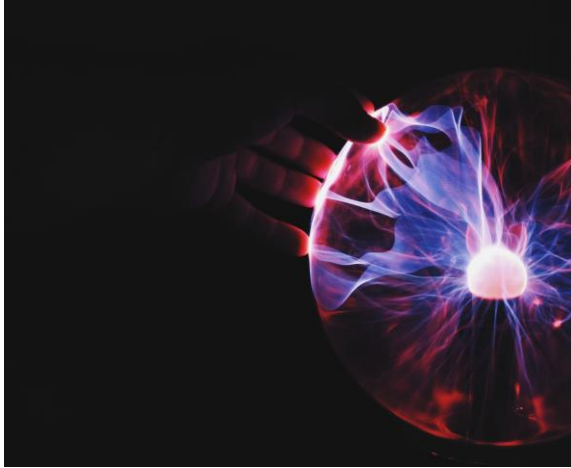


Fostering Synergy in Online Business Education: Digital Innovation and Collaboration

Jamina Ward, Nai Li, Stephen Vaz
IDEA Lab, Business School



Overview



IDEA Lab & OSCAR



**Imperial-NTU Education
Seed Fund Project**

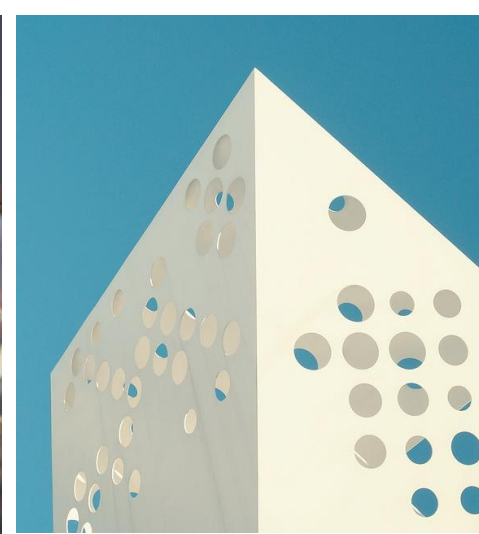


**Innovation & Emerging
Technologies at IDEA Lab**

IDEA Lab

Who we are

The transition from the Edtech Lab to the IDEA Lab signifies our evolved commitment to Innovation, Digital Education, and Analytics, ensuring we remain at the forefront of technology-enhanced education.



IDEA Lab

Research, innovation and data

Dr Nai Li
Senior
Educational
Researcher

Gaurav Gill
Data Scientist

Monica Ares
Executive
Director,
IDEA Lab

Richard Banks
Associate
Director, Digital
Education

Learning design

Jamina Ward
Head of
Learning
Design

Joe Pollard
Senior
Learning
Designer

James Piper
Senior
Learning
Designer

Sean O'Grady
Lead Learning
Designer

**Peter
Atkinson**
Senior
Learning
Designer

**Nuria
Benavent-
Esteve**
Senior
Learning
Designer

Katie Hughes
Assistant
Senior
Learning
Designer

Development

Stephen Vaz
Senior
Learning
Technologist

Media

Andy Parry
Head of
Media

**Calin
Chisalom**
Online
Learning Video
Producer

**Dominic
Jacobs**
Online
Learning Video
Producer

Editorial

Lok Yee Liu
Digital
Content
Editor

**Sophie
Talbot**
Digital
Content Editor

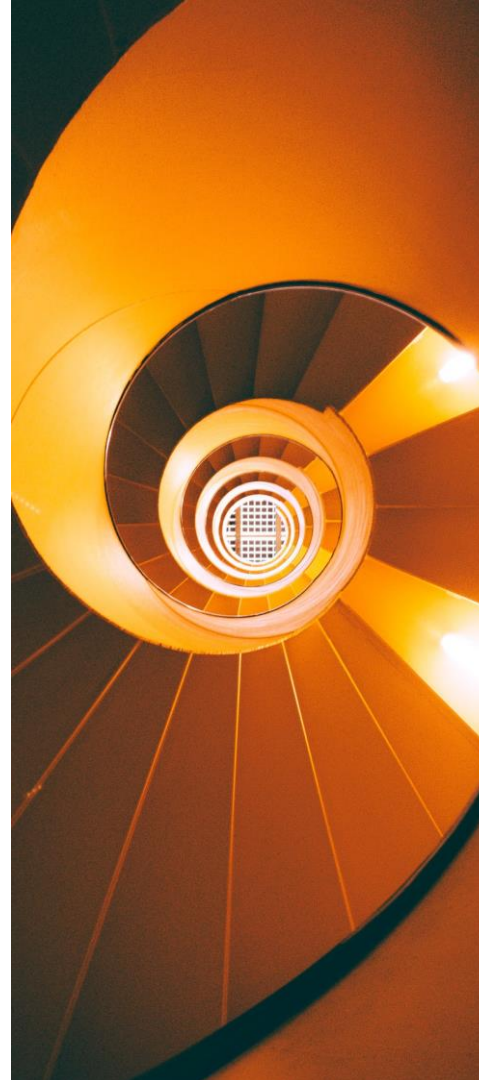
Project management

Katie Doreen
Project
coordinator

IDEA Lab

OSCAR

Our online development approach to create new modules is faculty focused, ensuring scholars are thoroughly involved in every step of the process.



OSCAR



- **Transforming** face-to-face campus modules to our online pedagogy
- Led by the pedagogy, not the tools
- Encapsulates our **design principles**
- Collaboration is **key**

Organise curriculum materials, refine learning outcomes and develop pedagogical framework.

Structure module by dividing curriculum into timed units, determine locality of assessments and live sessions, and segment content into activities and exercises that best meet the intended outcomes.

Learning Outcomes

By the end of this module, you should:

- Understand basic algorithms (such as search, sorting, and shortest paths) and data structures (such as arrays, lists, and graphs) and their representation in a programming language
- Understand why and how we analyse the efficiency of algorithms and data structures, as well as the workings of basic algorithms for problems like sorting, sorting and shortest paths
- Have gained insight into the process of moving from a problem statement to formulating a computational solution method
- Be able to read, design, and implement medium-sized programs in Python

Session 1: Introduction to optimisation			
Page	Page title	Content	Estimation of page time
1.1	Introduction to session one	Welcome video Learning outcomes Reading / essential resources Activity (Poll question)	20
1.2	What is an optimisation problem?	Interactive video: The generic optimisation problem (slide 14) (Question: What is the advantage of expressing the feasible region through constraints rather than every possible feasible solution?) Video: Outline cowboy example (slide 15) Text entry: What would be suitable decision variables? What do we want to maximise and minimise? What are the constraints? Feedback: Identification of decision variables, max and min, and constraints etc. and mention what optimal solution is.	30
1.3	Real-life applications	Video Interview: Interview with Analytics faculty about their work with big companies (Burger King, Easy Jet etc.) Activity: Click through examples to learn more about real-life optimisation applications Additional resources: Link to website Open discussion (audio? video?): Think about your experience, what could be optimisation problems in your company and what might be the decision variables etc..	30
1.4	Optimisation terminology	Video: Outline terminology (feasible solution; global minimiser; local minimiser; epsilon global minimiser; epsilon local minimisers) (Slides 18-19 without formula) Graph manipulation: Can you draw an optimisation problem that has three local and two global minimisers? Poll: Is it possible to draw an optimisation problem that has two local and three global minimisers? Feedback: No. Every global minimiser must have a local minimiser but not vv.	30

Active engagement

The '4Ps'

The '4 Ps' ensure we achieve many of our pedagogical aims such as storytelling, multimedia and active, social and experiential learning. We audit our modules to ensure an even balance of each 'P'.

Presenting

Information and theory is conveyed to students, generally through our video presentations, feedback or readings within the Hub, linked via a narrative through the module.

Practise

Plenty of opportunities to consolidate learning by practising the concepts presented through formative quizzes, question exercises or drag and drops, for example.

Participation

Students actively participate in most exercises in the Hub but most noticeably in online and live discussions, or contributing to wordclouds, polls etc and creating presentations.

Produce

Students embed or apply their learning by producing content of their own. For example producing a report or presentation, applying the concepts to a real-world issue.

Compose the content. Support faculty to develop content



Given everything we have covered about managing risk, I'd like you to consider hedging.

<<<WOULD YOU LIKE TO ADD ANY MORE INFORMATION ABOUT HEDGING? CONFIRM EXERCISE CHOICE BELOW OK?>>>

[X Remove](#)

Activities Legacy versions External tools

Search

Reading Explanatory text Information box File upload Question

Journal Sticky note Poll Matrix poll Reveal

Pedagogical approach

Segmentation

- We break down complex topics into manageable chunks, making it easier for learners to understand and retain information

Multimedia

- We employ a mix of text, visuals, audio and interactive elements to cater to different learning preferences and enhance comprehension

Active learning

- We encourage learners to interact with content, fostering deep engagement and better knowledge retention.

Feedback

- We incorporate regular, constructive feedback throughout our modules, helping learners to track their progress and adjust their learning strategies as needed.

Social learning

- We cultivate opportunities for learners to connect with each other and collaborate, fostering a sense of community and promoting peer learning.

Storytelling

- We use narrative techniques to bring concepts to life, making learning more memorable and engaging.

Experiential learning

- We provide practical activities that allow learners to apply what they've learned to their real lives, deepening their understanding and skills

Constructive alignment

- We ensure that our learning outcomes, activities and assessments are all aligned, creating a coherent and purposeful learning journey.

Audit storyboard for blend of activities, workload balance and timings.

Session 2	
2.1 Introduction	
Video	
Reading	
2.2 What is an algorithm?	
Video	
Wordcloud	Participation release: 5 students
Image tile grid	Contribution release
2.3 What is a function?	
Vertical tabbing	5 tabs
Video	
2.4 Parameters and retrun statements	
Horizontal tabbing	6 steps
Poll	1 MCQ
2.5 Local variables and scoping	
Interactive video	
2.6 Heron's algorithm	
Animation	
Drag and drop	6 items
Interactive video	

The screenshot shows a video player interface. The video content displays a hand-drawn graph on a whiteboard with the title "Why do economists like free markets? (part 1 of 2)". A hand is using a green marker to draw a dashed red line on the graph. The video player controls show a progress bar at 0:36 / 5:01 and a speed of 1.0x.

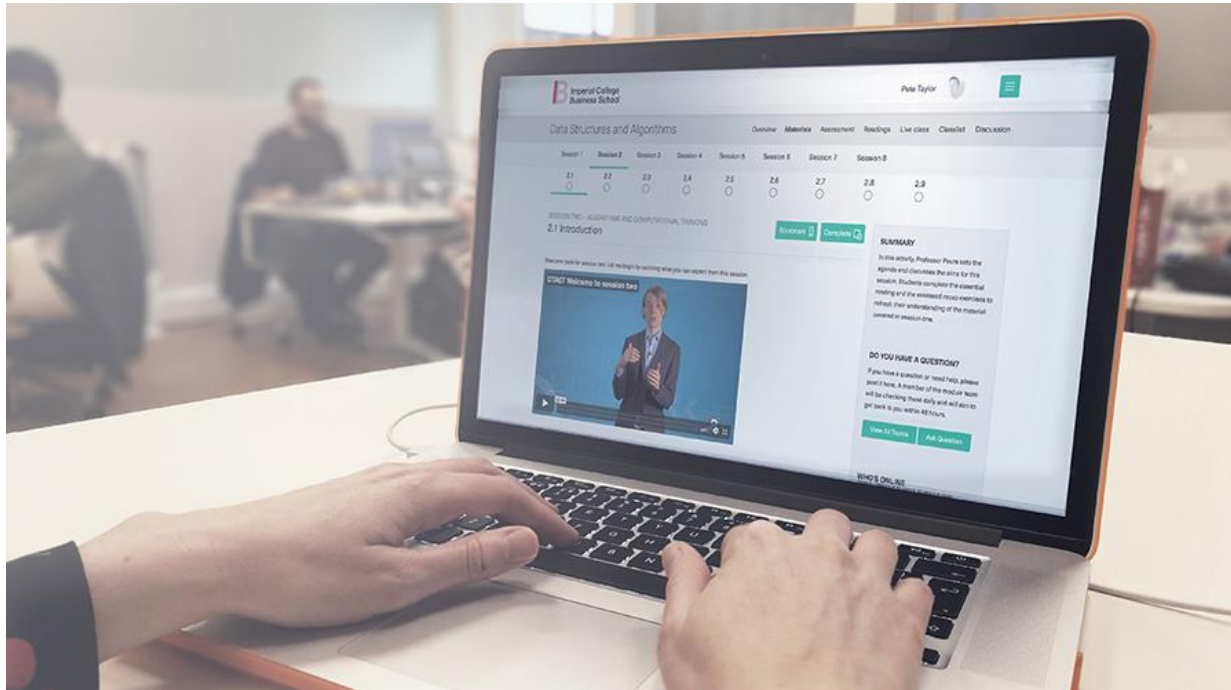
Below the video player is an interactive poll interface. It features a bar chart titled "You should consider from the list below" with a legend: Green for "Yes", Blue for "No", and Light Blue for "Uncertain". The chart shows responses for five categories:

Category	Yes	No	Uncertain
Coal versus nuclear	High	Low	Low
Transport of coal to the power station	Low	High	Low
Transport of electricity from the power station	Low	High	Low
Bangladesh of rising water levels due to global...	Low	High	Low
Future generations of global warming due to...	Low	High	Low

Below the poll are several text input fields with "Stop" buttons:

- Description: What it cost to buy the machines
- What it cost to replace the machines
- Best price if I sold the machines
- Net income from the machines over time
- The cost of producing some particular level of output $C(Q)$

Review in the context of the wider programme objectives.



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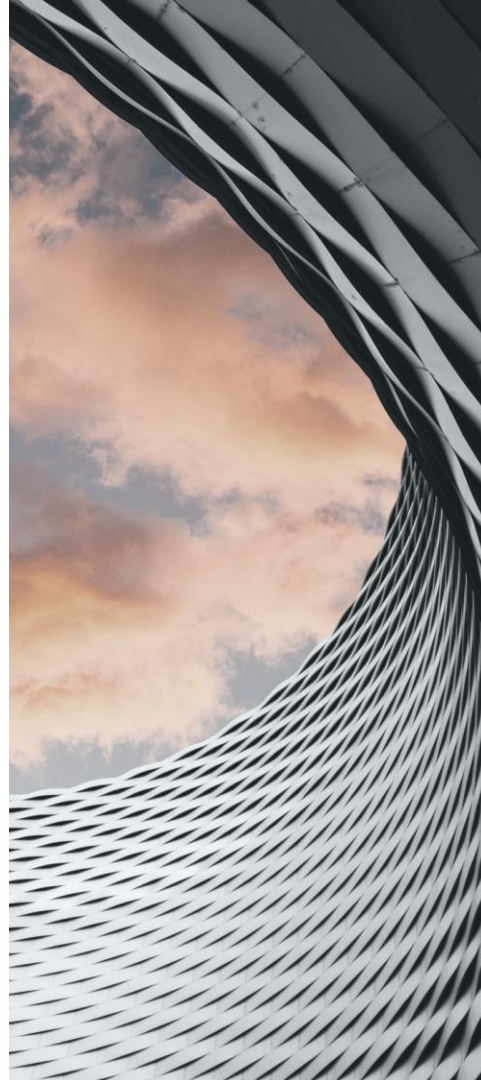
NTU-Imperial Education Seed Fund Project

A Sustainable Future Through Digital Analytics

Dr Esma Koca (Imperial College Business School)

Dr Nai Li, IDEA Lab, (Imperial College Business School)

Dr Siyuan Liu (NTU, Singapore)



Project Overview

Aim

focus on the creation of an interdisciplinary online the UN SDG. This collaborative **action learning experience** offers students the opportunity to work on real-world problems and deliver tangible outcomes that can be shared across institutions.

Participants & Platform

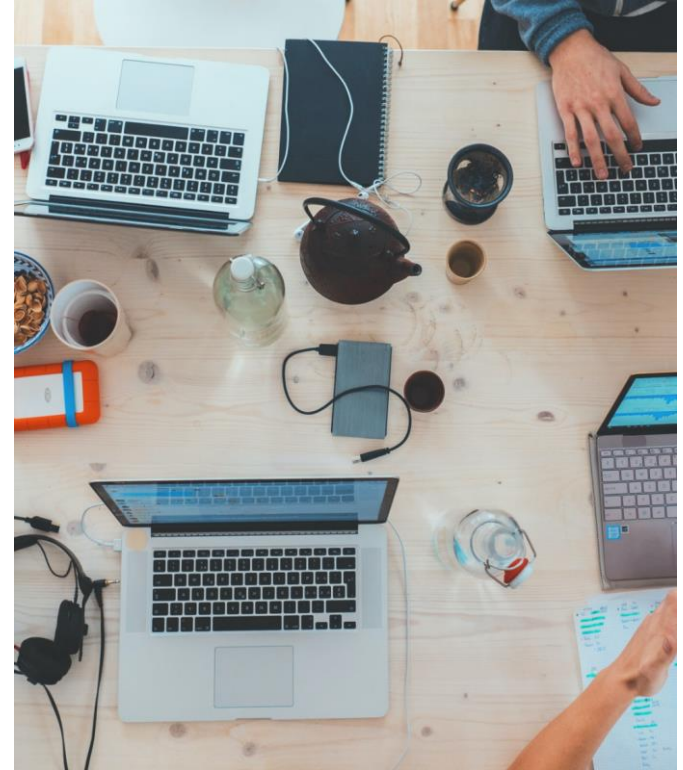
involves **postgraduate** students from **ICBS** and **fourth-year undergraduates** from **NTU's** School of Computer Science and Engineering, forming groups of 4-8 students. **PhD students** from ICBS are assigned as a group mentor, providing guidance and support throughout the project. All modules are created on **insendi**

Evaluation and Impact

sessions judged by a **panel** including ICBS **faculty**, **alumni**, and **industry experts**. Criteria based on creativity, relevance and impact of the sessions.

Future Engagement

winning modules will be made **publicly accessible** to raise global sustainability awareness. Ensure ongoing educational impact by **updating** and **expanding** the modules through **future student's** teams





The Philosophy of Action Learning

"Action learning is an educational process whereby the participants study their own actions and experiences in order to improve performance. This is done in conjunction with others, in small groups called Action Learning sets. It is proposed as particularly suitable for adults, as it enables each person to reflect on and review the action they have taken and the learning points arising."

MIKE HOHNEN

Hands-on Learning & Knowledge Growth

Team Collaboration Supports Students Throughout Project Journey



**Pedagogy & Learning
Design Workshop**



**insendi Platform
Training & Support**



**Editorial Workshop
& Review**

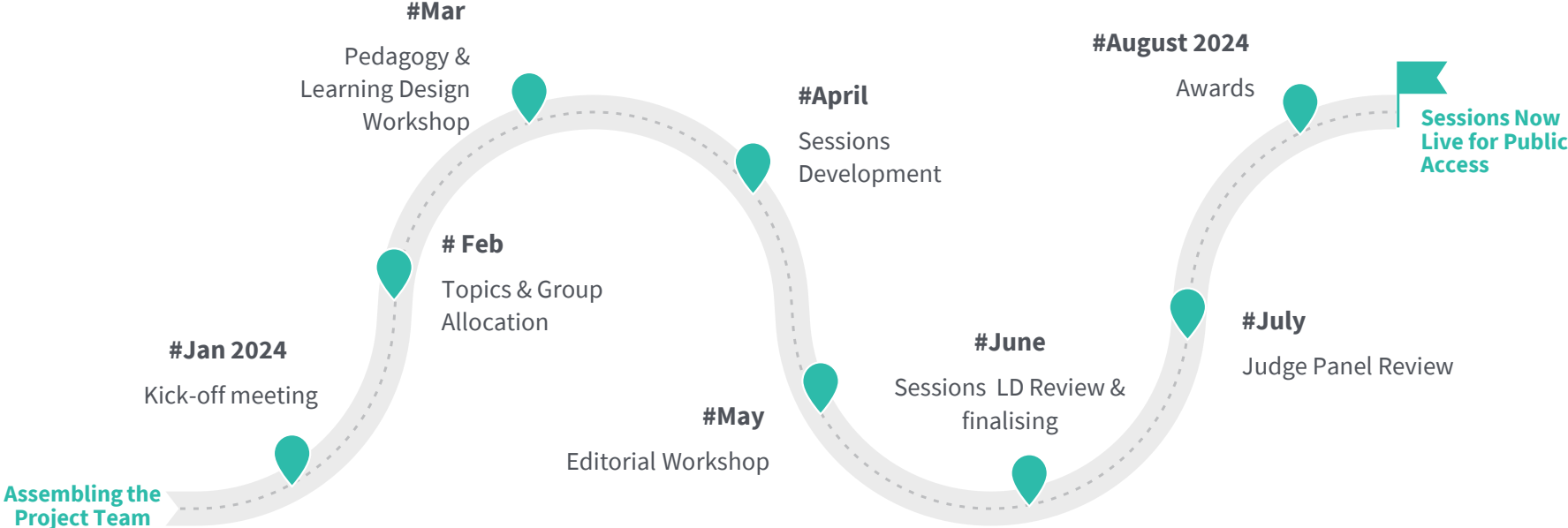


**Academic Mentor
Monthly catch-up**



**Community &
Wellbeing Support**

The Module Development Journey



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Positioning for the Future

We're broadening our horizons beyond digital education and embracing disruptive tech, from AI to virtual reality, as key elements of our expanding domain.



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How could VR work in the Business School?



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How could VR work in the Business School?

Immersive Learning
Environments

Simulation of
Real-World
Scenarios

Data
Visualisation
and Analytics

Interactive
Role-Playing



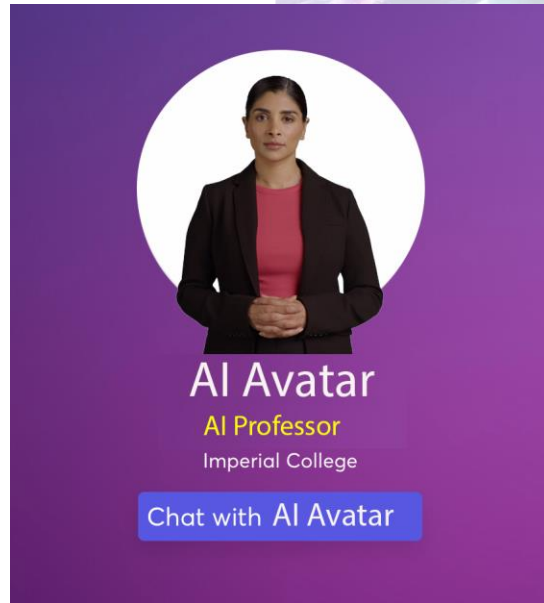
Meet Sam & Sophie



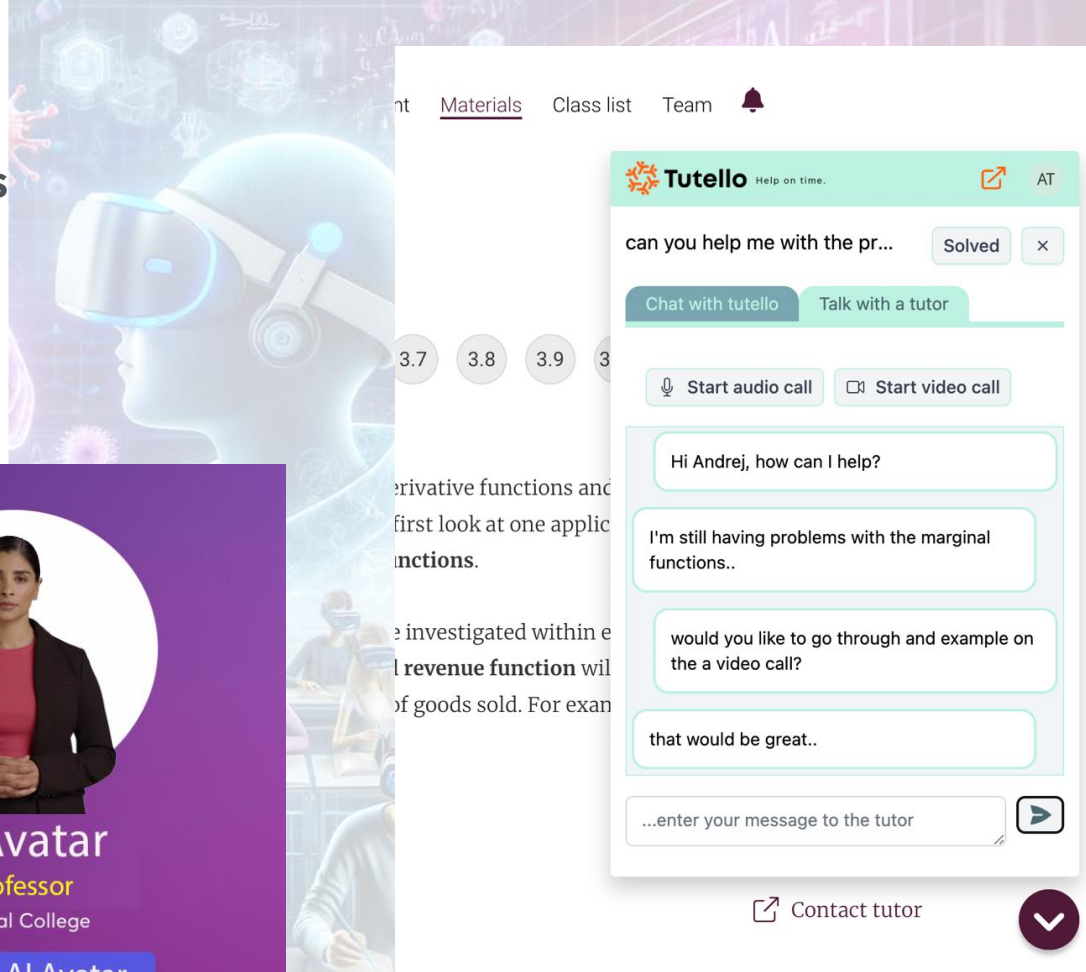
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AI



A purple rectangular card featuring a circular profile picture of a woman with dark hair, wearing a black blazer over a red top. Below the image, the text reads "AI Avatar" in white, "AI Professor" in yellow, and "Imperial College" in white. At the bottom, there is a blue button with white text that says "Chat with AI Avatar".



A screenshot of a web application interface. At the top, there are navigation links: "Materials", "Class list", "Team", and a bell icon. Below this is a chat window for "Tutello" with the tagline "Help on time." and a user icon labeled "AT". The chat history shows a question: "can you help me with the pr..." which has been marked as "Solved". There are two tabs: "Chat with tutello" (active) and "Talk with a tutor". Below the tabs are buttons for "Start audio call" and "Start video call". The chat messages are as follows:
Tutello: "Hi Andrej, how can I help?"
User: "I'm still having problems with the marginal functions.."
Tutello: "would you like to go through and example on the a video call?"
User: "that would be great.."
At the bottom of the chat window is a text input field with the placeholder "...enter your message to the tutor" and a send button. Below the chat window is a "Contact tutor" button with an external link icon and a dropdown arrow.

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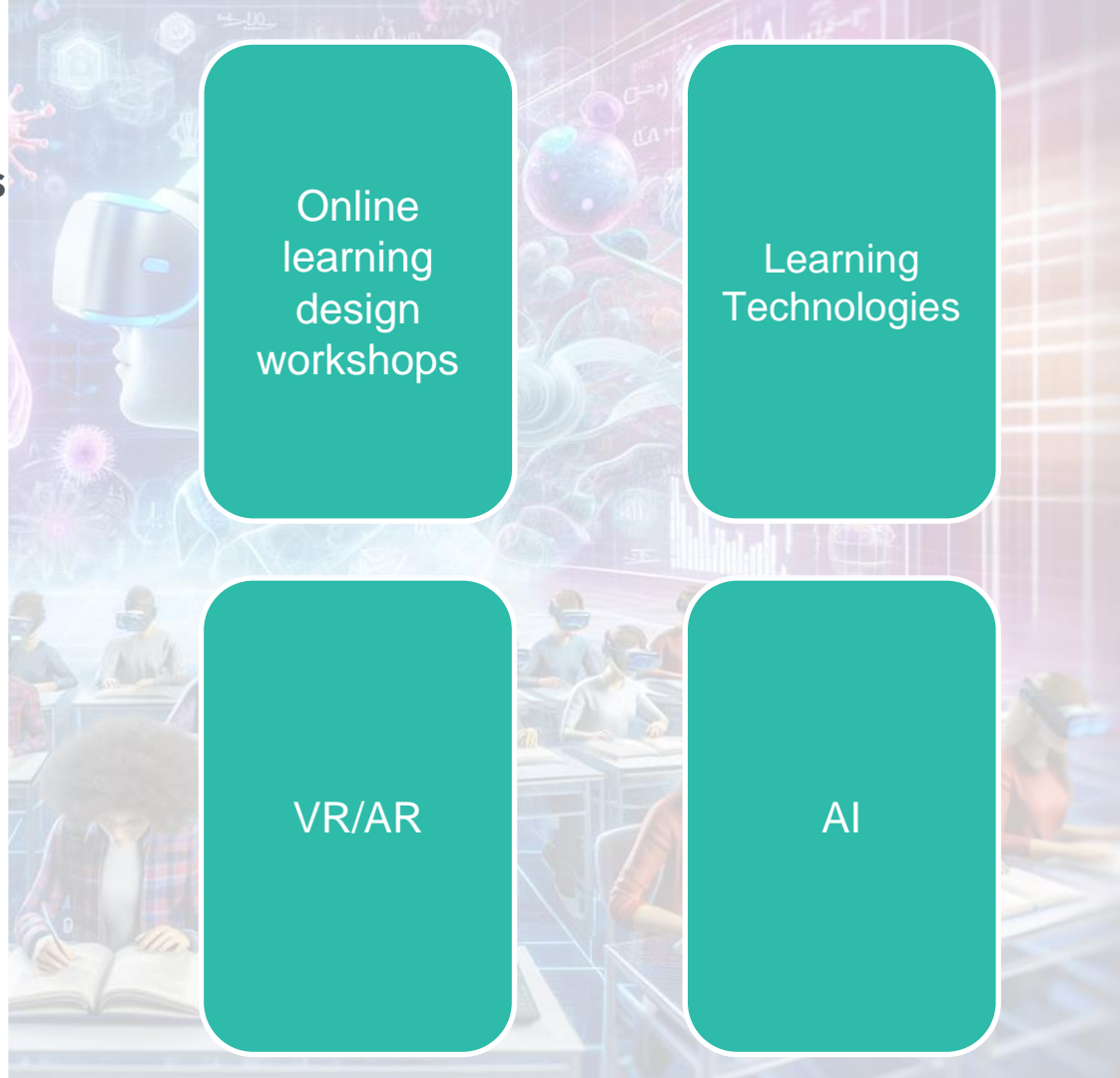
What can we collaborate with you on?

Online learning design workshops

Learning Technologies

VR/AR

AI



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Questions?

