■ Neural Network Learning Roadmap

Tailored for intermediate Python users with NumPy, Pandas, and basic NLP knowledge.

1. Introduction & Usage

This roadmap is designed to take you from knowing basic Python & NumPy to building and deploying deep learning models. It includes theory, coding exercises, projects, and milestones.

Phase	Duration	Goal
Phase 1 — Math Foundations	Days 1–10	Learn linear algebra, calculus, probability, optimization basics
Phase 2 — Neural Networks From Scratch	Days 11–25	Build NNs in NumPy, learn forward/backpropagation
Phase 3 — PyTorch Basics	Days 26–40	Learn tensors, model building, training loops
Phase 4 — CNNs & RNNs	Days 41–60	Learn vision & NLP architectures
Phase 5 — Advanced Topics & Projects	Days 61–90	Work on real-world projects, transfer learning

2. Daily Structure

- 1 hr — Theory & notes - 1 hr — Coding exercises - 30 min — Reading research papers/blogs - 30 min — Revisiting & debugging old code

3. Project Milestones

- Project 1 (Day 25): MNIST handwritten digit classifier from scratch - Project 2 (Day 50): CNN-based image classifier on custom dataset - Project 3 (Day 80): Resume skill extractor (NLP-based) - Capstone (Day 90): Choice of chatbot, object detection, or multi-class text classifier

■ Tip for Success

- Stay consistent — learning NNs is a marathon, not a sprint. - Implement what you learn — theory without practice fades fast. - Use Kaggle datasets for hands-on training. - Share your projects on GitHub to build a portfolio.