

# Omar Abbas Haque

[omarhaque.com](http://omarhaque.com) | [ohaque@umass.edu](mailto:ohaque@umass.edu) | [linkedin.com/in/omar-haque](https://linkedin.com/in/omar-haque) | [github.com/Omar-Haque](https://github.com/Omar-Haque)

## EDUCATION

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### University Of Massachusetts

Amherst, MA

*Bachelor of Science in Computer Science, Bachelor of Science in Mathematics*

*Expected Graduation: May 2027*

## HIGH SCHOOL

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**Advanced Placement:** Calculus BC: 4, Chemistry: 5, Physics 1: 5, Physics 2: 5, Computer Science A: 5

**Cambridge International A Levels:** Maths: A\*, Further Maths: A\*, Physics: A\*, Chemistry: A\*, CompSci: A\*

## COURSEWORK

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Data Structures(Java), Introduction to C programming, Multivariable Calculus, Coursera: Stanford Machine Learning Specialization

## PROJECTS

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### Tech Support Assistant | *React, TailwindCSS, OpenAI API, Amazon AWS EC2*

- Developed a chatbot with the functionality to answer questions related to a specific company or organisation
- Implemented OpenAI API as the LLM
- Information about the organisation was specified in the system prompt of the OpenAI Model
- Used React and TailwindCSS for frontend. Deployed to Amazon AWS EC2 servers
- Chatbot maintains conversation history by passing an array of past messages as context

### Professor Recommendation Chatbot | *Pinecone, React, MaterialUI, OpenAI API*

- Created a chatbot which recommends professors to the user based on criteria specified by them
- Each professor's data was stored in a JSON file, containing reviews by students on that professor
- Professor reviews were stored in the Pinecone vector database
- Implemented RAG to match user's query with reviews of the professors

### Maze Generator | *JavaScript, p5.js, Depth-First Search*

- Built a maze generator, which generates a valid maze with a guaranteed start and end point
- Depth-first search implemented with backtracking to generate the maze
- p5.js used for rendering

### Inventory Management | *Firebase, React, MaterialUI*

- Developed a website to track an inventory of items
- Implemented firebase to keep track of the items in the inventory

### Plinko Simulation | *JavaScript, p5.js, matter.js*

- Developed a realistic simulation of a plinko game using matter.js as the physics engine, and p5.js for rendering
- Used Object-Oriented Programming to make matter.js objects
- Iteration was used to generate a uniform pattern of fixed balls, and the buckets they will fall into

### Color Palette Picker | *React, MaterialUI, Color Theory*

- Designed a color palette generator to implement in other projects for designing UI
- Generates one complementary color, two analogous colors, and two triadic colors
- HSV color format was used for color manipulation since it corresponds directly to the 360 degrees in the color wheel

## TECHNICAL SKILLS

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**Languages:** Java, Python, C, JavaScript, HTML/CSS

**Frameworks:** React, Next.js, React Native, Material-UI

**Developer Tools:** Git, Pinecone, OpenAI, LangChain, VS Code, PyCharm, IntelliJ, Eclipse

**Libraries:** pandas, NumPy, Matplotlib, p5.js, matter.js, TensorFlow, scikit-learn