

[RE]IMAGINE EDUCATION

A weekly Design.AI newsletter

STUDENTS VS AI: HOW SUTD DESIGN STUDENTS COLLABORATED WITH AI IN SURPRISING WAYS

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Best of AI contest- 03.007 Design Thinking and Innovation with DesignZ's Future of Innovation Lab at the Lee Kuan Yew Centre for Innovative Cities

*This newsletter is produced with ChatGPT and other AI tools as super-collaborators. The authors contribute the core ideas, drafts, strategic framing, pedagogical insights, and design direction, while AI supports creative articulation.
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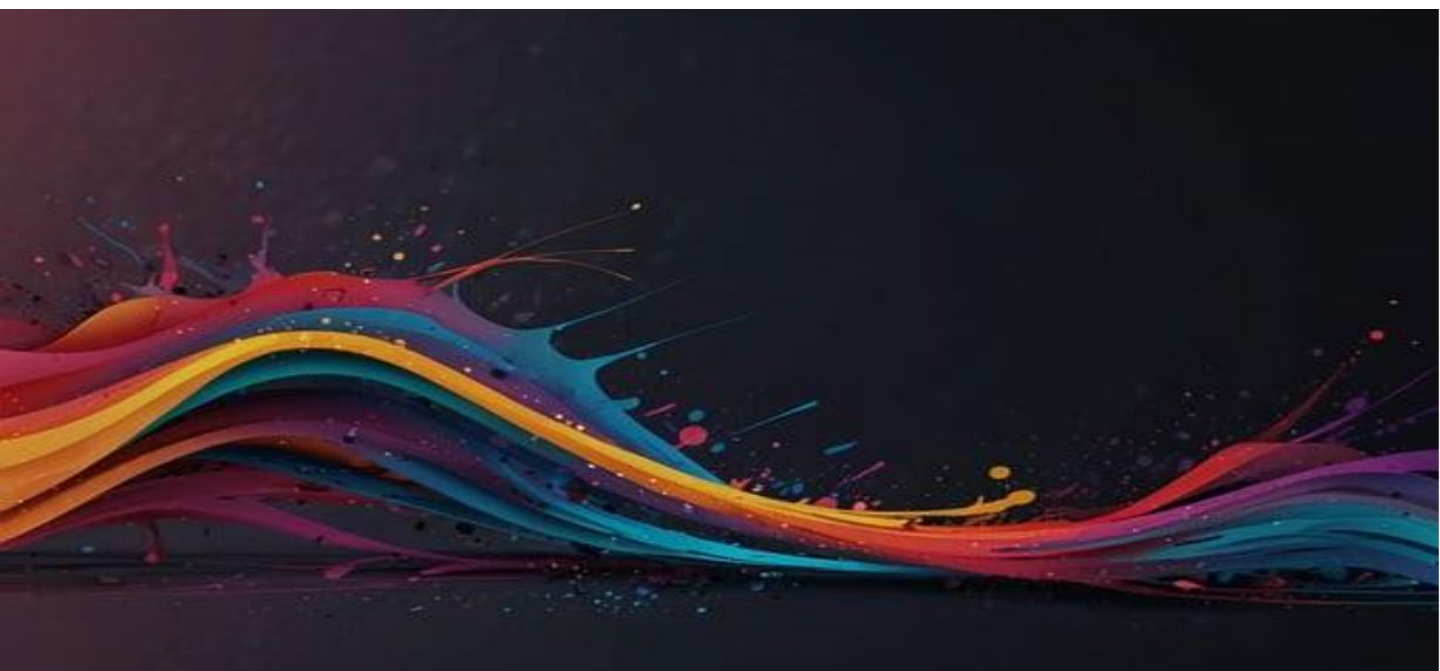
As part of SUTD's broader pivot to Design AI, the 03.007 Design Thinking & Innovation course embedded several AI-based interventions to help students explore the future of human-AI collaboration in 2025. The course offered structured opportunities to experiment with emerging technologies, from AI-personalized feedback to generative tools for design research and prototyping. This newsletter highlights the Best Use of AI Contest.

DesignZ's Future of Innovation Lab at the Lee Kuan Yew Centre for Innovative Cities funded DTI teams to purchase premium AI tools for their project. DTI had over 500 students divided into 109 teams. In total, 17 teams applied for the funding, 8 teams finally submitted their projects, and 5 teams won. We highlight three here.

In this contest, students were challenged to do more than just "use AI." They were invited to co-design with it, critique it, and even ignore it depending on what the problem called for. Each team explored three distinct roles AI can play in the design process:

- AI as a Tool: for efficiency, insight, or automation
- AI as a Teammate: for collaboration and co-creation
- AI as Neither: when human empathy, creativity, or judgment mattered more

Teams submitted 2-page write-ups with prompts, visuals, and ethical reflections. From a strong pool of excellent entries, three winning teams stood out for their bold integration, thoughtful reflection, working prototypes, and a strong, articulated vision for AI as tool, teammate, or neither.





Verbasense – Real-Time Emotion Analytics for Classrooms - (1st Place Winner)

Final Prototype: A sentiment-monitoring system that tracks classroom confusion through audio cues and visual dashboards (Figure 1).

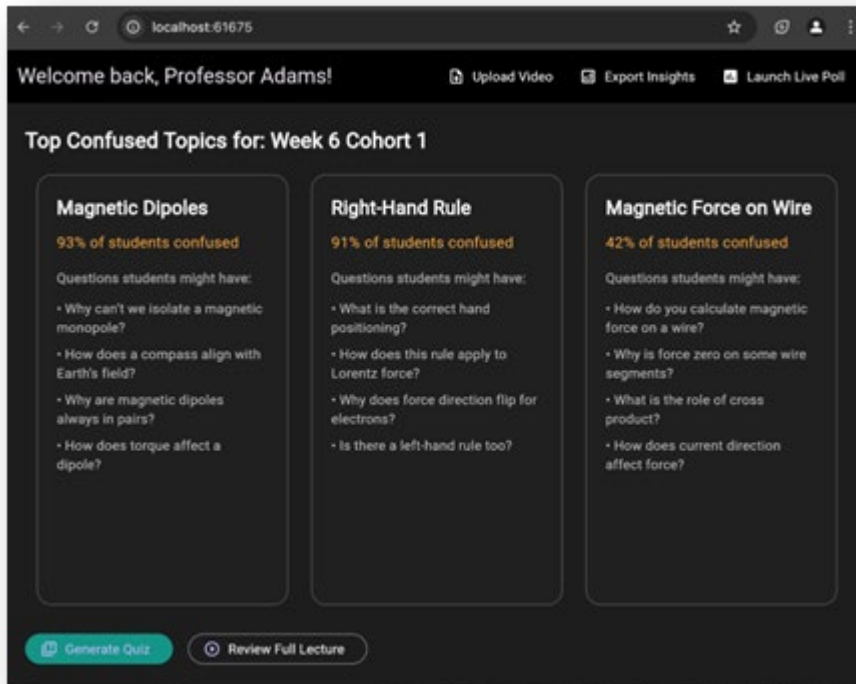


Figure 1. Verbasense Dashboard

The AI-powered classroom insight tool was collaboratively created by Berving Bek Jun, Chin Fu Jie, Jaryl Low Jia Wei, Lo Khye He, and Ramanathan Meyyappan Santhoshram. This team applied AI across design ideation, user persona analysis, and real-time classroom sentiment tracking.

AI Helped: By combining OpenAI Whisper for transcription and Hugging Face sentiment models, they built a dashboard that flagged confusion hotspots and suggested quiz questions. The team also used AI to cut industrial design time from 3 days to just 1 hour, rapidly transforming concepts into high-fidelity visuals.

Tool: AI accelerated industrial design and generated feedback dashboards.

Teammate: Co-analyzed user feedback for MVP pivots and emotional insights.

Neither: AI was excluded during in-class testing to protect natural student-teacher dynamics.

"AI functioned as a teammate in analyzing feedback and was excluded (neither) during live testing to maintain authentic classroom dynamics."

~Team Verbasense



The Wavelet – Wearable Gesture Control for Educators - (2nd Place Winner)

Final Prototype: A smart bracelet ("Wavelet") that lets educators control slides and classroom tech through hand gestures (Figure 2).

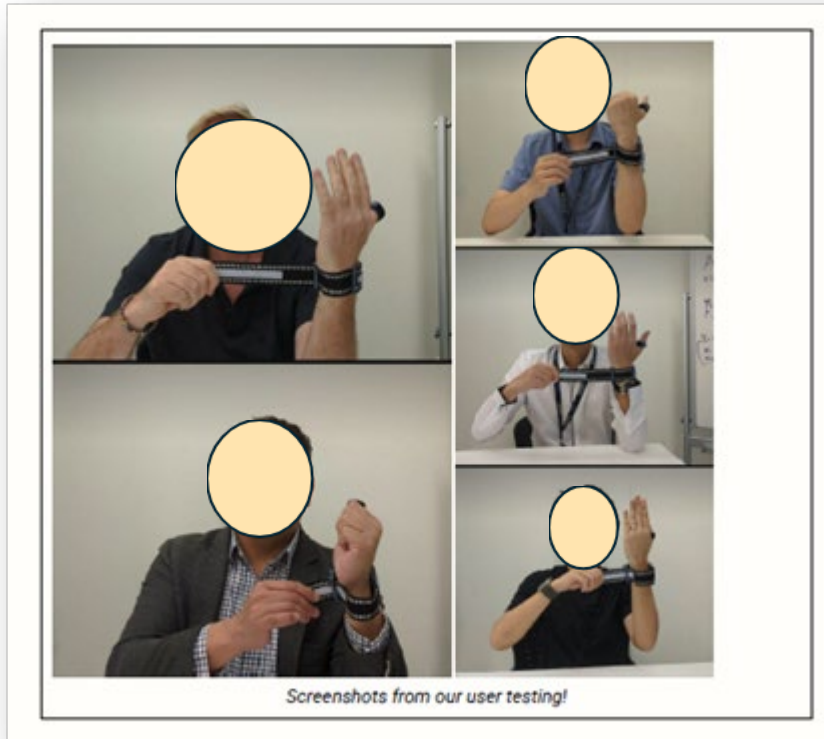


Figure 2. User-testing of Wavelet

The smart, gesture-controlled bracelet project, "Wavelet," was developed by Alvin Teo Xi Hao, Ho Li Lian, Andrew Leng Chi Yeong, and Muhammad Zahid B Mohamad Dali.

AI Helped: The team trained a machine learning model to detect muscle and motion signals (EMG, gyroscope, accelerometer) using a Random Forest classifier.

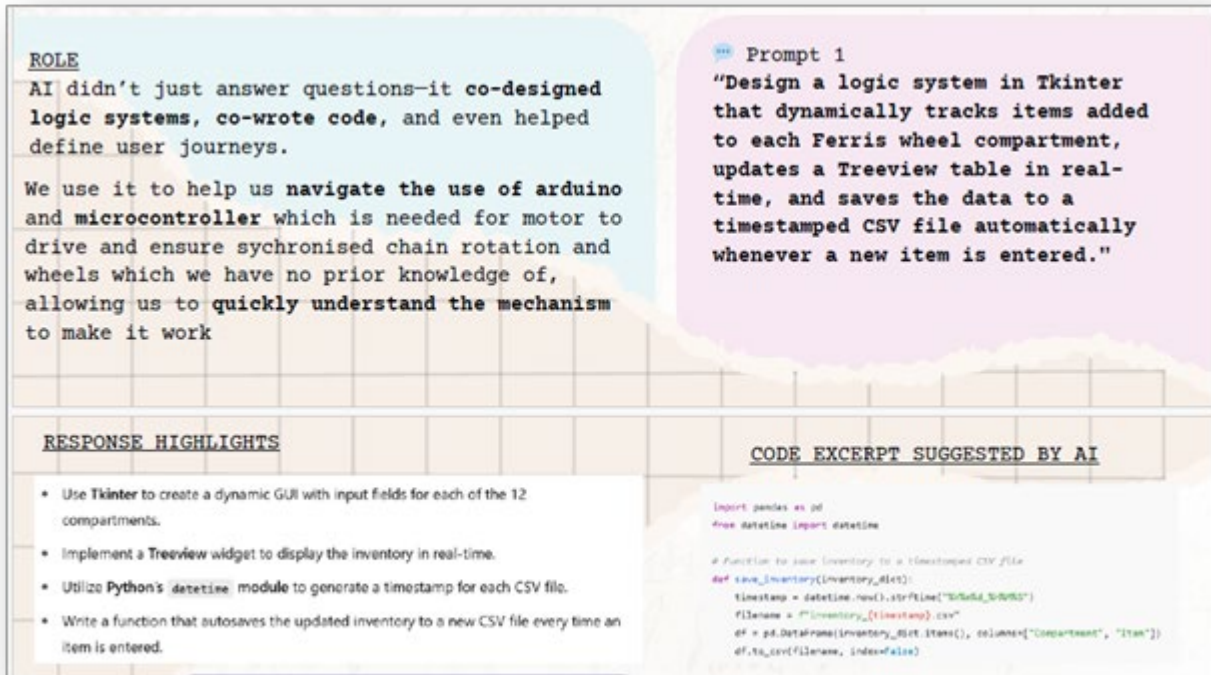
- Tool: AI processed gesture data for real-time classification.
- Teammate: Four different LLMs (Gemini, Claude, DeepSeek, GPT-4o) were assigned to team members and used to cross-validate prompts and outputs.
- Neither: UI design and user testing were kept AI-free to preserve aesthetic coherence and human empathy.

"Validating through contradiction, we did not dismiss the outlier when AIs disagreed, but rather used discrepancies to probe deeper, often surfacing blind spots that we hadn't considered."

~Team Wavelet

Ferris Wheel – A Rotating Storage System with Intelligent Inventory - (3rd Place Winner)

Final Prototype: A computer vision-powered rotating “Ferris Wheel” storage system that auto-tracks inventory and rotates items into view (Figure 3).



ROLE

AI didn't just answer questions—it co-designed logic systems, co-wrote code, and even helped define user journeys.

We use it to help us navigate the use of arduino and microcontroller which is needed for motor to drive and ensure synchronised chain rotation and wheels which we have no prior knowledge of, allowing us to quickly understand the mechanism to make it work

Prompt 1

“Design a logic system in Tkinter that dynamically tracks items added to each Ferris wheel compartment, updates a Treeview table in real-time, and saves the data to a timestamped CSV file automatically whenever a new item is entered.”

RESPONSE HIGHLIGHTS

- Use Tkinter to create a dynamic GUI with input fields for each of the 12 compartments.
- Implement a Treeview widget to display the inventory in real-time.
- Utilize Python's datetime module to generate a timestamp for each CSV file.
- Write a function that autosaves the updated inventory to a new CSV file every time an item is entered.

CODE EXCERPT SUGGESTED BY AI

```
import pandas as pd
from datetime import datetime

# Function to save inventory to a timestamped CSV file
def save_inventory(inventory_dict):
    timestamp = datetime.now().strftime("%Y%m%d_%H%M%S")
    filename = f"inventory_{timestamp}.csv"
    df = pd.DataFrame(inventory_dict.items(), columns=["Compartment", "Item"])
    df.to_csv(filename, index=False)
```

Figure 3. Use of AI as a Teammate in the Ferris Wheel project

The Ferris Wheel Storage System project was by Ayushi Kalmath, Kaviya Babu, Khong Puey Kee, and Nerissa Kho Wei Na.

AI Helped: From mechanical design advice to Tkinter-based GUI coding and Arduino motor syncing, AI was a constant collaborator.

- Tool: Helped troubleshoot chain slippage, calculate gear ratios, and write save-to-CSV functions.
- Teammate: Co-developed inventory logic, interface, and dynamic tracking system.
- Neither: AI-generated personas were rejected in favor of direct user interviews that led to redesigns in size, lighting, and usability.

"AI was not always helpful, especially when empathy, aesthetics, or emotional context were crucial."

~Team Ferris Wheel



What Students Learned About AI in Design

Drawing from the reflections of all 17 teams, several themes emerged about what students gained from this experience:

1. **AI accelerates, but does not replace human creativity.** Focused prompts worked best; vague ones led to generic results. Students found AI most useful when complementing human insight, especially for visuals, prototyping, and analogies.
2. **Treating AI as a collaborator matters.** Teams used multiple LLMs to validate results, tested AI-generated workflows, and cross-checked ideas to uncover blind spots.
3. **AI-enabled rapid technical learning.** From Arduino to gesture recognition, many students mastered new skills quickly thanks to AI's guidance and debugging support.
4. **Efficiency gains were real.** AI cut design iteration time drastically, sometimes from days to hours, and supported MVP pivots and fast user feedback loops.
5. **Empathy and context still belong to humans.** AI often fell short in emotionally or context-sensitive tasks. Some teams deliberately excluded AI from key moments to preserve authenticity.
6. **Prompt engineering emerged as a critical skill.** Teams had to iterate their queries, co-write prompts, and even use one AI to prompt another.
7. **AI moved from ideation to implementation.** Some teams embedded AI into the product itself, for example, in gesture recognition and voice sentiment tracking.

These lessons affirm that AI is not a shortcut to good design. It is a partner when used well. **What mattered most was not what AI tool was used, but how students framed the task, tested the outputs, and critically decided when to lean in and when to step back.**