Diffusion Models for Inverse Problems in Audio: Applications in Music Restoration

Tuesday 24 September 2024 11:00 (1 hour)

The talk will discuss the application of diffusion models to a variety of inverse problems in audio restoration, with a focus on music. These models can be integrated within a posterior sampling framework to offer a probabilistic generative approach for addressing ill-posed problems such as audio inpainting, bandwidth extension, and declipping. The first part of the talk will focus on using pretrained diffusion models as generative priors for several degradation-informed restoration tasks, without requiring retraining. The second part will cover more complex blind restoration tasks, where the degradation process is unknown and inferred iteratively. Examples from historical music restoration will be presented, demonstrating how these techniques improve the quality of degraded audio while maintaining coherence with the original recordings.

Presenter: MOLINER, Eloi (Aalto University)