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Welcome to this session:

Skills Bootcamp - Q&A Session

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**

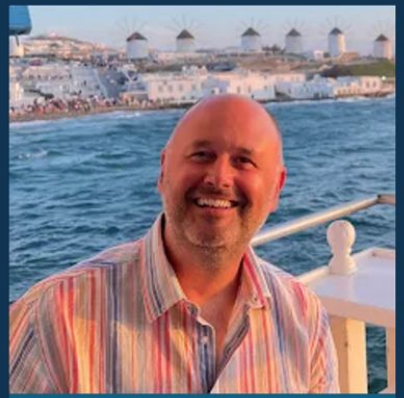
Skills Bootcamp Data Science Housekeeping

- 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

- **Define stochastic processes** and **explain their role** in data science and simulations.
- **Identify different types** of stochastic processes (Markov chains, Poisson processes, Brownian motion).
- **Understand Monte Carlo simulations** and their applications in real-world problems.
- **Analyse case studies** where stochastic processes are applied in fields such as finance, epidemiology, and physics.
- **Implement basic simulations** in Python using NumPy and SciPy.

Is there a specific topic from this week that you'd like to review or gain more clarity on?

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What is the key characteristic of a stochastic process?

A. It evolves in a completely deterministic way
B. It contains some level of randomness or uncertainty
C. It is always time-invariant
D. It cannot be used for real-world applications

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Which of the following is NOT an example of a stochastic process?

A. Brownian motion of stock prices
B. The rolling of a fair die multiple times
C. The movement of planets around the sun
D. Customer arrivals at a bank modelled using a Poisson process

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A. The future state depends only on the present state and not on past states
B. The future state is dependent on all past states
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Which of the following statements about stationarity in stochastic processes is true?

A. A stationary process has statistical properties that change over time

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C. Stationarity is required for all stochastic processes to be valid

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Brownian motion is widely used in finance because:

A. It describes how stock prices move randomly over time
B. It ensures that stock prices always increase
C. It eliminates the uncertainty in market behaviour
D. It is only applicable to physical sciences

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In a stochastic gradient descent (SGD) optimization process, what does the “stochastic” aspect refer to?

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Let’s Breathe!

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

Which real-world application of stochastic processes uses Poisson distributions to model system failures?

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B. Modelling server requests in cloud computing
C. Detecting anomalies in manufacturing quality control
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Any more questions on Simulations and Stochastic Processes?

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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