



# AI Intermediate Projects for Extion Infotech Interns

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## 1. Sentiment Analysis on Financial News

Description: Create a model that predicts market movements by analyzing the sentiment in financial news articles. This project teaches how sentiment can influence financial decisions and the importance of real-time data processing.

Additional Tip: Focus on fine-tuning the model with recent data to account for the constantly changing financial landscape.

### Steps and Guidelines:

1. Data Collection: Scrape financial news articles from reputable sources.
2. Preprocessing: Clean text data, remove stopwords, and perform lemmatization.
3. Model Selection: Choose a model (e.g., LSTM, BERT) for sentiment analysis.
4. Training: Train the model on labeled financial news data.
5. Evaluation: Test accuracy with unseen data and fine-tune.
6. Prediction: Use the model to predict market trends based on sentiment scores.

Tools: Python, TensorFlow/PyTorch, NLP libraries (NLTK, SpaCy).

## 2. AI-Powered Resume Screening

Description: Develop an AI system that automates the process of screening resumes, matching candidates to job descriptions based on skills and experience. This project highlights the practical application of NLP in HR processes.

Additional Tip: Include a feature that allows recruiters to manually adjust the AI's recommendations, making the system more flexible.

### Steps and Guidelines:

1. Dataset Preparation: Collect resumes and corresponding job descriptions.
2. Feature Extraction: Extract relevant skills, experience, and qualifications from resumes.
3. Model Development: Develop a model to match resumes to job descriptions (e.g., using cosine similarity or transformers).

4. Scoring System: Implement a scoring algorithm to rank candidates.

5. Evaluation: Validate the model against real-world hiring data.

Tools: Python, NLP libraries, Scikit-learn, Flask for deployment.

### 3. AI-Driven Music Genre Classification

Description: Build a model that classifies songs into genres based on audio features. This project combines signal processing with machine learning, providing insights into how AI can interpret and classify audio data.

Additional Tip: Experiment with different feature extraction techniques like Chroma features and Mel Spectrograms to see which yields the best results.

#### Steps and Guidelines:

1. Data Collection: Gather a dataset of songs labeled by genre.
2. Feature Extraction: Extract audio features (e.g., MFCCs, tempo) using libraries like Librosa.
3. Model Selection: Choose a classification model (e.g., CNNs, SVM).
4. Training: Train the model on a portion of the dataset.
5. Evaluation: Test the model with unseen data and tune hyperparameters.
6. Deployment: Develop a web or mobile interface for genre prediction.

Tools: Python, Librosa, TensorFlow/PyTorch, Flask/Django for web deployment.

### 4. AI-Based Image Caption Generator

Description: Create a system that generates descriptive captions for images, blending computer vision with natural language processing. This project is a great way to learn about encoder-decoder architectures and the power of CNNs and RNNs.

Additional Tip: Start with a pre-trained CNN model for image feature extraction to save time and improve performance.

#### Steps and Guidelines:

1. Dataset: Use a dataset like MSCOCO for images with captions.
2. Preprocessing: Convert images to features using a pre-trained CNN model.
3. Model Architecture: Use an encoder-decoder model with CNNs for image encoding and RNNs for caption generation.
4. Training: Train the model on the dataset and fine-tune for better captions.
5. Evaluation: Evaluate caption quality using BLEU or METEOR scores.

6. Application: Deploy the model as an API for captioning images.

Tools: Python, TensorFlow/PyTorch, OpenCV, Flask.

## 5. AI-Driven Personalized Learning Path

Description: Develop an AI system that suggests personalized learning paths for students based on their strengths and weaknesses. This project emphasizes the application of AI in the educational domain.

Additional Tip: Use clustering algorithms to group students with similar learning needs and optimize the recommendation system.

### Steps and Guidelines:

1. Data Collection: Gather student performance data from online learning platforms.
2. Data Analysis: Identify patterns and gaps in student learning using clustering algorithms.
3. Recommendation System: Develop a model to suggest courses or study materials (e.g., collaborative filtering, content-based filtering).
4. Evaluation: Test recommendations against actual student progress.
5. Implementation: Integrate the system into an educational platform.

Tools: Python, Scikit-learn, TensorFlow, Django/Flask.

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After Completion message the below number for the submission link.

After Submitting Projects submit details on number as mentioned below as follows:

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**If having doubts, Issues feel free to WhatsApp or call on +918445361338**

[Support@extioninfotech.com](mailto:Support@extioninfotech.com) | [info@extioninfotech.com](mailto:info@extioninfotech.com) | [www.extioninfotech.com](http://www.extioninfotech.com)

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contact@extioninfotech.com

Extion Infotech, Bareilly

www.extioninfotech.com