Beginner AI Projects

Focus: Python, NumPy, Pandas, Scikit-Learn, Jupyter

1. **Titanic Survival Prediction**
   - Predict who survives using logistic regression
   - Tools: Pandas, Scikit-Learn

2. **House Price Predictor**
   - Regression problem with housing data
   - Tools: Scikit-Learn, matplotlib

3. **Handwritten Digit Recognition (MNIST)**
   - Train a neural network to recognize digits
   - Tools: TensorFlow/Keras or PyTorch

4. **Movie Recommendation System**
   - Recommend movies based on user ratings (collaborative filtering)
   - Tools: Pandas, Surprise, or Scikit-Learn

5. **Spam Email Classifier**
   - NLP + ML to classify spam vs ham
   - Tools: Scikit-Learn, NLTK or spaCy

🧠 **Intermediate Projects**

Focus: Deep Learning, NLP, CV, time series

6. **Stock Price Predictor (Time Series)**
   - Predict next-day prices with LSTM or GRU
   - Tools: TensorFlow/Keras, Pandas

7. **Fake News Detection**
   - Classify fake vs real news using NLP
   - Tools: Scikit-Learn, TF-IDF, Logistic Regression or BERT

8. **Face Mask Detection**
   - Real-time webcam detection of face masks

  o Tools: OpenCV + CNN model

9. **Voice Gender Recognition**

  o Predict gender using voice frequency features

  o Tools: Librosa, Scikit-Learn

10. **AI Chatbot**

- Train a rule-based or ML-based chatbot

- Tools: Rasa, NLTK, or custom LSTM model

🧠 **Advanced Projects**

Focus: Transfer learning, Reinforcement Learning, Multi-modal AI, deployment

11. **Image Caption Generator**

- Input: image → Output: natural language sentence

- Tools: CNN + LSTM (e.g., ResNet + GRU)

12. **Self-Driving Car Simulator**

- Use Udacity simulator and train using behavioral cloning

- Tools: CNN, OpenCV, Keras

13. **Object Detection App (YOLOv8 or SSD)**

- Real-time detection in video

- Tools: PyTorch, OpenCV, YOLO models

14. **Transformer-based Text Summarizer**

- Summarize long text documents using HuggingFace transformers

- Tools: BART, T5

15. **Reinforcement Learning Game Agent**

- Train an AI to play games (e.g., Snake or CartPole)

- Tools: OpenAI Gym + DQN or PPO

🚀 **Expert/Portfolio Projects**

Focus: Industry-grade skills (API, UI, deployment)

16. **AI SaaS App (End-to-End)**

- Example: "AI Resume Analyzer" or "Credit Risk Scorer"

- Includes: UI (React/Vue), backend (FastAPI), ML model, Docker, deployment (Heroku or AWS)

17. **Custom GPT Chatbot**

- Build your own GPT-powered assistant using OpenAI API

- Fine-tune on custom data

18. **AI for Medical Imaging**

- Classify X-rays (e.g., Pneumonia detection)

- Tools: CNNs + Explainability (Grad-CAM)

19. **AI-Powered Search Engine**

- Semantic search using embeddings (e.g., Sentence-BERT + FAISS)

20. **Multi-Modal AI App**

- E.g., upload an image + question → get an answer

- Tools: CLIP + BLIP + LLMs

📦 **Bonus Ideas for Deployment Practice**

- Deploy an AI model with **Streamlit** or **Gradio**

- Host projects on **HuggingFace Spaces**

- Wrap backend in **FastAPI**

- Use **Docker** to containerize the model

- Push code to **GitHub with a README and demo**