

The 180-Day AI Engineer Sprint: From Builder to Architect

This roadmap is designed for **Laksh**, a high-agency founder transitioning into deep AI engineering. It balances technical depth with the "build and ship" mentality, optimized for public documentation on Instagram and potential productization on Gumroad.

Phase 1: Python & Engineering Excellence (Days 1–30)

The goal of this month is to move beyond "scripting" and master Python as a professional engineer. Clean code is the foundation of scalable AI systems.

Week	Focus Area	Key Tasks	Instagram Content Idea
1	Advanced Python	Decorators, Generators, Context Managers, AsyncIO.	"Python features you didn't know you needed for AI."
2	Data Foundations	NumPy for vectorization, Pandas for complex manipulation.	"Stop using loops; use NumPy." (Visual comparison)
3	Clean Code	SOLID principles, Type Hinting, Pydantic for validation.	"Why your AI code looks like spaghetti (and how to fix it)."
4	Project 1	Build a CLI tool that automates a part of your current agency workflow.	"Building a tool to save 10 hours/week."

Free Resources:

- [CS50P - Harvard Intro to Python](#)
- [ArjanCodes - Better Python Code](#)

Phase 2: Machine Learning Foundations (Days 31–60)

Understanding the "why" behind the models. We focus on the intuition and implementation of core algorithms.

Week	Focus Area	Key Tasks	Instagram Content Idea
5	The Math	Linear Algebra & Calculus intuition (not just formulas).	"The only math you actually need for AI."
6	Scikit-Learn	Regression, Classification, Clustering, Pipelines.	"Predicting [X] with 10 lines of code."
7	Neural Networks	Backpropagation, Activation functions, Loss functions.	"How a computer actually 'learns'" (Visual animation)
8	Project 2	Build a custom predictor for a niche dataset (e.g., lead conversion).	"I built a model to predict my best clients."

Free Resources:

- [StatQuest with Josh Starmer](#)
- [Sentdex - ML with Python](#)

Phase 3: Deep Learning & NLP (Days 61–90)

Transitioning into the modern era of AI. This is where you learn the tech behind LLMs.

Week	Focus Area	Key Tasks	Instagram Content Idea
9	PyTorch Basics	Tensors, Autograd, Building a simple MLP.	"PyTorch vs. TensorFlow: Why I chose PyTorch."
10	NLP Fundamentals	Tokenization, Word Embeddings (Word2Vec, GloVe).	"How computers read text."
11	Transformers	Attention mechanism, Encoder-	"The paper that changed everything:

		Decoder architecture.	Attention is All You Need."
12	Hugging Face	Using the Transformers library, Pipelines, Model Hub.	"Hugging Face is the GitHub of AI. Here's why."

Free Resources:

- [Andrej Karpathy - Zero to Hero](#)
- [Hugging Face NLP Course](#)

Phase 4: MLOps & Production AI (Days 91–120)

A "businessman who codes" knows that a model in a notebook is worth zero. This month is about deployment.

Week	Focus Area	Key Tasks	Instagram Content Idea
13	API Development	FastAPI, Pydantic, Asynchronous endpoints.	"FastAPI: The secret to production-grade AI APIs."
14	Containerization	Dockerizing AI models, Multi-stage builds.	"Why 'it works on my machine' is a lie."
15	CI/CD & Tracking	GitHub Actions, MLflow for experiment tracking.	"How I automate my AI deployments."
16	Cloud Infra	Deploying to AWS (Lambda/SageMaker) or GCP.	"My AI is now live on the cloud."

Free Resources:

- [Abhishek Veeramalla - MLOps Playlist](#)
- [DataTalksClub - MLOps Zoomcamp](#)

Phase 5: RAG & Agentic Workflows (Days 121–150)

This is the "meta" right now. Building systems that don't just talk, but act.

Week	Focus Area	Key Tasks	Instagram Content Idea
17	Vector Databases	Pinecone, ChromaDB, Semantic Search.	"RAG > Fine-tuning. Here's the proof."
18	LangChain/LangGraph	Chains, Memory, State management.	"Building complex AI logic with LangGraph."
19	AI Agents	Tool use, Function calling, ReAct pattern.	"I built an agent that can browse the web and book meetings."
20	Project 3	Build an end-to-end RAG system for your agency's knowledge base.	"My agency now has a brain."

Free Resources:

- [LangChain Official YouTube](#)
- [DeepLearning.AI Short Courses](#) (Many are free for a limited time)

Phase 6: AI System Design & Capstone (Days 151–180)

The final stretch. Thinking like an Architect and building your "Proof of Mastery."

Week	Focus Area	Key Tasks	Instagram Content Idea
21	System Design	Scalability, Latency, Cost optimization.	"How to design AI systems for 1 million users."
22	Evaluation	RAGAS, TruLens, LLM-as-a-judge.	"How do you know if your AI is actually good?"

23	Capstone Start	Define a high-value problem and architect the solution.	"The Big One: Starting my final 180-day project."
24	Capstone Delivery	Full build, documentation, and public launch.	"180 days later: From dropout to AI Engineer."

Free Resources:

- [Chip Huyen's Blog](#)
- [Full Stack LLM Bootcamp](#)

Strategic Advice for Laksh

1. The "Buffer" System

Since you mentioned you might not follow the schedule perfectly, use a **"Sprint & Sync"** approach. Every 2 weeks, have a "Sync Day" where you don't learn anything new but catch up on missed tasks or refine what you've built.

2. Documentation as a Product

Every Instagram Reel you post is a marketing asset for your future Gumroad product.

- **Save your prompts.**
- **Save your "Aha!" moments.**
- **Save your failures.**

The "180-Day AI Engineer Vault" could be a high-ticket resource containing all your notes, code snippets, and resource lists.

3. Technical Implementation

Using a private subdomain like `docs.lakshyaraj.me` is a great idea. I recommend using **Obsidian** with a **Quartz** or **Docusaurus** setup. It allows you to write in Markdown (fast) and deploy automatically to your subdomain. You can then use a simple API or iframe to show "Latest Updates" on your main site.

4. The "Founder" Edge

Don't just learn the tech. Always ask: *"How can I sell this?"* Every project in this roadmap should be a potential micro-SaaS or a service offering for your agency.