

Senior Music Technology Software Designer – Independent Contractor

Job Overview: Outlier Technology, LLC is seeking an Expert Music Technology Software Designer with a PhD or equivalent research/industry expertise and a minimum of 7 years' experience in building advanced, commercially viable generative and interactive compositional music systems. This is a short-term, high-impact contract role, ideal for an accomplished expert who is interested in participating in the development of neurotherapeutics at the intersection of music, AI, machine learning, and neuroscience innovation.

Our current flagship project involves engineering data-driven, personalized, computer vision, machine learning, and music-based augmented reality neurotherapeutics for individuals with Alzheimer's disease. These tools aim to allow users to engage interactively with music creation in the context of individualized rehabilitation interventions that adapt to the user's musical tastes and clinical needs.

The ideal candidate will have deep fluency in computer music, music composition, Python 3, Max/MSP, object-oriented programming (**OOP**), and Github. Extensive experience developing generative composition platforms capable of producing aesthetic mainstream music, and integrating computer vision, machine learning, and/or AI techniques into computer music is also desired. A proven track record of strong logic skills, building sophisticated, efficient, creative or artistically engaging software systems, and developing solutions to complex technical problems is also desired. The contract work will be 1 man-month, which can be distributed as part time work over 2 months. Work will focus on redesigning our current prototype for integration with computer vision, AI, and a central database system for a commercially viable platform that will be evaluated for clinical efficacy in a pilot study. The position is fully remote, with regular Zoom meetings and collaboration with a highly interdisciplinary team. While U.S. citizenship is not a requirement, NIH stipulations on this project require all remote work to be performed in the U.S. Compensation will be based on skills and experience. Target start date is **on or before Nov. 1, 2025**.

Key Responsibilities:

- **Advanced System Design:** Lead the design of a sophisticated music generation system that outputs recognizable, genre-diverse adaptations of popular songs for therapeutic applications.
- **Nostalgic Adaptation Engine:** Architect mechanisms that preserve core musical identity while introducing novel yet appropriate stylistic transformations, leveraging signal processing and neural network techniques.
- **Technical Documentation:** Develop comprehensive design blueprints, including architecture diagrams, wireframes, mockups, and implementation notes to guide an engineering team.
- **Cross-Disciplinary Collaboration:** Work in close partnership with software developers, music technologists, computer vision experts, neuroscientists, and project leads to ensure cohesive design and implementation.
- **Iterative Evaluation:** Design and implement evaluation protocols for musical quality, emotional impact, and therapeutic relevance; refine models based on testing feedback.

Required Expertise:

- Extensive experience with computer music, sound synthesis, and advanced audio signal processing.
- Demonstrated expertise in designing and training ML models (GANs, transformers, LSTMs, etc.) for music generation or transformation.
- Deep understanding of harmony, rhythm, arrangement, and structure across a wide range of musical styles.
- High-level proficiency in object-oriented programming (e.g., Python, C++), and experience with ML/DSP libraries such as TensorFlow, PyTorch, JUCE, Librosa, etc.
- Proven ability to balance artistic sensibility with scientific rigor in technology-driven music applications.
- Ability to clearly articulate complex technical ideas and collaborate with interdisciplinary teams.

Preferred Qualifications:

- Experience building and deploying commercial or large-scale generative music systems.
- Prior involvement in projects combining music technology with health, cognitive science, or therapy.
- Familiarity with the rising application of music-based interventions for treatment of neurological conditions.
- Portfolio that demonstrates deep originality, technical excellence, and practical impact.

Outlier Technology, LLC is an early-stage neuroscience innovation start-up and the recent recipient of Phase I & 2 SBIR funding from the National Institute of Aging and the 2023 & 2024 Catalyst Award from the National Academy of Medicine. Our current work explores the use of personalized, AI-driven music tools to improve cognitive and emotional wellbeing in individuals with Alzheimer's disease. For more information on the current job offering, please email info@outliertechnology.com. Visit www.outliertechnology.com for additional information on Outlier's team.