

# 2024 The Course of Making AI Tutor of [X]

10 Weeks of AI Innovation and Hands-On Learning



by Alwin Lin

# Who are we?



**Yu-Jen Lin**

Founder/Lecturer

CS Equity AI



**Li-Ta Hsu**

Lead Mentor

Hong Kong Polytechnic University



**Sam Lin**

Lead Coach

Google

# About this bootcamp

## What is this Bootcamp About?

- **Duration:** 10 weeks, excluding holidays
- **Goal:** Build a RAG-based AI Tutor tailored to your interests.
- **Experience:** Learn AI fundamentals, work hands-on, and showcase your creativity.

## Bootcamp Goals

- **Understand AI Fundamentals:** Learn LLMs, embeddings, and RAG.
- **Develop Practical Skills:** Work with Gemini, ChromaDB, and other libraries.
- **Create a Custom AI Tutor:** Apply skills to a real-world project.
- **Prepare for Applications:** Gain transferable skills for academics and beyond.

# Attendance Policy

- One absence for personal reasons.
- Inform your team lead and lecturer at least three days in advance via email at [csquityai@gmail.com](mailto:csquityai@gmail.com).
- Second absence is accepted for health or unavoidable circumstances.
- Beyond two absences, your participation may be affected and you will not be eligible for a certificate.
- Recordings will be available for missed sessions.

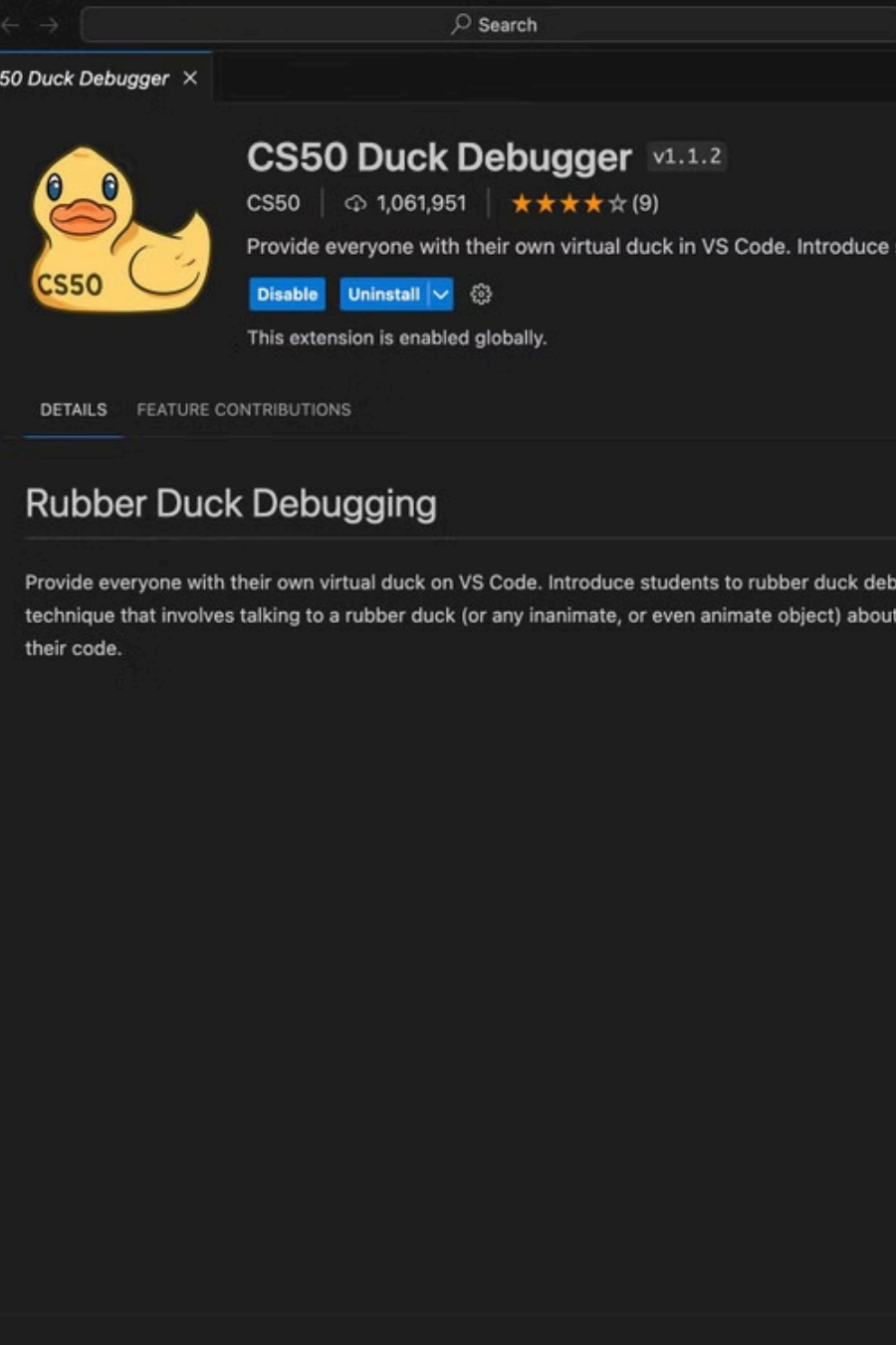
# Weekly schedule

## Phase 1: The basics

- **Week 1:** Orientation
- **Week 2:** Introduction to Prompt Engineering
- **Week 3:** Introduction to Ducky AI & Gemini
- **Week 4:** Gemini API Labs & Setting up for Interactions
- **Week 5:** Vector Embedding and Semantic Retrieval

## Phase 2: Meeting with your coaches

- **Week 6:** Advanced RAG Techniques
- **Week 7:** Building the AI Tutor Core
- **Week 8:** Testing and Evaluation
- **Week 9:** Deployment and Scalability
- **Week 10:** Showcase and Presentations



# Week 5 Midterm

- Who
  - 1 submission per group to your Github
- What
  - A baseline chat bot with RAG capabilities that could:
    - Ingest multiple files
    - Proper data chunking
    - Chat history
- When
  - Due 01/23, 1 day before week 6
- How
  - Fork GitHub repo

# Final Project

- **Who:**
  - You and your team of 5~6
  - Showcase to peers, instructors, and invited guests.
- **What:**
  - Present a functioning AI Tutor using RAG principles.
  - Documentations
  - Upload code to GitHub
- **When:**
  - March 1st
- **How:**
  - Explain your project's goals, design, and implementation.



## ≡ NotebookLM

Sources 




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

 Getting Started with ... 



 Getting The Most Out... 



 NotebookLM Features 

 NotebookLM Glossary 

 NotebookLM Troubles... 

 Using NotebookLM A... 

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
## Introduction to NotebookLM

Here is an example of how NotebookLM uses RAG technology

- NotebookLM uses RAG technology by allowing users to upload their own source files. 1 2 NotebookLM makes a copy of these files into its database.
- When a user asks a question, NotebookLM will analyze the question and use the RAG technology to ground its responses in the provided sources. 3
- For example, a user could upload a meeting transcript and ask, "What are the marketing budgets?" 4 NotebookLM would then analyze the transcript and provide citations that link to the relevant parts of the transcript.
- NotebookLM also uses RAG technology to offer different types of outputs, including summaries, suggested questions, FAQs, briefings, and more. 5
- 7 Each guide draws its information directly from the sources you upload.



What are the limitations on NotebookLM source files? H

 Close Chat

8 sources

Start typ

 Made with Gamma

Note

# Grading Rubric

Category	Weight	Criteria
Functionality	50%	- The bot operates without errors and fulfills its intended purpose.
		- Accurate integration of RAG (e.g., demonstrates retrieval of relevant external data sources and effectively grounds responses).
		- Smooth interactions (clear responses, low latency, logical outputs).
Innovation & Creativity	25%	- Unique or creative application of the bot for a specific subject or user group.
		- Effective use of Gemini and embedding techniques to tailor the project.
		- Demonstrates originality in features or design.
Presentation Quality	25%	- Clear and structured presentation explaining the bot's goals, design choices, and technical implementation.
		- Demonstrates a solid understanding of RAG principles and embedding models.
		- Engages the audience with visuals (e.g., slides, live demo, or flowcharts) and answers questions effectively.



# Tools and Preparation Overview

## 1. GitHub:

- [Create a GitHub account.](#)
- Learn [how to make a pull request.](#)

## 2. Google Cloud Platform (GCP):

- Familiarize yourself with [GCP basics.](#)
- Set up access to the Gemini API.

## 3. Google Colab:

- Explore [Google Colab features.](#)
- Learn [markdown basics.](#)
- Practice [GitHub integration.](#)

# Q&A and Next Steps

- Team Breakout room
  - Come up with a team name
  - Think about areas where AI could help your studies.
  - Setup Accounts if you are missing Github or Gmail
- Prepare for Week 2:
  - a. Complete pre-work (Gemini setup, GitHub basics).
  - b. Review reading materials.