Music recommendation system using the Spotify and Genius Track Datasets.

Here's a high-level outline of how you could approach this project:

Project Outline:

1. **Data Collection and Preparation:**
    - Obtain the Spotify and Genius Track Datasets. If these datasets are not available as a single package, you might need to gather data from both sources separately.
    - Clean and preprocess the data. This may involve handling missing values, merging relevant fields from both datasets, and converting categorical variables into numerical representations.
2. **Feature Engineering:**
    - Extract relevant features from the datasets. From the Spotify dataset, you can use audio features like danceability, energy, valence, tempo, etc. From the Genius dataset, you can extract textual features like song lyrics and annotations.
    - Create user-specific features if available, such as listening history, user preferences, or playlists.
3. **Building the Recommendation System:**
    - Choose a recommendation algorithm that suits your project's goals. Collaborative filtering, content-based filtering, hybrid models, or even deep learning techniques like neural collaborative filtering could be explored.
    - Train the chosen model on the prepared data. This might involve matrix factorization, neural network training, or other techniques depending on the algorithm.
4. **Evaluation:**
    - Split the dataset into training and testing sets.
    - Evaluate the performance of your recommendation system using appropriate metrics such as precision, recall, F1-score, or user engagement metrics.
    - Fine-tune the model parameters to optimize its performance.

5. **User Interface (Optional):**
    - Create a simple user interface to interact with your recommendation system.
    - Allow users to input a song or artist, and display recommended tracks or playlists based on their input.
6. **Visualization and Interpretability (Optional):**
    - Visualize the performance metrics of your recommendation system.
    - Provide explanations for why certain recommendations are made, which can enhance user trust and understanding.
7. **Documentation and Presentation:**
    - Write a detailed project report that explains your approach, methodology, challenges faced, and results obtained.
    - Create a presentation summarizing your project for your capstone presentation.
8. **Ethical Considerations:**
    - Consider ethical aspects of recommendation systems, such as potential biases, filter bubbles, and user privacy. Address how your system aims to mitigate these concerns.