



Job Title: **Audio R&D Scientist DSP/ML**

Reference: **ENG-035**

Date: **April 22, 2021**

About EERS

Founded in 2014, EERS Global invents, designs and tests in-ear advanced technologies to accelerate go-to-market of game-changing products. Our cutting-edge technology augments the human experience in communication in challenging situations, hearing protection, biometric and wellness monitoring, brain computer interfacing, and is repeatedly validated in the field and some have become an ANSI [Standard](#).

Through co-development partnership, we bring a stream of new products to market. Beyond prototyping, we produce actual scalable, easily transferable, manufacturable product taking the development execution risk out of the equation.

A global centre of excellence in research in acoustics, audio and biosignal processing, in-ear technologies and product development, we attract high-caliber scientists and engineers to our team. Our head office is located in the heart of downtown Montreal. We offer competitive salaries as well as a great team environment. EERS Global is an equal-opportunity employer committed to diversity.

Job Description

Reporting to the Principal Audio R&D Scientist, the **Audio R&D Scientist** is responsible for developing audio signal processing algorithms and applications for in-ear technologies.

The position involves addressing specific challenges related to audio signal processing and optimization/machine learning that require in-depth experimentation and understanding. It involves surveying the literature, setting up test environments in MATLAB, participate in data collection, carrying out analysis of audio data, and developing algorithms on MATLAB and Python. The candidate will have to keep practical implementation in mind and, depending on skillset, will be tasked with implementing and testing the results of her/his work on an embedded platform.

The ideal candidate has strong signal processing knowledge and experience with optimization / machine learning and is interested in participating in many aspects of bringing ideas to the real world.

Duties and Responsibilities

- Characterize audio signals using FFT, spectrograms, transient separation, formant analysis, envelope extraction, etc.
- Participate in the design and characterization of signal processing/machine learning algorithms.
- Implement audio processing algorithms on MATLAB/Python/JUCE, considering real-time and embedded systems implementation requirements.
- Design and optimize FIR/IIR filters.



- Summarize, document, and communicate findings, solutions, and strategies.
- Participate in acoustical measurements, data collection, develop experiment protocols, organize user studies.

Education and work experience

- Electrical engineering, computer science, audio/music technology or related
- Master's degree with thesis/coursework in audio technology
- Bachelor's degree with relevant internship and projects in experience in audio research

Minimum Knowledge, Skills & Abilities:

- Knowledge of DSP concepts such as time-frequency analysis, FFT analysis-synthesis and expertise in one or more of the following: denoising, dynamic equalizers, limiters/maximizers, compressors, active noise cancellation, feedback control, echo cancellation
- Knowledge of statistical analysis, modelling and machine learning.
- Experience with design and optimization of FIR/IIR filters.
- Strong knowledge of MATLAB and Python.
- Knowledge of using DAWs such as Audacity and Reaper.
- Experience with sound and recording equipment such as microphones, audio interfaces, and loudspeakers.
- Experience with real-time operability and complexity reduction of DSP/ML algorithms targeted for embedded platforms.

Nice-to have:

- Experience in developing real-time audio applications with GUI controls on MATLAB, MaxMSP, JUCE or other C++ audio frameworks.
- Knowledge of implementing machine learning algorithms on embedded platforms.
- Knowledge of DSP CODECs and associated communication protocols like I2S.

Additional skills:

- Effective written and verbal skills in English / French
- Good people and communication skills: ability to accept directions, provide and receive constructive feedback
- Strong technical aptitude: exhibit a structured and detail-oriented approach
- Excellent analytical and problem solving skills
- Strong time management and organizational skills; ability to handle multiple tasks, be punctual, and respect deadlines
- Ability to work both autonomously and collaboratively as part of multi-disciplinary teams
- Self-motivated and focused

If you are meticulous, a problem solver, and a team player, you will feel right at home. Please send your cover letter and or resume to cv@eers.ca OR submit them through our [EERS Career platform](#).