GUO ZIXUN NICOLAS

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Education

- **Queen Mary University of London, UK** Aug 2023 - Present
  PhD Researcher in AI and Music
- **Nanyang Technological University (NTU), Singapore** Aug 2016 - Jun 2020
  BEng Electrical and Electronic Engineering (Highest Distinction Honors); CGPA:4.74/5.00
- **KTH Royal Institute of Technology, Sweden** Aug 2018 - Jan 2019
  Overseas exchange program in the School of Electrical Engineering and Computer Science

Research Experience

- **Center for Digital Music, Queen Mary University of London** Sep 2023 - Present
  PhD Researcher (Full-time)
  - **Topic**: Multimodal Foundation Models for Music; Supervised by Prof. Simon Dixon
- **AMAAI Lab, Singapore University of Technology and Design (SUTD)** Aug 2020 - Sep 2023
  Senior Research Assistant (Full-time)
  - **Topic**: Sound and Music Modeling, Music Emotion Analysis; Supervised by Prof. Dorien Herremans
  - **Topic**: Noise Robust AI; Supervised by Prof. Ernest Chong
- **Digital Signal Processing Lab, Nanyang Technological University (NTU)** Aug 2019 - Jun 2020
  Research Student (Thesis)
  - **Topic**: Neural Sound Generation; Supervised by Prof. Gan Woon-Seng
- **Speech and Language Lab, Nanyang Technological University (NTU)** Apr 2019 - Aug 2019
  Research Intern
  - **Topic**: DDSP-based Speech Data Augmentation; Supervised by Prof. Chng Eng Siong
- **Desay SV Automotive, Singapore** Jan 2019 - Apr 2019
  Research Intern
  - **Topic**: Self-driving; Automatic Lane Detection; Supervised by Dr. Wu Xiaojun

Industrial Experience

- **Meta Reality Lab, Redmond, USA** Sep 2025 - Dec 2025
  Research Scientist Intern
  - **Work Scope**: Spatial Audio. Supervisor: Dr. Ishwarya Ananthabhotla
- **Spotify, London, UK** June 2025 - Aug 2025
  Research Scientist Intern
  - **Work Scope**: Music Information Retrieval. Supervisor: Dr. Rachel Bittner
- **IRIS Audio, London, UK** May 2024 - Dec 2024
  Research Scientist Intern (Part-time)
  - **Work Scope**: Deploying one of my research works to IRIS' training pipeline

Publications

- **J. Melechovsky* Z. Guo***, D. Ghosal, N. Majumder, D. Herremans, S. Poria, "Mustango: Toward Controllable Text-to-Music Generation", in NAACL 2024, ***indicates co-first authorship**.
- **Z. Guo**, J. Kang and D. Herremans, "A Domain-Knowledge-Inspired Music Embedding Space and a Novel Attention Mechanism for Symbolic Music Modeling", in AAAI 2023.
- **Z. Guo**, S. Dixon, "MIDI Foundation Model using both Absolute and Relative Music Attributes", Ongoing Project.
- **Z. Guo**, C. Chen and E. Chng, "DENT-DDSP: Data-efficient Noisy Speech Generator Using Differentiable Digital Signal Processors for Explicit Distortion Modeling and Noise-robust Speech Recognition", in INTERSPEECH 2022.
- **X. Riley***, **Z. Guo***, D. Edwards and S. Dixon "GAPS: A Large And Diverse Classical Guitar Dataset And Benchmark Transcription Model", in ISMIR 2024. ***indicates co-first authorship**.
- **Z. Guo**, D. Makris and D. Herremans, "Hierarchical Recurrent Neural Networks for Conditional Melody Generation with Long-term Structure", in International Joint Conference on Neural Networks (IJCNN), 2021.
- D. Makris, **Z. Guo**, M. Kaliakatsos-Papakostas, D. Herremans, "Conditional Drums Generation Using Compound Word Representations", in EvoMUSART 2022.

Invited Talks

- **MIT Media Lab**, Text2Music using Mustango: Inspiration, Approaches, and Future Paths. May 2024

Projects

- **The Use of Music for Reporting Mood in People with Autism** Aug 2021 - Present
  in collaboration with SingHealth and Duke NUS; Principal Music Composer

  Wrote music pieces with various valances, arousals and musical modes which convey different emotions and will be used to examine the effect of music in helping people with Autism.

- **Text2Audio: Neural Environmental Sound Generation** Apr 2019 - May 2020
  NTU Final Year Project; Best Final Year Project Award; Supervisor: Prof. Gan Woon-Seng

  Developed an RNN-based text-to-audio system that can generate environmental sound with text inputs as conditions.

- **Guitar Effect Simulator using Raspberry Pi with a Web Controller** Jan 2020 - May 2020
  NTU Design and Innovation Project; Project initiator and team leader of 5

  Developed a guitar effect simulator which contains various settings (e.g., equalizer, reverb, delay) controlled by a self-designed web controller using Raspberry Pi.

- **FM synthesizer using NI MyRio** Jan 2020 - May 2020
  NTU Embedded System Course Project

  Developed an embedded FM (frequency modulation) synthesizer using NI MyRio which is able to synthesize musical sounds of various instruments such as bassoon, clarinet, drum.

Awards and Prizes

- **Super AI Leader Award** (World Artificial Intelligence Conference (WAIC) 2024, World Top 30).
- **PhD Studentship, UKRI CDT in Artificial Intelligence and Music at C4DM, QMUL** (Full scholarship with stipends for a 4-year PhD program, Acceptance Rate: 13.5%).
- **NTU Science and Engineering Scholarship** (Full scholarship with stipends for a 4-year undergraduate program).
- **CHIME Travel Grant (ISMIR 2024)** (2000 GBP).
- **Defence Science & Technology Agency Gold Medal** (NTU Best Undergraduate Thesis Award 2020, Top 1).
- **ST engineering book prize** (1500 SGD; Highest marks in the course: Embedded Systems)
- **Motorola book prize** (300 SGD; Highest marks in the course: Digital Communications)
- In the **Dean′s List (NTU)** in Academic Year 2016 - 2017, 2019 - 2020 (Top 5%).

Skills and Strengths

- **Languages**: Python, C, Matlab, Labview
- **Frameworks:** Tensorflow, Pytorch
- **Tools:** Overleaf, Latex, Docker, Git, Puredata
- **Music:** Songwriting, Music Theory, Improvisation

Academic Service

- **Teaching:** Teaching Assistant for Computational Data Science, SUTD in AY2020-2021
- **Project Supervision:** Undergraduate Research Opportunities Program (UROP, Supervising 5 students as a group on GNN-based Generative Model for an entire academic year), SUTD in AY2022-2023
- **Reviewer:** AI Music Creativity (AIMC)
- **Volunteering**: ICASSP 2022, ISMIR 2024