# The Ultimate AI Developer YouTube Stack (Tailored for Your Profile)

## 1 Python Foundations

| Course | Link | Topics | Notes |
|---|---|---|---|
| Python Crash Course for Beginners | freeCodeCamp | Syntax, loops, functions, data structures, file I/O | Start here if new to Python. Hands-on exercises included. |
| Python File Handling & Mini Projects | YouTube | Read/write files, CSV, JSON, text parsing | Practice with FEA simulation data. |

## 2 Data Analysis & Visualization

| Course | Link | Topics | Notes |
|---|---|---|---|
| Python for Data Analysis (Pandas & NumPy) | freeCodeCamp | NumPy arrays, Pandas DataFrames, cleaning data | Do exercises with FEA CSVs for hands-on experience. |
| Data Visualization with Matplotlib & Seaborn | YouTube | Plots, charts, heatmaps, EDA | Visualize data trends, correlations, distributions. |

## 3 Machine Learning

| Course | Link | Topics | Notes |
|---|---|---|---|
| Machine Learning with Python | freeCodeCamp | Regression, classification, clustering, evaluation | Follow along with small datasets. |
| PyCaret Hands-on | YouTube | AutoML, model comparison, feature engineering | Very useful to build ML pipelines quickly. |

## 4 Deep Learning

| Course | Link | Topics | Notes |
|---|---|---|---|
| Deep Learning with PyTorch | YouTube | Neural networks, CNNs, MNIST, CIFAR | Apply to image data. |
| TensorFlow / Keras for Beginners | YouTube | TensorFlow basics, model training, saving models | Practice building and training models. |

## 5 Generative AI / LLMs

| Course | Link | Topics | Notes |
| --- | --- | --- | --- |
| Hugging Face Transformers | [YouTube](#) | Pretrained models, tokenizers, pipelines | Experiment with text generation. |
| LangChain Tutorial | [YouTube](#) | Building chatbots, vector DB, retrieval | Useful for AI assistant projects. |
| OpenAI API Introduction | [YouTube](#) | Calling GPT models, prompts, embeddings | For integrating GPT into apps. |

## 6 MLOps & Deployment

| Course | Link | Topics | Notes |
| --- | --- | --- | --- |
| FastAPI for ML Deployment | [YouTube](#) | REST API for ML models | Deploy trained ML models locally. |
| Docker Basics for ML | [YouTube](#) | Containerize apps | Useful for running AI services anywhere. |

## ✅ Suggested Order for Your Profile

1. Python Foundations
2. Data Analysis & Visualization
3. Machine Learning
4. Deep Learning
5. Generative AI / LLM
6. MLOps & Deployment

Tip: Spend **hands-on time daily** — replicate everything in your `~/AI_Projects` folder using VS Code + virtual environment.