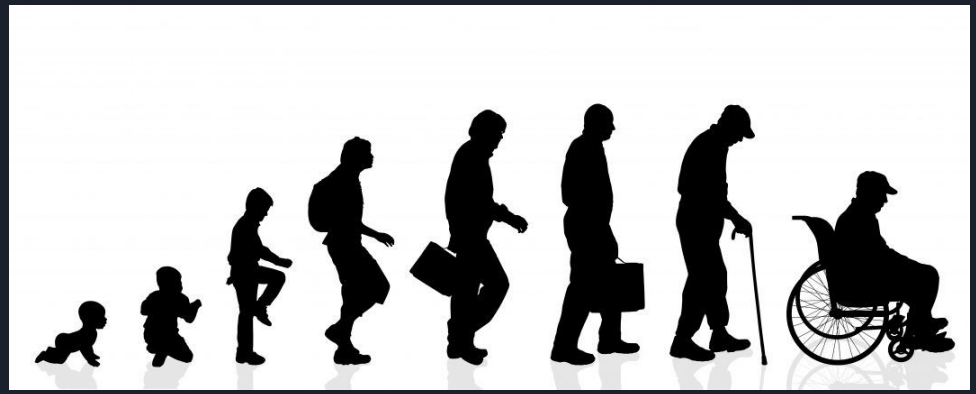
# Analyzing Voice Samples to Predict Age

By Raj Singh

# Problem: Knowing the age range based on a voice sample

- Age range can help us predict nature of disease
- Can help us get specialized care

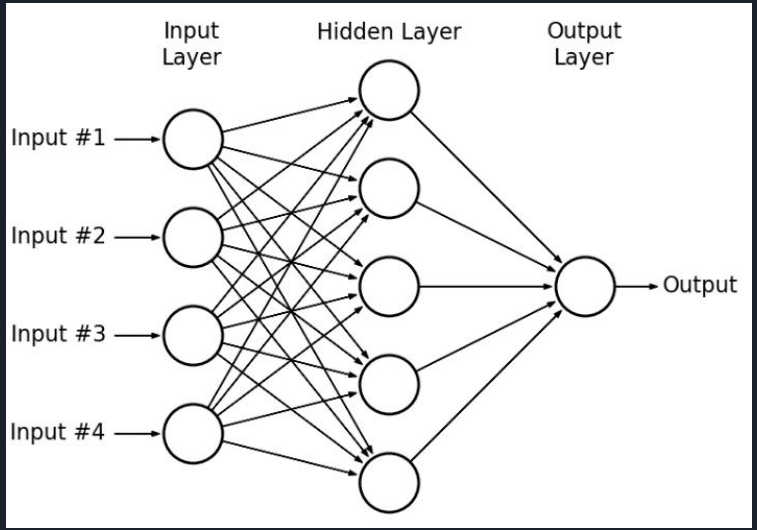


# Dataset and feature extraction

- Mozilla Common Voice Dataset: About 73,000 mp3 samples labeled with age
- Feature extraction:  pyAudioAnalysis (Energy, MFCC Coefficients, Chroma Vector)

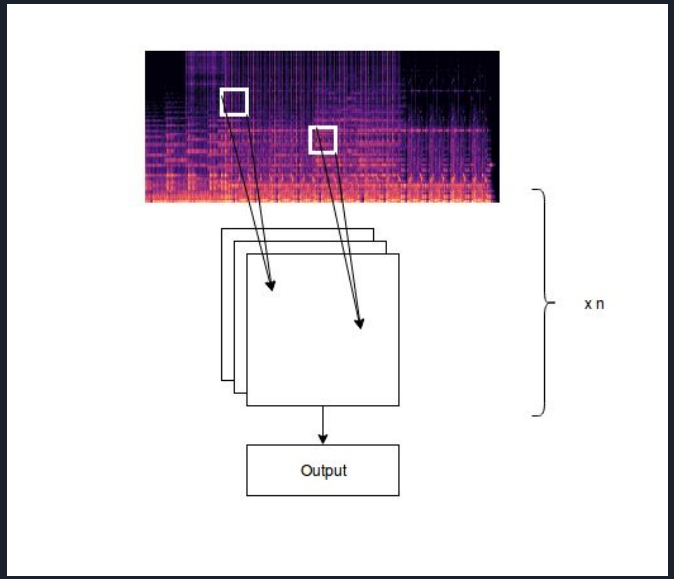

# Initial Approach: A Multi-layer Perceptron

- 4 hidden layers (256, 1024, 1024, 256, 8)
- SVM feature selection (170 -> 81)
- Accuracy achieved on test set: 82.5% (84 training accuracy).



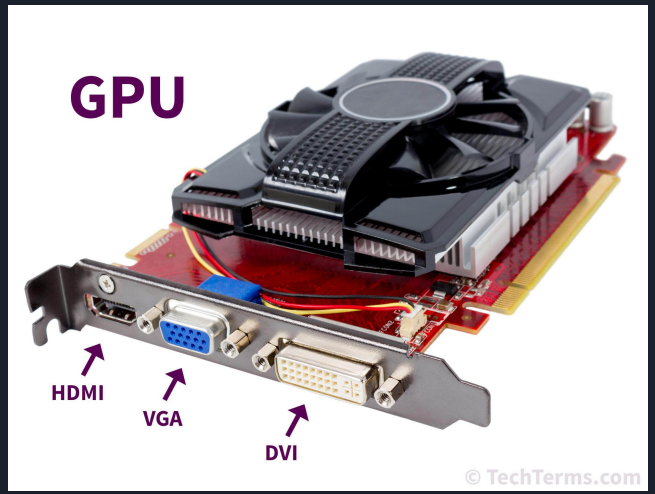
# New approach: Image classification problem

- Convert raw audio into mel spectrogram
  - 2D feature array: one axis is frequency, one axis is time, values are amplitude
- Extract features with librosa



# Convolutional Neural Network

- Very low accuracies, very high training time, even with GPU



# Works Cited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