



## Imperceptible Audio Watermarking

Watermarking is the procedure of visibly altering a medium to deter unauthorized use. However, there also exists imperceptible watermarking, where the watermark is not visible or audible to humans and can only be extracted using a specialized algorithm or detector. Imperceptible watermarking has many interesting applications, such as identifying if certain data was used to train a machine learning model or to distinguish between creators and copycats. While watermarking in principal is straight-forward it bears an interesting trade-off: how much information can be imperceptibly encoded in a signal while making it robust to removal attacks and not altering the perception of the original signal?

The field of imperceptible neural audio watermarking is fairly new and has rapidly gained prominence with the emergence of strong generative audio and music models, making it a hot topic to work on. In this project, we will review the small body of existing neural audio watermarking literature and work on a novel, more robust watermarking approach. The goal of this project is to surpass existing methods.

**Requirements:** Strong Python programming skills. Preferably with interests in sound processing and writing up a conference paper.

Weekly meetings will be scheduled to address questions, discuss progress, and brainstorm future ideas.

### Contact

In a few short sentences, please describe your interest in this project and any relevant coding experience or background (e.g., projects or coursework).

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Figure 1: Image from Shutterstock with perceptible watermark.