Audio Signal Processing for Machine Learning
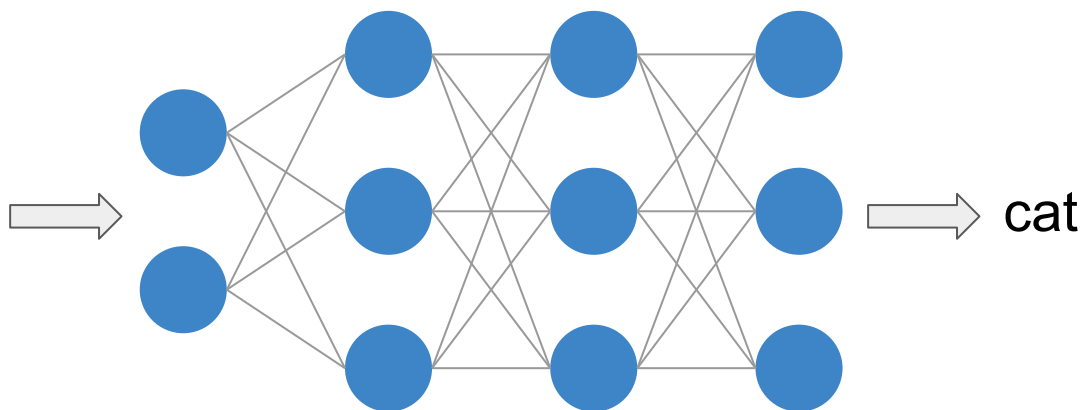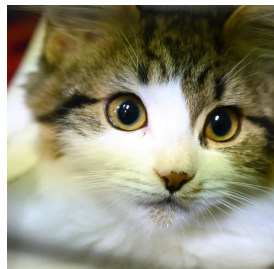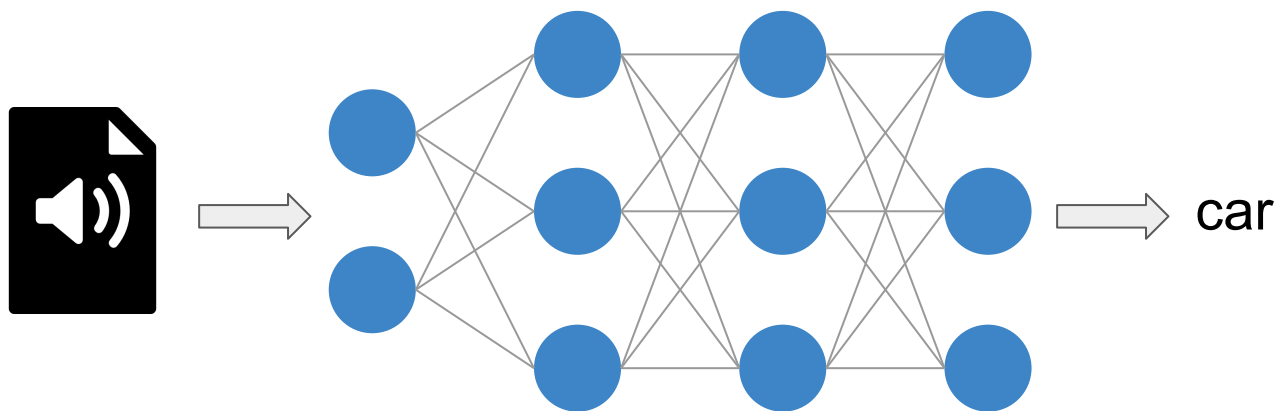
Valerio Velardo
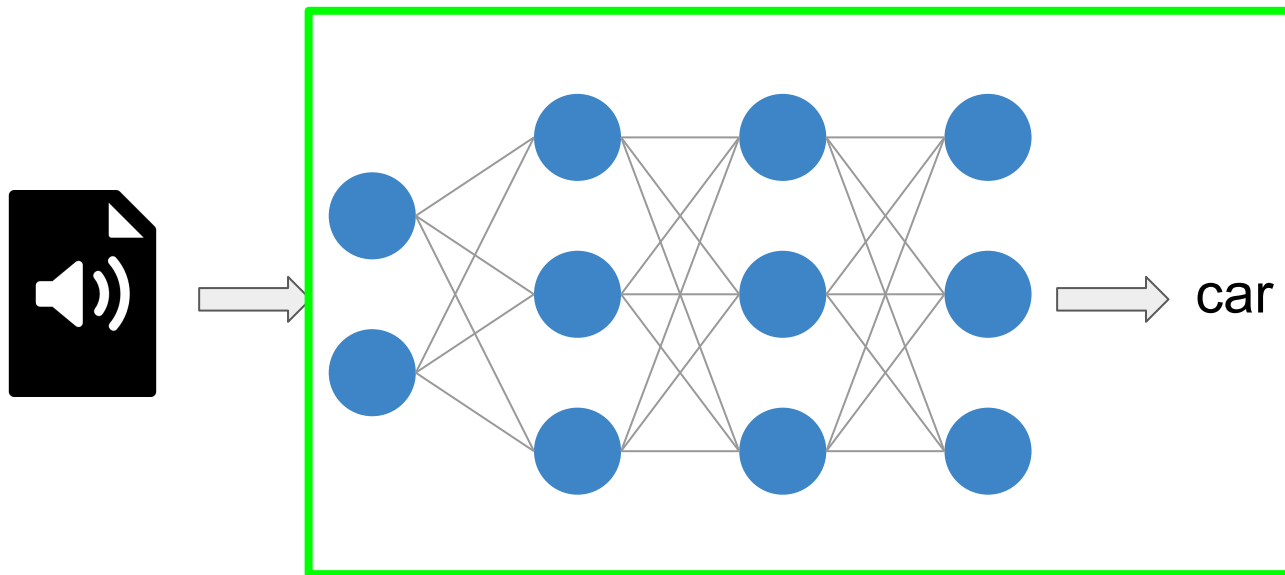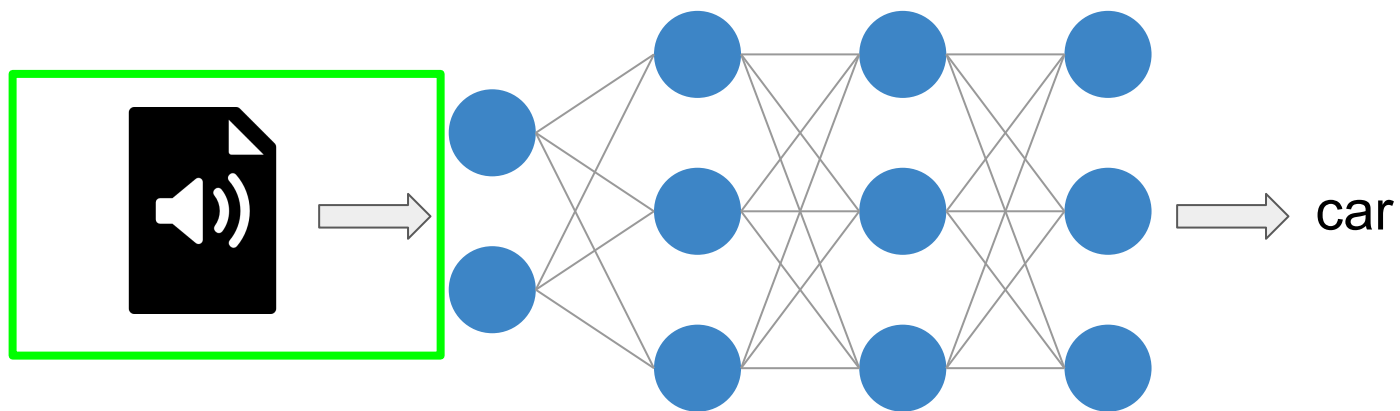
Problem

Problem

Problem

Problem

car

Applications

- Audio classification

- Speech recognition / speaker verification

- Audio denoising / audio upsampling

- Music Information Retrieval

  - Music Instrument Classification

  - Mood Classification

  - …

- ...

Content

- Sound waves

- DAC / ADC

- Time- and frequency-domain audio features (e.g., rms, spectral centroid)

- Audio transformations

  - Fourier Transform / STFT

  - Constant-Q Transform

  - Mel Spectrograms

  - Chromograms

- ...

What should you expect?

- Theory

- Coding tutorials

Where do you I get the code/slides?

Technology stack

What you'll learn

- Get a deep understanding of audio data

- Familiarise with frequency/time-domain audio features

- Extract features from raw audio

- Recognise what audio features to use for ML applications

- Preprocess audio data for ML

- Understand (some!) math behind audio transformations

- Use *librosa* for your audio projects

Don't freak out!
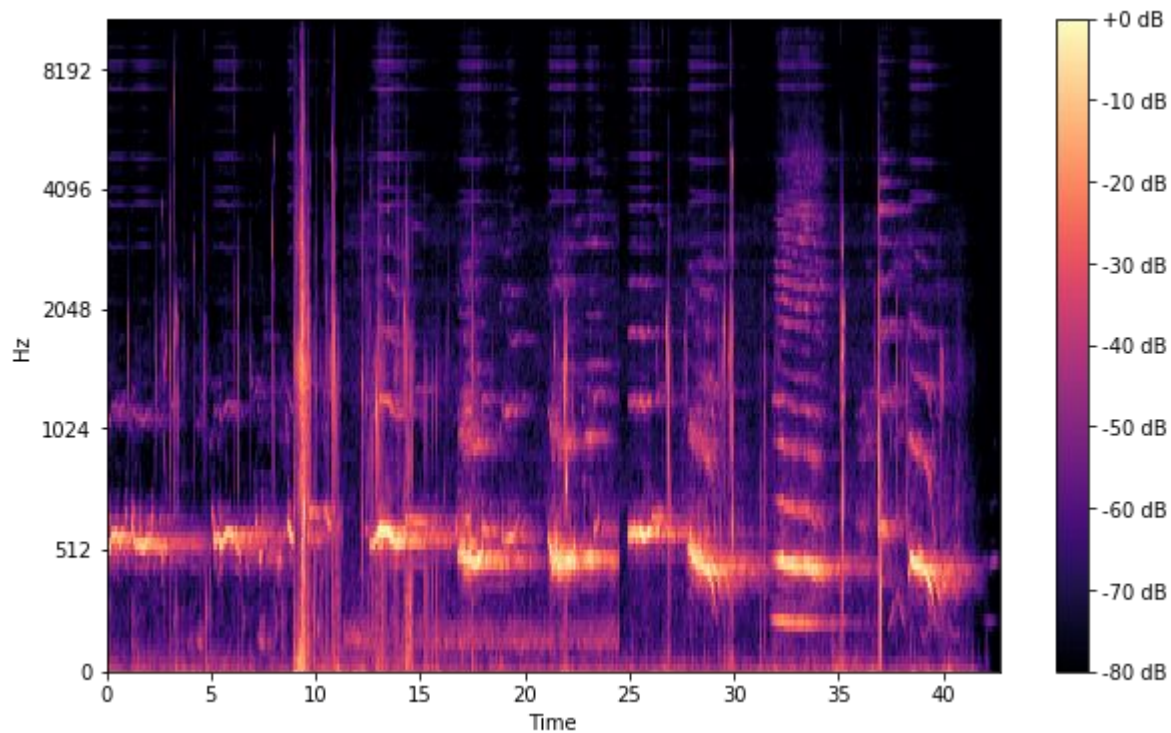
Who's this series for?

- ML/DL engineers

- Computer science students

- Software engineers

- Music technologists

- Tech-oriented musicians

Prerequisites

- Intermediate Python programming

Join the community!

thesoundofai.slack.com