



HOMERTON COLLEGE
UNIVERSITY OF CAMBRIDGE

HOMERTON
INTERNATIONAL
PROGRAMME

Official College Programmes
at the University of Cambridge

THREE TOPICS. TWO WEEKS. REAL DEPTH.

The programme is structured around three interconnected areas, each building on the last. Students do not just attend lectures. They work through problems, discuss real applications, and apply what they learn to their own project.

Topic 1 · Foundations of AI and Machine Learning

Understanding the systems behind modern AI

How machine learning works, what neural networks actually do, and how AI systems are trained and evaluated. Students build a working mental model of the field before touching the tools, so that everything that follows makes sense from the ground up.

Topic 2 · Large Language Models

How LLMs are built, trained, and deployed

What makes a large language model different from earlier AI systems, how transformer architecture works, what prompting and fine-tuning mean in practice, and where current models succeed and fall short. Students engage with real models and learn to evaluate their outputs critically rather than take them at face value.

Topic 3 · Retrieval-Augmented Generation

The technique powering the most useful AI applications today

What RAG is, why it matters, and how it solves one of the core limitations of language models on their own. Students learn how retrieval systems are designed, how they connect to generative models, and how to build a basic RAG pipeline from scratch as part of their final project.

YOUR PROJECT

Build Something Real

Our approach is interactive, collaborative, and project-driven, combining thought-provoking lectures, workshops, group discussions, and hands-on project work.

Every student completes 5-8 hands-on projects over the course of the programme. Working individually or in small teams, students design and build a functional application using the tools and techniques covered in the sessions, from prompt engineering and LLM integration to a working RAG pipeline.

Projects are presented to the cohort and faculty on the final day. Students leave with a working prototype, documented code, and a University of Cambridge affiliated certificate that reflects the technical depth of the programme.



BUILD SOMETHING REAL



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