud deployment
Domains: Music/audio ML, motion synthesis, 3-D generation, computer vision, content safety, game development
Spoken: Bilingual English/Korean, Mandarin Chinese (B1)