

Full Stack

If you are already a full-stack developer you should visit the following tracks.

Frontend Backend DevOps

Find the detailed version of this roadmap along with other similar roadmaps

roadmap.sh

Target audience for this roadmap is absolute beginners wanting to get into full-stack development.

Key topics to learn

Project ideas and suggestions

HTML

CSS

JavaScript

Checkpoint - Static Webpages

Checkpoint - Interactivity

npm

Checkpoint - Collaborative Work

Checkpoint - External Packages

React

Tailwind CSS

GitHub

Git

Feel free to skip these and revisit after learning Backend

Checkpoint - Frontend Apps

You can pick any backend programming language. My recommendation is Node.js because you are already familiar with JavaScript and it's easier to pick.

Start Backend Development

Node.js

Backend Starts here

Checkpoint — CLI Apps

PostgreSQL

Checkpoint — Simple CRUD Apps

Redis

JWT Auth

RESTful APIs

Checkpoint — Complete App

Use the checkpoints and do not forget to practice what you learn. There are project ideas at each checkpoint that you can build to solidify your knowledge.

DevOps starts here

Route53 SES

EC2 VPC S3

Linux Basics

Basic AWS Services

Checkpoint — Deployment

Monit

Checkpoint — Automation

Checkpoint — CI / CD

Checkpoint — Monitoring

Terraform

Checkpoint — Infrastructure

Continue Learning with following relevant tracks

Frontend

Backend

DevOps

AWS

If you are a beginner, we'd recommend you to visit the beginner friendly version.

Visit the Beginner Version

Find the detailed version of this roadmap along with other similar roadmaps

roadmap.sh

Git and GitHub

git init

git config

Local vs Global Config

Repository Initialization

Working Directory

Staging Area

Committing Changes

Intro and Git Commands

.gitignore

Viewing Commit History

Fast-Forward vs Non-FF

Rebase

Squash

Handling Conflicts

Cherry Picking Commits

Forking vs Cloning

Issues

Pull Requests

Labelling Issues / PRs

Saved Replies

Mentions

Reactions

Commenting

GitHub Discussions

Linear vs Non-Linear

HEAD

Detached HEAD

git log options

--soft

--hard

--mixed

What and Why use?

Adding / Updating

Submodules

Installation and Setup

Repository management

Issue Management

Pull Requests

Use in Automation

GitHub Apps

OAuth Apps

Creating Apps

Learn the Basics

What is a Repository

What is Version Control?

Why use Version Control?

Git vs Other VCS

Installing Git Locally

Cloning Repositories

Managing Remotes

Pushing / Pulling Changes

Fetch without Merge

Git Remotes

Merge Strategies

PR from a Fork

Collaborators

Creating PR

Collaboration on GitHub

Git Stash Basics

Intermediate Git Topics

History

git revert

git reset

Undoing Changes

Viewing Diffs

Rewriting History

commit-msg

post-checkout

post-update

pre-commit

pre-push

Common Hooks

Git Reflog

Git Bisect

Git Worktree

Git Attributes

Git LFS

REST API

GraphQL API

GitHub API

GitHub Copilot

GitHub Models

GitHub Marketplace

GitHub Education

GitHub Sponsors

Student Developer Pack

GitHub Classroom

Campus Program

Basic Collaboration

Branching Basics

Creating Branch

Renaming Branch

Deleting Branch

Checkout Branch

Merging Basics

GitHub Essentials

Creating Account

GitHub Interface

Setting up Profile

Creating Repositories

Commit Messages

Branch Naming

PR Guidelines

Code Reviews

Contribution Guidelines

Clean Git History

Best Practices

Markdown

Project Readme

GitHub Wikis

CITATION files

Documentation

Between Commits

Between Branches

Staged Changes

Unstaged Changes

GitHub Projects

Working in a Team

Project Planning

Kanban Boards

Roadmaps

Automations

Collaborators / Members

GitHub Organizations

Teams within Organization

Between Commits

Between Branches

Staged Changes

Unstaged Changes

GitHub Workflow

git commit --amend

git rebase

git filter-branch

git push --force

Managing Tags

Pushing Tags

Checkout Tags

GitHub Releases

YAML Syntax

Workflow Triggers

Scheduled Workflows

Workflow Runners

Workflow Context

Secrets and Env Vars

Caching Dependencies

Storing Artifacts

Workflow Status

Marketplace Actions

Webhooks

Deploying Static Websites

GitHub Pages

Custom Domains

Static Site Generators

Continue learning with following roadmaps

Advanced Git Topics

Git hooks

What and Why?

Client vs Server Hooks

What are these?

Usecases

Rewriting History

Tagging

GitHub Actions

GitHub Developer Tools

GitHub API

Git Reflog

Git Bisect

Git Worktree

Git Attributes

Git LFS

REST API

GraphQL API

GitHub Copilot

GitHub Gists

GitHub Packages

GitHub Codespaces

GitHub Security

GitHub Sponsors

GitHub Marketplace

GitHub Education

GitHub Student Developer Pack

GitHub Classroom

Campus Program

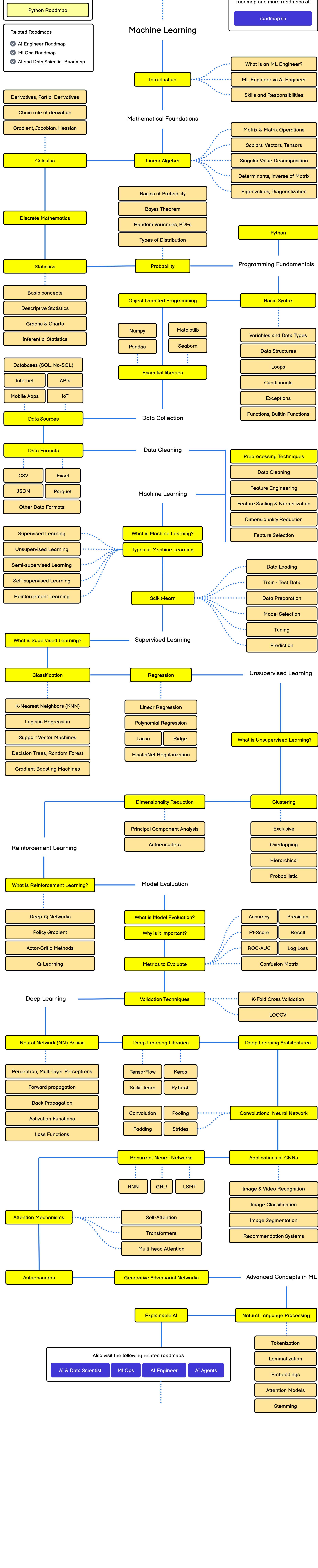
More GitHub Features

Frontend

Backend

DevOps

Full-stack



Pre-requisites (One of these)

Frontend Backend Full-Stack

AI Engineer

Scrimba is offering 20% off to roadmap users on their AI Engineer course that covers this roadmap in depth. Check them out!

Scrimba - AI Engineer Path

Related Roadmaps

- ✓ AI and Data Scientist Roadmap
- ✓ Prompt Engineering
- ✓ Data Analyst Roadmap

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Impact on Product Development

Roles and Responsibilities

What is an AI Engineer?

AI Engineer vs ML Engineer

AI vs AGI LLMs

Inference

Training

Embeddings

Vector Databases

AI Agents RAG

Prompt Engineering

Common Terminology

Benefits of Pre-trained Models

Limitations and Considerations

OpenAI Models

Open AI Models

Capabilities / Context Length

Cut-off Dates / Knowledge

Popular AI Models

Anthropic's Claude

Google's Gemini

Azure AI AWS Sagemaker

Hugging Face Models

Mistral AI Cohere

Replicate

Prompt Injection Attacks

Security and Privacy Concerns

Bias and Fairness

Understanding AI Safety Issues

OpenAI Moderation API

Adding end-user IDs in prompts

Conducting adversarial testing

Robust prompt engineering

Know your Customers / Usecases

Constraining outputs and inputs

Safety Best Practices

Open AI Embedding Models

Pricing Considerations

Open AI Embeddings API

Sentence Transformers

Models on Hugging Face

Open-Source Embeddings

Vector Databases

Purpose and Functionality

Popular Vector DBs (pick one)

Chroma Pinecone

Weaviate FAISS

LanceDB Qdrant

Supabase

MongoDB Atlas

Implementing Vector Search

Indexing Embeddings

Performing Similarity Search

Multimodal AI Usecases

Image Understanding

Image Generation

Video Understanding

Audio Processing

Text-to-Speech

Speech-to-Text

Multimodal AI Tasks

Introduction

Using Pre-trained Models

Pre-trained Models

Open AI Platform

OpenAI API

AI Safety and Ethics

OpenSource AI

What are Embeddings

Semantic Search

Data Classification

Recommendation Systems

Anomaly Detection

Use Cases for Embeddings

RAG Alternative

Open AI Assistant API

Agents Usecases

Prompt Engineering

ReAct Prompting

AI Agents

Multimodal AI

AI Code Editors

Code Completion Tools

Development Tools

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Embeddings

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AI Agents RAG

Prompt Engineering

Common Terminology

Chat Completions API

Writing Prompts

Maximum Tokens

Token Counting

Pricing Considerations

Managing Tokens

Open AI Playground

Fine-tuning

Prompt Engineering Roadmap

Open vs Closed Source Models

Popular Open Source Models

Hugging Face

Finding Open Source Models

Hugging Face Tasks

Hugging Face Hub

Using Open Source Models

Inference SDK

Transformers.js

Ollama

Ollama Models

Ollama SDK

RAG Usecases

RAG vs Fine-tuning

Implementing RAG

Chunking

Embedding

Vector Database

Retrieval Process

Generation

Ways of Implementing RAG

Using SDKs Directly

Langchain Llama Index

Building AI Agents

Manual Implementation

OpenAI Functions / Tools

OpenAI Assistant API

OpenAI Vision API

DALL-E API

Whisper API

Hugging Face Models

LangChain for Multimodal Apps

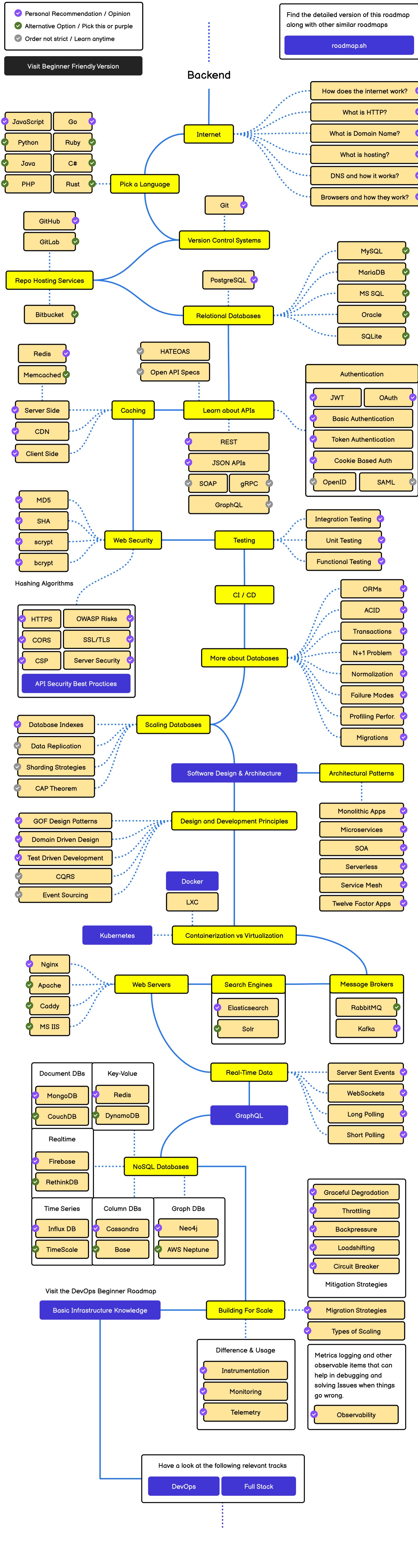
LlamaIndex for Multimodal Apps

Implementing Multimodal AI

Continue learning with following relevant tracks

AI & Data Scientist

Prompt Engineering



- ✓ Personal Recommendation / Opinion
- ✓ Alternative Option / Pick this or purple
- ✓ Order not strict / Learn anytime

Visit Beginner Friendly Version

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Front-end

