Capstone Certificate Track Proposal

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Certificate Titles: IBM AI Engineering Professional Certificate | Generative AI with Large Language Models | Google Project Management Professional Certificate

1. Professional Interests and Career Direction

What first got me into AI/ML more in depth was taking my first Data Science class and bridging it with AI to build my foundation. After that, I became very fascinated with AI and its capabilities, and how useful and powerful it can be when used correctly. After CST 383, I started working on a computer vision project with a graduate student and Dr. Feng, which involved many ML topics as well as the foundational skills needed for AI. Working on this Basketball Action Detector was my first time using Hugging Face to access different trained models and learn to train my own models for specific tasks.

I don't have a strong pull towards one specific industry. I work well in a small or large company or team. What matters to me is being in an environment where I can be productive, learn, and apply skills to real-world situations. I'm driven to want to create something that can be useful for others- everyday things that can be automated or made more accessible and simple.

In the near term, my plan is to finish my certificates, keep building on my interests like the B.A.D. project, and keep applying for entry-level AI/ML engineering roles as I get closer to graduation. In the meantime, I've been doing freelance web design work. I've built websites for small businesses over the past six months, which has taught me useful frontend design skills along the way.

2. Gap Analysis: Knowledge and Skill Gaps

Many AI roles require work experience or prefer candidates with years of ML experience. There's always more to learn, and I feel like I have the right tools to learn what these jobs require. I looked at postings for entry-level and intern AI/ML roles, including the Oklahoma City Thunder's Applied AI Engineer Intern and Software Engineer Intern postings (Basketball Operations), an Intel Software Engineering Intern posting, Atlassian's 2026 grad ML Engineer posting, and an entry-level Data Scientist role at CoLab in Portland. The skills employers ask for most (Python, LangChain, cloud AI deployment, LLM integration) are where my background has real gaps.

- Skill/Knowledge Gap 1 – Production LLM and agent tooling (RAG, LangChain, prompt engineering at a systems level). My coursework and B.A.D. work involve calling and evaluating LLMs like Qwen3-VL, but I haven't built or deployed a RAG pipeline or agent system end-to-end. The Thunder's Applied AI Engineer Intern posting explicitly lists experience building RAG pipelines and fine-tuning foundation models as a qualification, and the wider market analysis flags LangChain and LLM integration as the top-cited skills in entry-level AI engineer listings.
- Skill/Knowledge Gap 2 – Cloud deployment and MLOps. B.A.D. runs out of Colab notebooks, which is fine for research but isn't how production ML gets shipped. The same Thunder posting asks for experience with cloud-ML tooling like AWS SageMaker and Bedrock, and advanced SQL against warehouses like Redshift and Athena, which I don't have hands-on experience with yet. My certifications cover this, so I'll gain more hands-on experience.
- Skill/Knowledge Gap 3 – I'm continuing to deepen my understanding of core fundamentals, including ML/AI and project/delivery management. I'm making steady progress by actively learning through the certifications I have chosen, though I recognize there is always more to learn. My background is in basketball training and commission

sales rather than structured project delivery, so I am still strengthening my skills in planning, stakeholder communication, and timeline management.

- **Postings reviewed:**
- Applied AI Engineer Intern / Basketball Operations – Oklahoma City Thunder
- Software Engineer Intern / Basketball Operations – Oklahoma City Thunder
- Software Engineering Intern, Bachelor's – Intel Corporation
- Machine Learning Engineer, 2026 Graduate – Atlassian
- Data Scientist (entry level) – CoLab, Portland, OR

3. Certificates of Your Choice

The hours below are estimates from the course tracking spreadsheet. I dropped Google Advanced Data Analytics from my original list since it's optional and doesn't map as tightly to the applied ML/AI direction, and its hours alone (120-180) would push the total even higher. Even with just these three certs, the combined range is 275-400 hours, past both the 160-200 target in these instructions and the rubric's 140-160 range. I considered cutting Google Project Management, but I decided to keep all three since PM reinforces skills I want anyway, even if it means going over on hours.

Certificate	Provider	Sign-Up Link	Est. Hours	Status
IBM AI Engineering Professional Certificate	IBM / Coursera	coursera.org/professional-certificates/ai-engineer	140-180	In progress (course 1 of 13 complete, course 2 in progress)
Generative AI with Large Language Models	Coursera	coursera.org/learn/generative-ai-with-llms	15-40	Purchased (Course 1 in progress)
Google Project Management (Career Certificate)	Google / Coursera	grow.google/certificates/project-management/	120-180	In progress (course 1 of 7 complete, course 2 in progress)

Planned Timeline

Weeks	Focus	Hours
1-6	Finish IBM AI Engineering courses 2-6 (Deep Learning with Keras/TensorFlow/PyTorch, course 6 capstone)	~70-90
7-8	Generative AI with Large Language Models (full course)	~15-40
9-14	IBM AI Engineering courses 7-13 (Gen AI, LangChain, RAG, agents, course 13 project)	~70-90
Ongoing	Google Project Management, self-paced alongside the above, likely finishing after the Dec 2026 grad date	~120-180

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4. How the Certificates Bridge Your Skill Gaps

IBM AI Engineering is the big one, 13 courses covering a lot of foundation, starting with classical ML in Python (course 1, which I've completed) and working through deep learning with Keras, TensorFlow, and PyTorch. Course 6 is its own capstone project, and the other half is where it relates to Gaps 1 and 2 directly: courses 12 and 13 are "Fundamentals of AI Agents Using RAG and LangChain" and a hands-on RAG/LangChain project, the exact production LLM/agent tooling I'm missing right now.

Generative AI with Large Language Models is more focused. It's helped a lot with fine-tuning and getting better accuracy and calculations from a model, which is directly useful for Gap 1 since it teaches me how to make an LLM perform well for a specific task instead of just calling one.

Google Project Management reinforces the ideals of being a software engineer: keeping code consistent, thinking about scalability, working through projects efficiently as a team, and handling faults that come up in any work environment. That maps onto Gap 3, since it's the structured-delivery side of things I don't get much from CS courses, only projects I had done with groups.

5. Applied Projects and Deliverables

Each certificate comes with its own built-in project I can use as the deliverable for this class. IBM AI Engineering has two: the "AI Capstone Project with Deep Learning" (course 6 of 13) and the "Project: Generative AI Applications with RAG and LangChain" (course 13 of 13), which is a hands-on build using RAG/LangChain. Google Project Management also has its own capstone, "Capstone: Applying Project Management in the Real World" (course 6 of 7), which applies the full project lifecycle to a real scenario. Generative AI with Large Language Models doesn't come with a built-in capstone project like that, so I'll build my own project applying what I learn from that course once I get into it.

Timeline: IBM's course 6 capstone first, then Google PM's course 6 capstone once I get there, then IBM's course 13 RAG/LangChain project, then my own Gen AI with LLMs project last, running from now through graduation in December 2026.

Portfolio presentation: I have a portfolio site (ryebriscoe.github.io) and GitHub (github.com/ryebriscoe). I'll add write-ups for each certificate project as I finish them, along with links to my certificate completions on the portfolio site.