

Machine Learning Project Ideas: From Beginner to Advanced

Beginner-Level Project Ideas

1. **Classifying Iris Flowers:** Use the Iris dataset to classify species based on petal and sepal characteristics.
2. **Predicting the Fate of Titanic Passengers:** Use data on Titanic passengers to predict survival.
3. **Predicting Housing Prices in Boston:** Build a regression model to predict housing prices using the Boston housing dataset.

Intermediate-Level Project Ideas

4. **Laptop Price Prediction:** Build a regression model to predict laptop prices based on specifications.
5. **Predicting Movie Ratings on Rotten Tomatoes:** Analyze factors that influence movie ratings using a regression model.
6. **Predicting Customer Churn:** Identify customers likely to leave a service using classification.
7. **Predicting Delivery Duration:** Use real-world data to predict delivery times for logistics companies.
8. **Customer Segmentation for Marketing Campaigns:** Cluster customers into segments to tailor marketing strategies.
9. **Fraud Detection in Credit Card Transactions:** Build a classification model to detect fraudulent transactions.
10. **Classifying Handwritten Digits:** Use the MNIST dataset to classify digits with CNNs.
11. **Detecting Pneumonia Based on Chest X-Ray Results:** Apply deep learning to classify X-rays as pneumonia or not.
12. **Detecting Hand Gestures:** Build a model using images or sensor data to recognize hand gestures.
13. **Image Denoising with Autoencoders:** Use autoencoders to remove noise from images.
14. **Classifying Movie Review Sentiment:** Perform sentiment analysis on movie reviews.
15. **Classifying Tweet Sentiment:** Build a sentiment analysis model for Twitter data.
16. **Text Keyword Detection:** Extract important keywords from text documents.
17. **Topic Modeling of Text:** Use algorithms like LDA to identify topics in a collection of text.

Advanced-Level Project Ideas

18. **ML Algorithms Implementation From Scratch:** Implement algorithms like decision trees or SVM from scratch.
19. **Backpropagation Implementation for a Simple DL Model:** Implement backpropagation from scratch for a neural network.
20. **Stock Price Prediction:** Build a time series model to predict stock prices.
21. **News Topic Identification:** Classify or cluster news articles based on their topics.
22. **Named Entity Recognition:** Extract named entities (like people, organizations, etc.) from text.
23. **Text Similarity:** Measure similarity between two text documents using various techniques.
24. **Question-Answering:** Build an AI that answers questions based on provided text or a dataset.
25. **Image Similarity:** Build a model to find similar images from a dataset.
26. **Pet Breeds Recognition:** Classify different breeds of pets using image data.
27. **Language Translation:** Build a neural network model for machine translation.

28. **Image Generation:** Generate new images using GANs or other techniques.
29. **Interpreting Predictions of DL Models with Integrated Gradients:** Apply Integrated Gradients to explain predictions of deep learning models.
30. **Research Paper Classification:** Classify research papers into categories based on abstract and content.
31. **Text Summarization:** Build an NLP model to summarize long text documents.

These ideas provide a broad range of projects from classification to NLP and deep learning, ideal for showcasing different skills in ML/DL.

Best Regards, Shaheer Ali.