The Complete AI Roadmap for AI Roles

1. Machine Learning Basics (Core ML)

- Supervised & Unsupervised Learning
- Linear/Logistic Regression, Decision Trees, Random Forests, SVM, Naive Bayes
- Clustering: K-Means, DBSCAN | Dimensionality Reduction: PCA, t-SNE
- Model Evaluation: Confusion Matrix, ROC, F1, Cross-validation
- Feature Engineering, Time Series (ARIMA)

Tools: scikit-learn, numpy, pandas

2. Deep Learning

- MLPs, CNNs, RNNs, LSTMs, GRUs, Transformers
- Backpropagation, Activation, Loss Functions, Optimizers
- Transfer Learning, Regularization (Dropout, L2)

Tools: TensorFlow, PyTorch, Keras, FastAI

3. NLP + LLMs + RAG

- Preprocessing, Embeddings (Word2Vec, GloVe)
- BERT, GPT, LLaMA, T5, Prompt Engineering
- RAG Pipelines, LangChain, Vector DBs (Pinecone, Chroma)

Tools: HuggingFace, LangChain, OpenAI, FAISS

4. Data Handling & Engineering

- Pandas/Numpy for wrangling, SQL/NoSQL (MongoDB)
- Handling PDFs, text, images, audio
- Data Cleaning & ETL Pipelines

Tools: Pandas, SQL, MongoDB, OpenCV, PyMuPDF

5. Math for AI

- Linear Algebra: Vectors, Matrices, Eigenvalues

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- Calculus: Derivatives, Gradients
- Probability & Stats: Bayes, Expectation, Variance
- Optimization, Entropy, KL Divergence

6. Projects & Deployment

- Tabular, NLP, DL, LLM, SQL + NoSQL Projects
- Streamlit, Gradio, HuggingFace Spaces, FastAPI
- GitHub, ReadMe polish, blogs

7. MLOps (Optional)

- MLflow, DVC, Docker, FastAPI, CI/CD

8. Research & Interviews

- ML theory, tuning, case studies, latest trends
- Follow: Lex Fridman Podcast, PapersWithCode, arXiv-sanity

Bonus Tips

- Build > Watch
- Storytell your GitHub
- Replicate papers simply
- Post on LinkedIn/blogs