

AutoAssign

Online Coding Assignment Automation Platform

Presentation Structure

1. Motivation and Aims
2. The Landscape of the Market
3. Research
4. Design Process
5. Implementation Details
6. Demonstration
7. Evaluation Results
8. Conclusion

Motivation and Aims

Why?

- **Early Days of Coding:** Proficient coding was once rare, mainly for software development and research
- **Rising Industry Demand:** In 2022, 10 of the top 20 best jobs in the UK were related to coding (Glassdoor)
- **Increased Student Interest:** Growing student interest in computing courses and online platforms
- **Current Challenges:** Manual marking of assignments is time-consuming, inconsistent, and often neglects personalised feedback.
- **Student Concerns:** Students report increased stress due to lack of support and feedback from instructors.

What am I proposing?

- A platform that will take the stress out of the main three aspects of assignments:
 - **Creation**
 - **Marking**
 - **Feedback**
- Alleviates pressure on lecturers, especially in large classes.
- A new competition element

The Landscape of the Market

What is already out there?

- Can be split into 2 main categories:
 - **Educational**
 - **Industrial**
- This project seeks to combine the best of both worlds

Research

AI-Assisted Guidance and Feedback

- There was a gap in published research
 - AI-Assisted Code Review
 - AI-Assisted Marking
- Nothing about educational guidance
 - Helping the student vs. telling them the answer
- Engineered various prompt templates and compared them
- Tested the prompt templates with multiple different publicly available LLMs

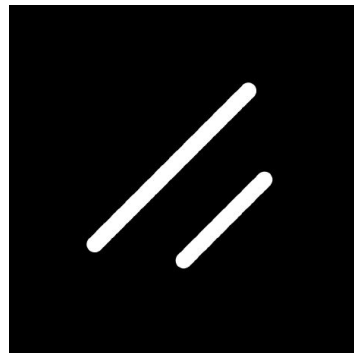
The Design Process

Design Language

- One chance to stand out
 - Simplicity - Avoid overwhelming the user
 - Animation - Intrigue the user
- Design prototyping in Figma



MagicUI



shadcn/ui

Implementation Details

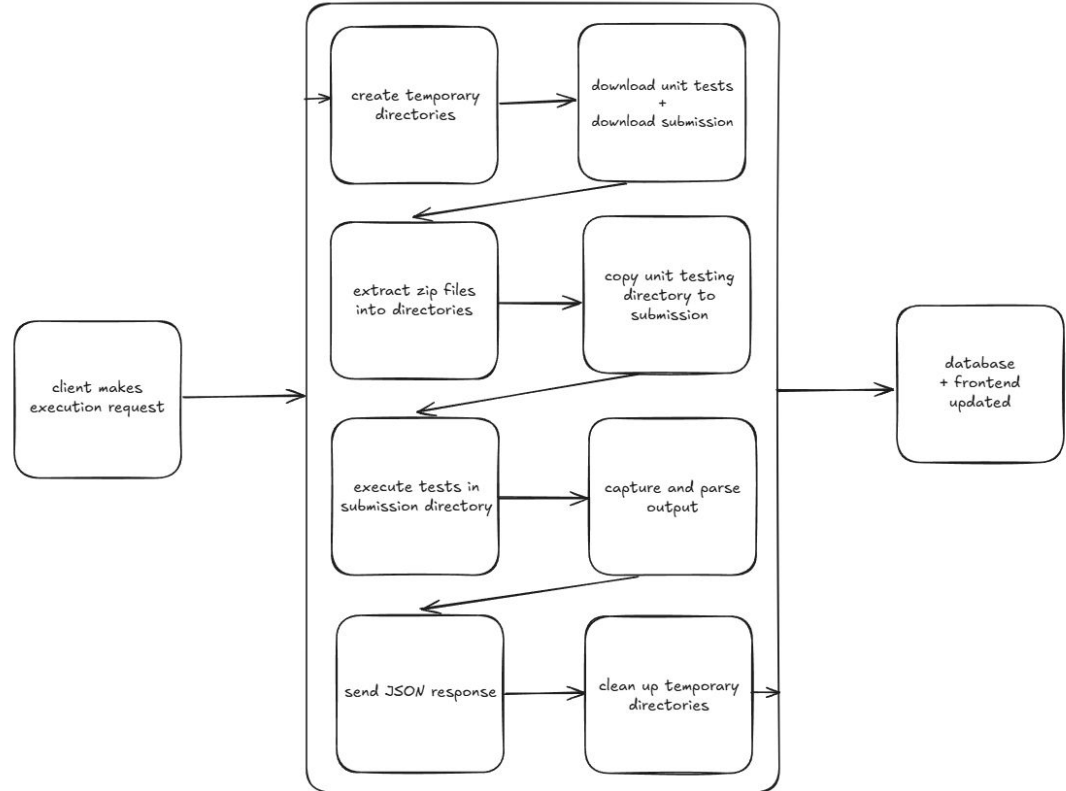
Brief Overview

(Full implementation discussion and further information on all of these topics is in the dissertation)

- Next.js framework
- Supabase database
- HuggingFace Inference API
- Custom unit test execution API

Custom Unit Test Execution API

- As stripped-back as possible
 - Giving freedom to the assignment creator

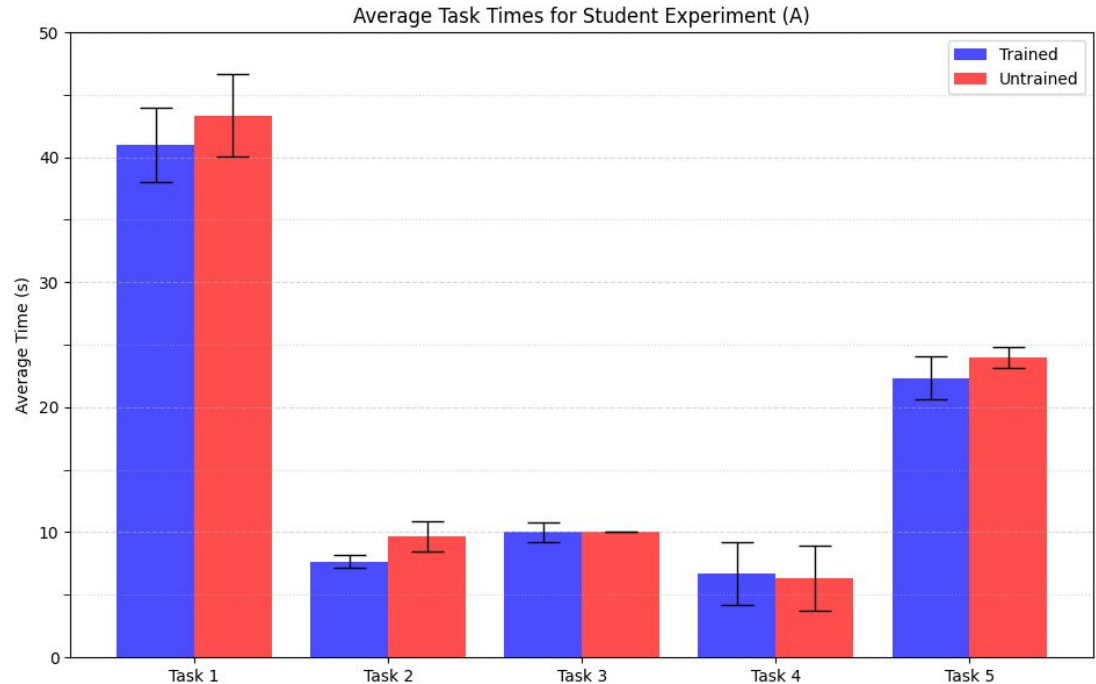


Demonstration

Evaluation Results

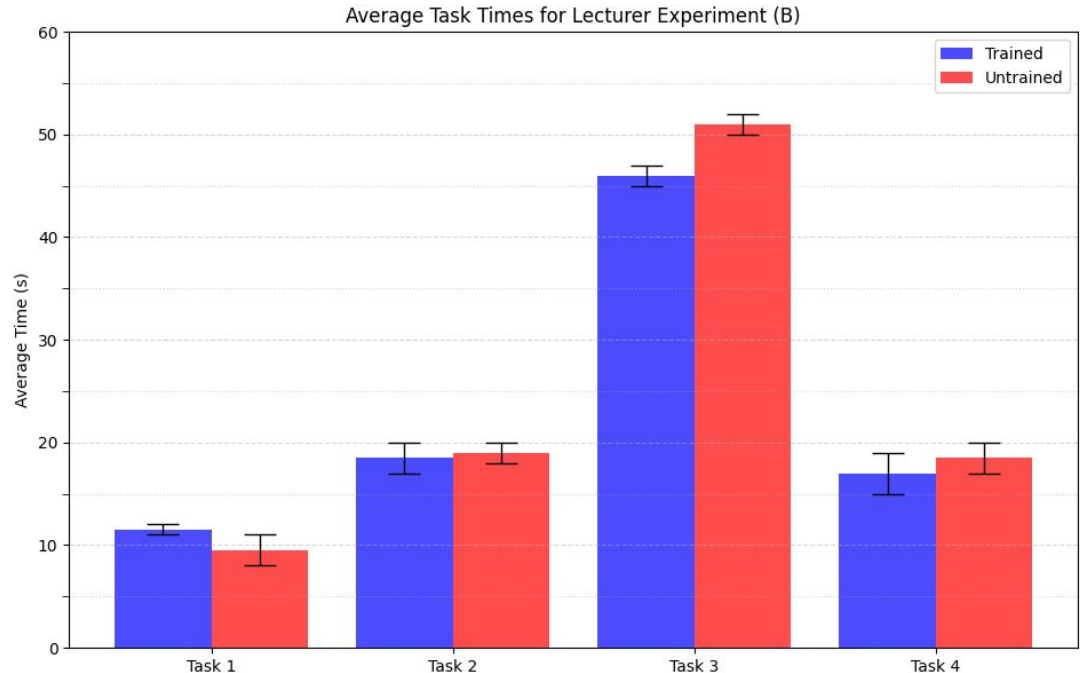
Experiment A - Student Workflow

- 6 anonymous participants
- Two groups
 - Untrained
 - Trained
- 5 tasks to complete
 - Timed



Experiment B - Student Workflow

- 4 anonymous participants
- Two groups
 - Untrained
 - Trained
- 4 tasks to complete
 - Timed



Questionnaire

- All 10 experiment participants took part
- 4 questions
 - User experience
 - Would you recommend AutoAssign?
- Common themes in responses
 - Concern about student-teacher engagement
 - Slow loading times

Conclusion

To wrap up...

- Implementation was a success
 - All **Must Have** and **Should Have** requirements were delivered
- Evaluation was a success
 - Intuitive
 - Integrates well with existing workflows
- The value of AutoAssign in a university environment
- Room for future work
 - Addressing the questionnaire concerns
 - Many features there was unfortunately no time to implement

Thank You For Listening