EE473 Digital Signal Processing
Project Proposal

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Composer Classification with DSP and Deep Learning

We are going to implement a classical music classification network that will categorize musics with respect to their composers. We will use the ideas and techniques from both digital signal processing and deep learning. We plan to use digital signal processing part in the role of feature extractor or in some way related to the objective function and learning part to execute inference. Most probably ways of doing this can be the transform of the signal using a form of discrete time transform (short-time discrete Fourier transform, wavelet transform), peak analysis, change point detection, zero crossing rate, etc. We plan to use the ways that give us more distinct features over the different composers. After determining the features, they can be fed to a set of machine learning algorithms such as supervised methods based on convolutional or fully-connected layers or unsupervised methods including K-Means clustering. We plan to implement the method that gives us the most accurate results. As a fail safe measure, if things go not the way we expected, we plan to implement a genre classifier with same approach.

We think the following papers can be useful through the project for us:

- Gianluca Micchi. A neural network for composer classification. International Society for Music Information Retrieval Conference (ISMIR 2018), 2018, Paris, France. hal-01879276

- Springer book on Computational Music Analysis, ISBN: 978-3-319-25929-1, pages 369-392, Chapter 14, Composer Classification Models for Music-Theory Building