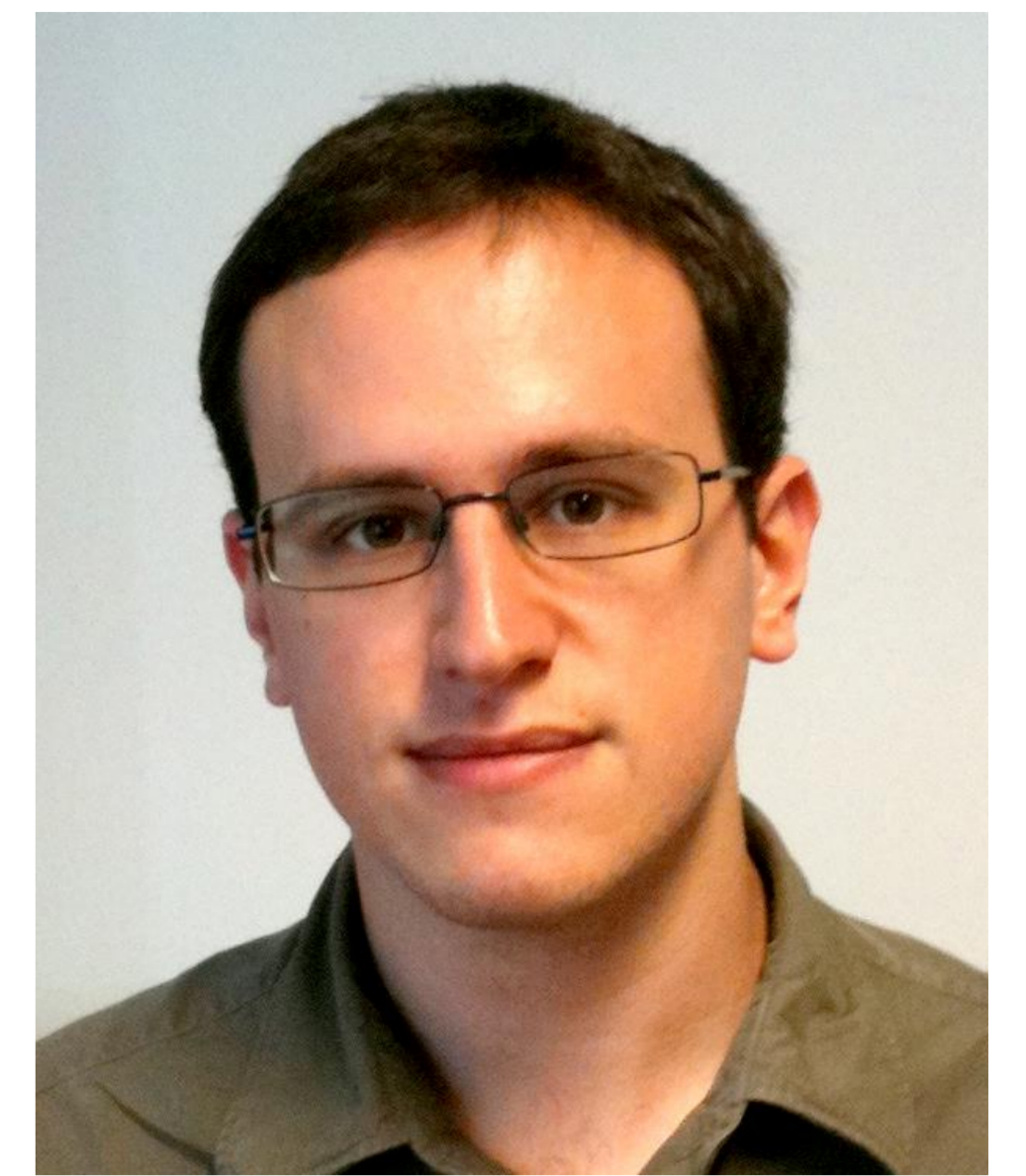


Machine Listening: Extracting Meaningful Information from Sound

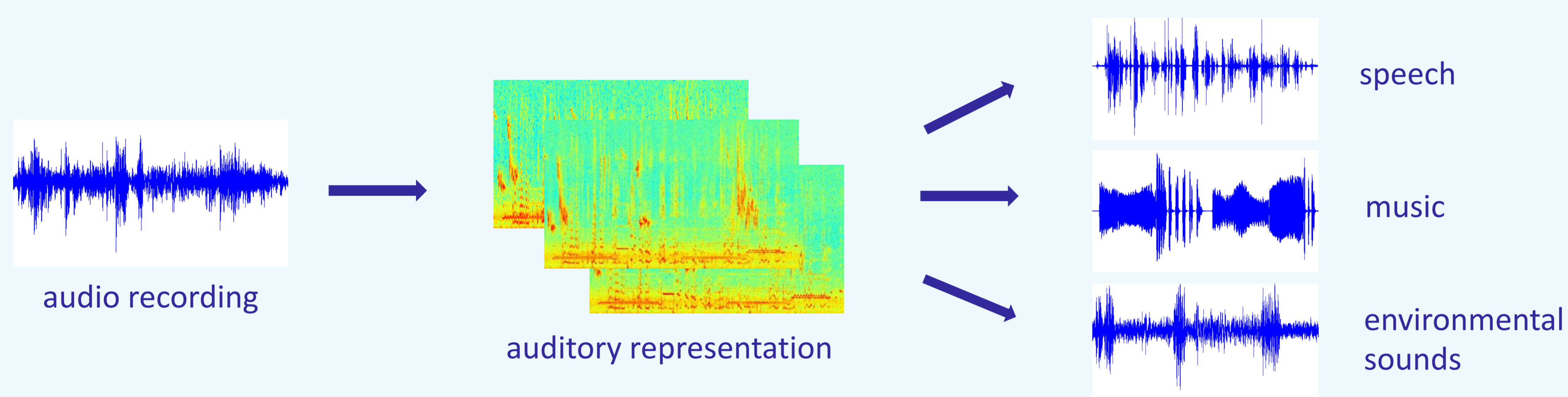
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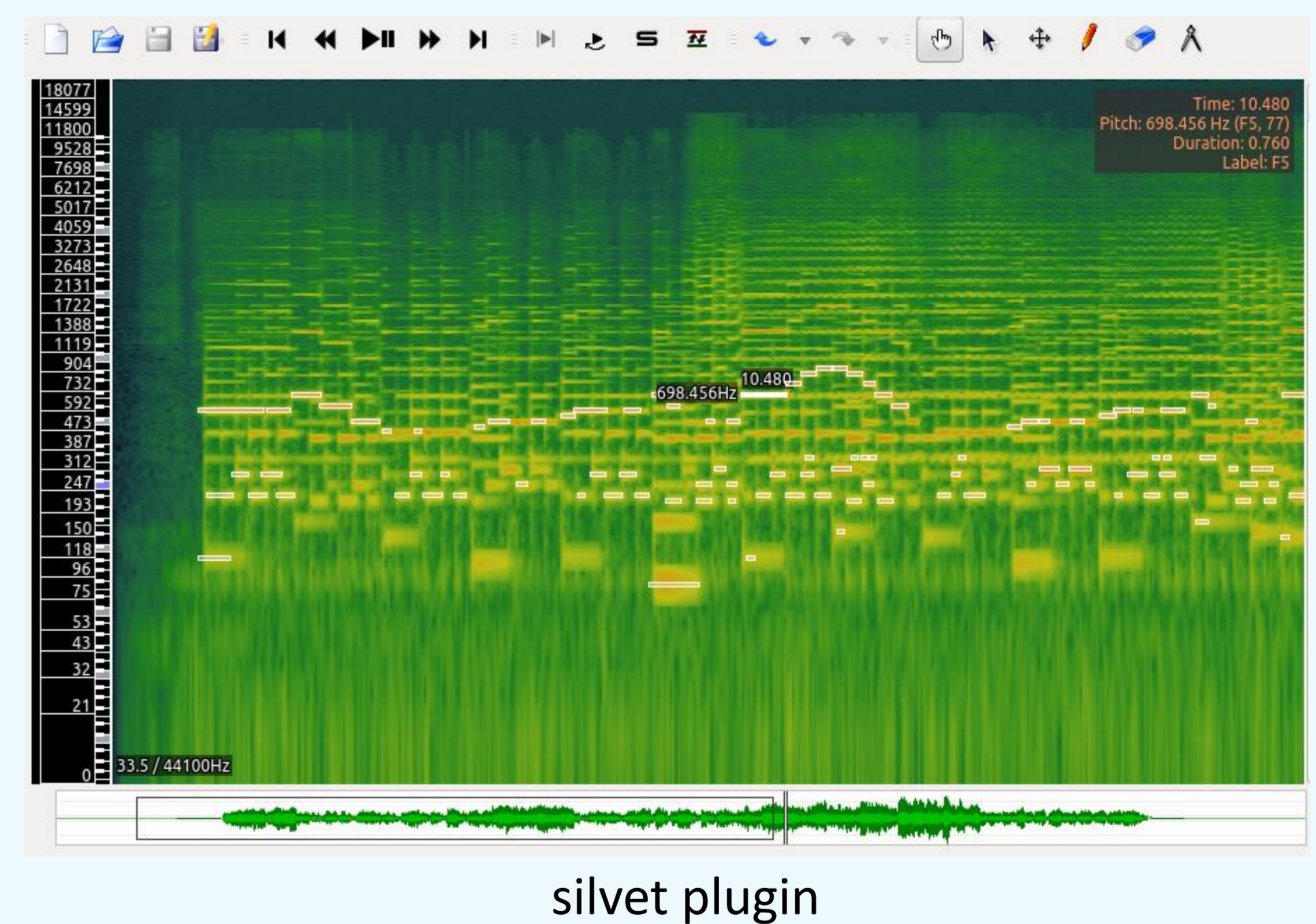


- Audio analysis (also called **machine listening**) involves the development of algorithms capable of analysing audio signals in such a way as to extract useful information
- **Applications:** organising sound collections, smart homes, music technology, security and surveillance, urban planning, hearing aids, autonomous robots, biodiversity assessment...
- The aim of this Research Fellowship is to create automatic tools for audio analysis through a unified **machine learning framework** – based on models & representations of the **human auditory system**



Application: Automatic Music Transcription

- **Automatic music transcription:** converting a music recording into some form of music notation
- Core problem in the field of music informatics – uses in music retrieval and recommendation, interactive music systems, musicology
- **Approach:** method for multiple-instrument music transcription using matrix factorization techniques
- Suitable for real-time applications
- **Silvet plugin:** tool for automatic music transcription developed for *Sonic Visualiser*. Download: <https://code.soundsoftware.ac.uk/projects/silvet/>



Application: Sound Event Detection

- **Sound event detection:** detect overlapping events directly from audio
- **Approach:** computationally efficient probabilistic model using an auditory-inspired sound representation
- Used for detecting sounds in an office environment
- Data & code: <http://c4dm.eecs.qmul.ac.uk/sceneseventschallenge/>

