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| Tentative Title of the Major Project:  **Deep Content-Based Music Recommendation Using Convolutional Neural Networks** |
| Project Outline:  **Background:**  Automatic music recommendation has become an increasingly relevant problem in recent years, since a lot of music is now sold and consumed digitally. The background of this project revolves around the points of providing a more varied recommendation based on the latent factor of the songs and overcoming what researchers refer to *cold start:* it fails when no usage data is available, so it is not effective for recommending new and unpopular songs when the technique used by most recommender systems rely on collaborative filtering.  In this paper, we propose to use a latent factor model for recommendation, and predict the latent factors from music audio when they cannot be obtained from usage data. We compare a traditional approach using a bag-of-words representation of the audio signals with deep convolutional neural networks, and evaluate the predictions quantitatively and qualitatively on the Million Song Dataset. We show that using predicted latent factors produces sensible recommendations, despite the fact that there is a large semantic gap between the characteristics of a song that affect user preference and the corresponding audio signal.  The technique implemented in this project is based on recent advances in deep learning that translate very well to the music recommendation setting, with deep convolutional neural networks significantly outperforming the traditional approach.  **Objective:**  -To build a recommender system that gives better and more variant of songs compared to traditional approach.  -To obtain latent factors from content of the songs using convolutional neural networks.  -To compare result given by convolutional neural networks and traditional approach.  **Possible extension:**  -Popularity prediction for new songs  **Requirement:**  -Python  -Matplolib, Numpy, Coffee python package  -Neural network simulators  -Milliion Song Dataset |
| Software/Hardware Requirements: |