**LIB AI - 12-Month Capstone Project Roadmap (Advanced AI & Cloud AI Services)**

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| **1** | **Foundation of AI, Transformers and Architectural Study** | **Understanding the core underlying architectures** |
| **2** | **Understanding Generative AI (GenAI) & RAG Models** | Basics of GenAI, LLMs, embeddings, RAG principles. |
| **3** | **Working with Large Language Models (LLMs) via APIs** | Calling LLM APIs, fine-tuning prompts, optimizing queries. |
| **4** | **NLP & BERT-Based Models for Text Processing & Summarization** | Text classification, named entity recognition (NER), summarization, Q&A. |
| **5** | **Retrieval-Augmented Generation (RAG) for Knowledge-Based AI** | Setting up vector stores, embedding retrieval, advanced RAG workflows. |
| **6** | **Fine-Tuning Open-Source LLMs & Deploying Custom AI Models** | Customizing AI models for domain-specific applications. |
| **7** | **Introduction to Reinforcement Learning and Robotics Simulation** | Using Open AI’s Gym and other simulation Libraries |
| **8** | **Scaling AI Models in Production (MLOps & AI Deployment)** | Automating model deployment, retraining, and real-time monitoring. |
| **9** | **Model Validation and Evaluation Techniques** |  |
| **10** | **End-to-End Capstone Project: Building a Real-World AI Solution** | Developing a fully functional AI system using learned techniques. |
| **11** |

Project Topics

**Automated Research Paper Summarization & Citation Generator**

* AI tool that **analyses and summarizes academic papers** using **llama3 model**

**Build a restaurant recommendation system** based on **user’s choice of cuisines & mood**

* using **RAG-based models**, **the recommendations** allow **flexible, real-time conversational recommendations** using LLMs unlike traditional recommendation system

**Agentic AI: Optional**

* Agentic AI is simply a wrapper up on the core AI using good Data Engineering Skills. Will keep this Optional for now.
* The only difference between an agent and a language model is that agents complete task autonomously. So, you should get the idea if you have ever worked on automating any application. 🙂Lets get the basics right first, shall we? 😬