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Welcome to this session:

Skills Bootcamp - Data Science for Social Good (Practical Applications and Implementation)

The session will start shortly...

Questions? Drop them in the chat.
We'll have dedicated moderators answering questions.

Skills Bootcamp Data Science Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. We will be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

Skills Bootcamp Data Science Housekeeping

- For all **non-academic questions**, please submit a query: ***www.hyperiondev.com/support***
- **Report a safeguarding incident: *www.hyperiondev.com/safeguardreporting***
- We would love your feedback on lectures: ***Feedback on Lectures.***
- Find all the lecture **content** in your **Lecture Backpack** on GitHub.
- If you are hearing impaired, kindly use your computer's function through Google chrome to enable captions.

Safeguarding & Welfare

We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Nurhaan Snyman

Rafiq Manan

Ronald Munodawafa

Tevin Pitts

Scan to report a safeguarding concern

or email the Designated Safeguarding Lead:
Ian Wyles
safeguarding@hyperiondev.com

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Skills Bootcamp Progression Overview

✅ Criterion 1 - Initial Requirements

Specific achievements within the first two weeks of the program.

To meet this criterion, students need to, by no later than **01 December 2024 (C11)** or **22 December 2024 (C12):**

- **Guided Learning Hours** (GLH)**:** Attend a minimum of 7-8 GLH per week (lectures, workshops, or mentor calls) for a total minimum of **15 GLH**.
- **Task Completion:** Successfully complete the **first 4 of the assigned tasks**.

✅ Criterion 2 - Mid-Course Progress

Progress through the successful completion of tasks within the first half of the program.

To meet this criterion, students should, by no later than **12 January 2025 (C11)** or **02 February 2025 (C12):**

- **Guided Learning Hours** (GLH)**:** Complete at least **60 GLH**.
- **Task Completion :** Successfully complete the **first 13 of the assigned tasks**.

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Skills Bootcamp Progression Overview

✅ Criterion 3 – End-Course Progress

Showcasing students' progress nearing the completion of the course.

To meet this criterion, students should:

- **Guided Learning Hours** (GLH)**:** Complete the **total minimum required GLH,** by the **support end date.**
- **Task Completion : Complete all mandatory tasks**, including any necessary resubmissions, by the end of the bootcamp, **09 March 2025 (C11)** or **30 March 2025 (C12).**

✅ Criterion 4 - Employability

Demonstrating progress to find employment.

To meet this criterion, students should:

- **Record an Interview Invite:** Students are required to record proof of invitation to an interview by **30 March 2025 (C11)** or **04 May 2025 (C12)**.
  - **South Holland Students** are required to proof and interview by **17 March 2025.**
- **Record a Final Job Outcome :** Within 12 weeks post-graduation, students are required to record a job outcome.

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Learning Outcomes

- Apply data collection and analysis techniques to assess and visualize disaster-related data.
- Use machine learning models to predict disaster-prone areas and improve response planning.
- Recognize the impact of data-driven decisions on marginalized and vulnerable communities.
- Advocate for ethical data usage and responsible AI implementation in social good projects.
- Cultivate a problem-solving mindset, using data science to address global and local challenges effectively.

Lecture Overview

- Data Science for Social Good
- Build project

What is the primary way data science contributes to social good?

A. Improving stock market predictions
B. Enhancing disaster response and crisis management
C. Increasing online advertising efficiency
D. Developing video game AI

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Which of the following is NOT a key ethical consideration in data science for social good?

A. Data privacy
B. Bias in algorithms
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What type of data is most useful for predicting the impact of natural disasters?

A. Number of social media users in a country
B. Historical climate patterns and population density
C. Celebrity endorsements of charities
D. Average internet speed in disaster-prone areas

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Project: Analysing and Visualising Disaster Relief Needs Using Open Data

- Goal: Build a data-driven web dashboard that identifies areas most in need of disaster relief (e.g., food, medical aid, shelters) based on real-time disaster reports and open datasets.

Project Breakdown

- Problem Statement
  - Disasters (floods, earthquakes, wildfires) cause displacement and resource shortages. Many organizations struggle to allocate resources effectively. How can data science help?
- Solution Overview
  - Collect real-world disaster and relief data from open sources.
  - Analyze the data to identify trends, high-risk areas, and relief needs.
  - Visualize insights in an interactive dashboard.
  - Ensure ethical considerations like avoiding biased datasets.

Let’s Code

Let’s Breathe!

Let’s take a small break before moving on to the next topic.

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In the disaster relief dataset, which factor had the strongest correlation with the amount of aid received?

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B. GDP per capita
C. Number of past disasters in the region
D. Distance from the equator

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A. It guarantees 100% accuracy in forecasts
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C. It identifies hidden patterns in data for better decision-making
D. It only works for predicting earthquakes

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In our project, what was the purpose of using sentiment analysis on disaster-related tweets?

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What was the main ethical concern when training the AI chatbot for disaster response?

A. Ensuring it generates profit for disaster relief organizations
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C. Making sure it only responds to earthquake-related queries
D. Preventing it from giving advice in multiple languages

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What visualization technique was used to display disaster-prone regions in our project?

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B. 3D globe with disaster intensity markers
C. Line graphs of historical disaster trends
D. Pie charts of disaster response funding

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Summary

- ★ Data science has the power to **drive social change** when used **responsibly**.
- ★ **Challenges like bias, privacy, and scalability** must be carefully managed.
- ★ **Ethical considerations** should always be at the core of social good applications.

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Q & A SECTION

Please use this time to ask any questions relating to the topic, should you have any.

Thank you for attending

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SKILLS FOR LIFE
SKILLS BOOTCAMPS

Department for Education