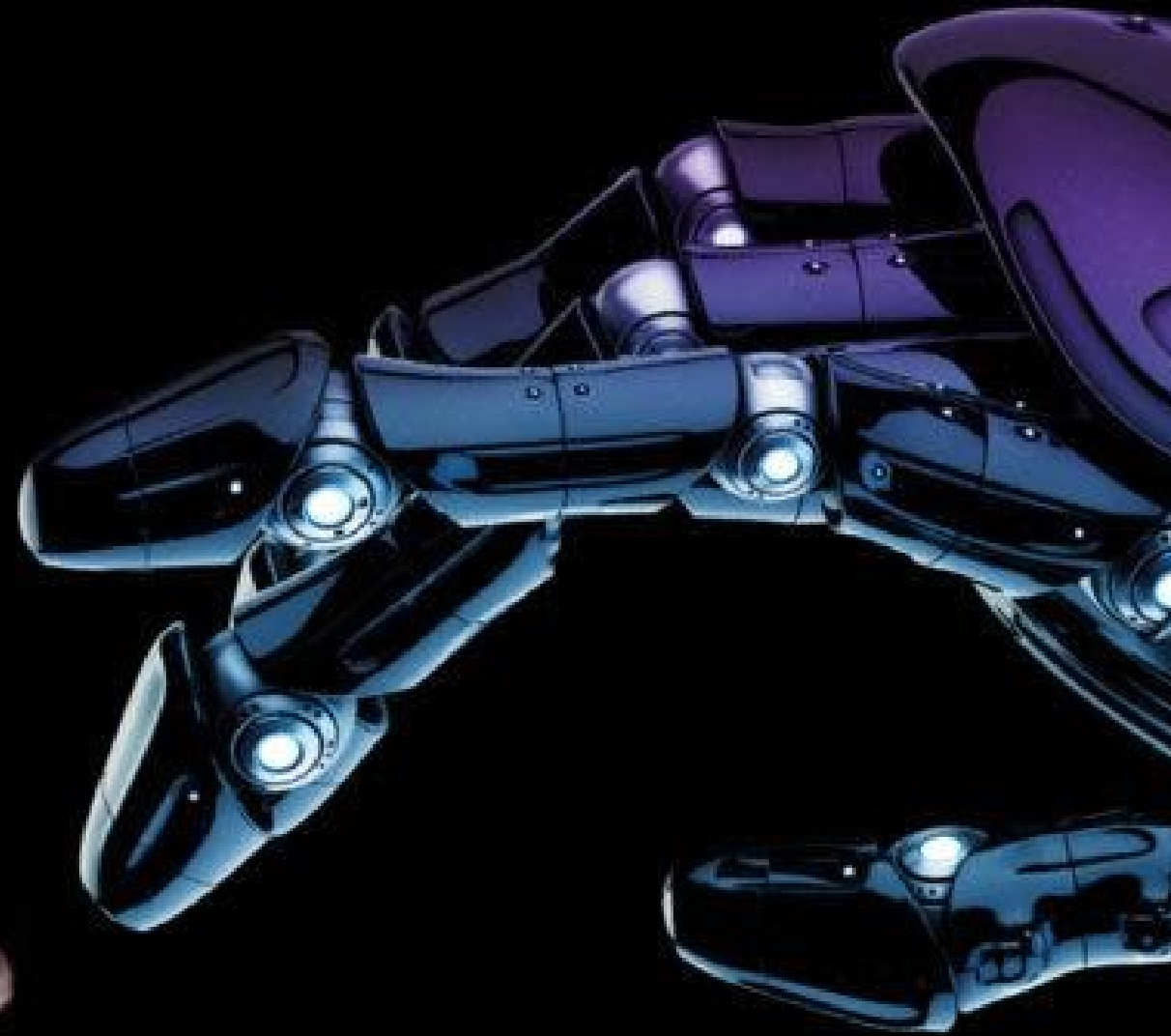# Securing Your University Offer for Computer and Data Science

Essay Competition Award Ceremony
Digital Technologies & Digital Futures
Competition Award Ceremony

11 April 2023

Northeastern University
**London**

# Agenda

- Welcome

- Studying Computer Science and Data Science at University: an Overview

- Submitting a Competitive Application

- NU London Insights

- Q&A

# Studying Computer Science and Data Science at University:
# An Overview

# What is the study of Computer Science?



- Computers and the programmes they run are among the most complex products ever created and permeate all aspects of our live; designing and using them presents immense challenges
- Computer science degrees deal with the theoretical foundations of information and computation (any type of calculation or use of computing technology that follows well-defined models), taking a scientific and practical approach
- Students will learn how to represent, store, communicate, manipulate, understand and use information
- Courses may include practical skills, such as programming in various languages (e.g.: Java, C/C++, Prolog) and hardware systems (e.g.: chip design), as well as computing theory such as data structures and algorithms, machine learning, operating systems and databases, computational modelling, computer simulation, computer structures and logic

# What is the study of Data Science?

- Data science is an exciting, emerging discipline that has a profound impact on society. The world produces increasing volumes of data every day, and making sense of this data has the potential to be transformative
- Data science combines mathematical, statistical and computational approaches to analyse and gain practical insights from the data produced by modern societies
- Courses may include coding; computing skills; algorithmic reasoning; statistics; machine learning; and AI and data ethics
- Courses may offer exciting opportunities to learn about and develop an understanding of different programming languages such as Python, JavaScript and Scala

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# Where and how can you study Computer and Data Science?

- Single honours BSc Computer Science or Data Science
- Many joint and combined honours options, e.g.: Computer Science and Data Science; Computer Science and Software Engineering; Data Science with Artificial Intelligence (*note that the study balance is likely to be other than 50/50 if it's Computer or Data Science *with* rather than *and*)
- Qualifications range from BSc, BEng, through to HND, HNC, and Foundation Certificates
- A number of universities offer four-year undergraduate or integrated Masters degrees (MSci) in Computer/Data Science
- Degree apprenticeships take a more practical approach (potentially useful to fast track toward particular careers)
- Full-time/part-time; online/in-person; flexible study options, as well as courses with industry placement (sandwich courses)

# How are Computer and Data Science taught?

- **Lectures:** Lecturers will discuss different programming techniques and help you develop an understanding of the fundamentals of computer and data science and analysis

- **Seminars:** Seminars allow for a more in-depth discussion of a topic and a chance to ask any questions to your lecturer/seminar supervisor. It's probably even more important that you are well prepared for the seminar as you will need to participate

- **Labs:** Interactive, hands-on practical learning experiences

- **Practical projects**: Experiential learning - these may take the form of group projects, working to a brief, and may have external employer sponsorship

- **Essays:** Formative (helping you to hone your ideas) and summative (assessed), to test your understanding of a subject

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# What skills do you develop?

- Specialist knowledge of computer science and data science theories, methods, practices and strategy
- Understanding of a range of computer-based systems
- Understanding of a range of programming languages
- Awareness of and ability to cope with and adapt to rapid technological changes
- Excellent mathematics/numeracy skills
- Ability to understand complex numerical data
- Statistical analysis and algorithmic reasoning
- Critical thinking, research and analytical writing skills
- Planning and time management skills

The skills you will acquire as a Computer or Data Science graduate will allow you to pivot flexibly into a variety of industries, when you enter the working world.

# What can you do after your degree?

As a Computer Science or Data Science graduate your transferable skills can take you into ANY industry. Some of the top graduate destinations are**:**

- IT

- Wholesale and retail trade

- Manufacturing

- Professional, scientific, and technical industries

- Education

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# Submitting a Competitive Application for Computer or Data Science

# What are the entry requirements?

- **A levels**: Usually need minimum two A levels, with three A levels and A-B grades required for the most popular courses

- Entry requirements range from CDD to AAA - typical offer BBC

- May require Maths GCSE

- **International Baccalaureate Diploma:** From 30-39 points overall in the IB Diploma

- **Scottish Highers:** From BBBB to AAAAB (most frequently required AAABB)

- If Advanced Highers are requested, universities or colleges typically ask for BBB

- **UCAS Tariff:** 130-64

- **Access to HE Diploma:** 60-30 overall credits

- **Cambridge Pre-U:** M3-D2

# What are admissions tutors looking for?

- Enthusiasm and motivation to study Computer or Data Science
- Credible evidence that supports your subject passion
- Proactive subject exploration and engagement
- Relevant extra-curricular/super-curricular activities
- Interests outside of school, relating to Computer or Data Science
- Relevant and transferable work experience
- Aims and goals; career plans if known
- Understanding of the demands of studying at university, and how this is different from school

# What super-curricular activities would support my application?

Super-curricular activities take the subjects you study further, beyond what you have learnt at school. Some examples for Computer or Data Science may include:

- Wider reading beyond the set texts
- Reading specialist magazines and journals
- Designing and building web pages or a website
- Learning to code
- Work experience, internships and bootcamps
- Attending university taster lectures or taster days
- Listening to podcasts, TED talks or online lectures
- Attending a Computer/Data Science Summer School
- Taking an online Computer/Data Science course
- Taking part in university competitions!

# Why is the personal statement so important?

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- Often your only chance to 'sell yourself' to the university and impress the admissions tutor

- Helps to differentiate between equally excellent candidates with similar or identical grade profiles, especially for competitive courses

- Helps if you are a borderline candidate

- Demonstrates your reasons for applying for a course

- May form basis of an interview - tutors may ask questions arising from the statement

- May help if on results day you don't quite make your grades

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# How can I write a compelling personal statement?

- Invest plenty of time in the brainstorming/thinking stage, before starting to write your statement
- Structure your personal statement
- Use positive and enthusiastic language
- Make every sentence count - word count is tight!
- Ensure it reflects your 'voice', and your 'journey'
- Use evidence to support claims/statements
- Be prepared to draft and redraft
- Be honest - don't exaggerate and don't plagiarise
- Double check grammar and spelling for errors
- Ask for support, especially with proofreading and checking - it's easy for mistakes to slip through!
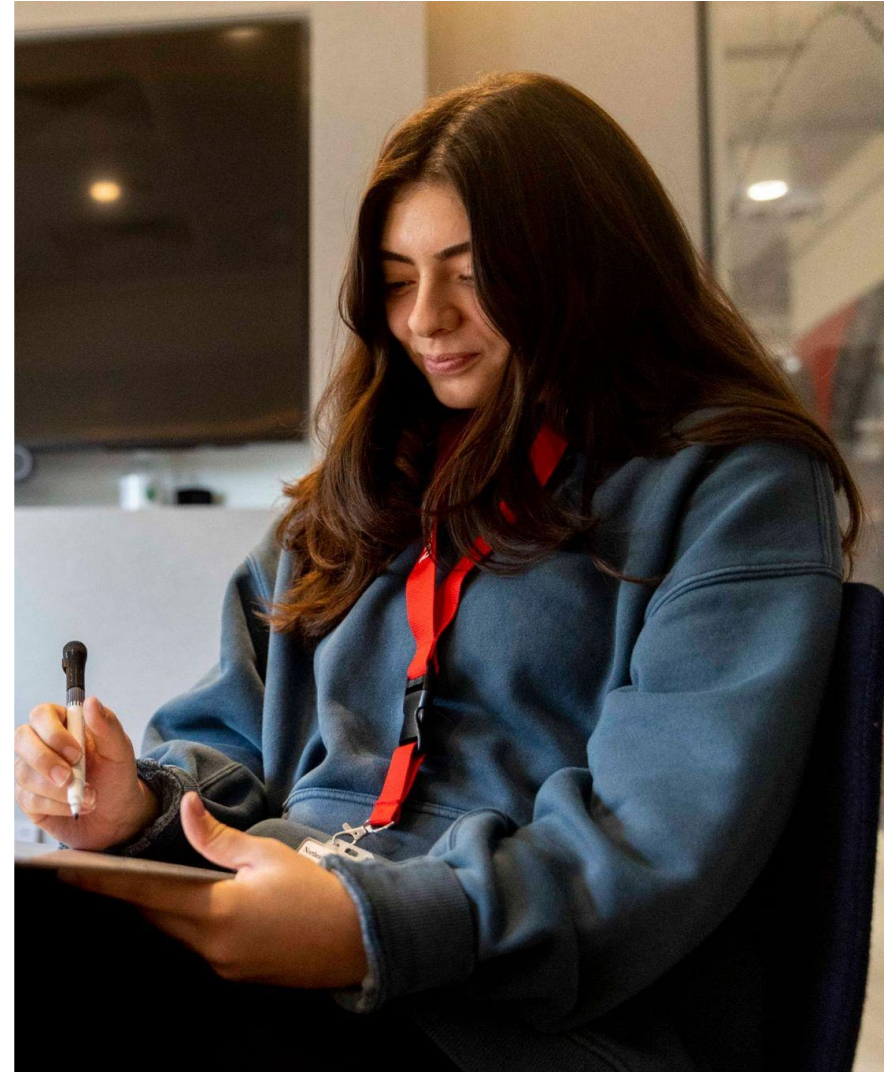
# What might an admissions interview look like?

- Unique opportunity to discuss a subject you are passionate about with an academic tutor
- Opportunity for tutor to get to know you and your motivation for applying - you can also ask questions!
- May take the form of a 'taster' tutorial
- Unlikely to be a test of knowledge - tutor will be more interested in how you think, rather than what you know
- Discussion-based; questions will probe your subject interest, enthusiasm and aptitude
- Questions may build on your personal statement
- Questions will be challenging - don't panic if you don't immediately have an answer; take your time to think
- Some interviews may include a task, or pre-reading

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# How can I prepare for my admissions interview?



- Carefully reread your personal statement, and be prepared to expand upon any of the points you have included
- Re-read or re-familiarise yourself with any texts you referenced, so these are fresh in your mind
- Undertake any reading or pre-interview tasks in good time
- Practice talking about the points in your statement
- Research who will be interviewing you
- Make sure you are clear regarding interview logistics
- If you will be undertaking a virtual interview, make sure you have somewhere suitable for this task, with good wifi
- Prepare questions you would like to ask in the interview

# NU London Insights

# Faculty insights

- Participate in online Data Science challenges. These allow you to work with real-world datasets and compete against other data scientists from around the world

- Get involved in the The British Informatics Olympiad - a national computing competition for schools

- Join a local Meetup group or online forum devoted to Computer and Data Science. These groups typically have members who are happy to help answer questions and share resources

- You can add to your knowledge by taking free coding classes in SQL, Python and Tableau. Those will be some of the basic skills you'll need to be able to interpret data and chart and present it. Check out the practical exercises on the Code Academy, as well as the Anaconda Data Science toolkit and Stack Overflow, a recommended forum to help solve problems with Python

- There are free games online that you can play that help you learn programming languages, such as TwilioQuest, SQL Murder Mystery, or CodinGame

- Check out the Women in Data Science podcast (Stanford University)

# Student tips and hints

- Computer and Data Science students come from a broad range of academic backgrounds, so don't worry if you don't know everything about the subject, or haven't formally studied it before!
- Get experience working with data. This can be done through internships, webinars, online courses, and bootcamps
- Listen to podcasts like The Data Scientist Show and University of Oxford Computer Science
- Check out the science news and science articles on
- Learn some coding! freecoursesinengland.co.uk
- Take one of the Open University's many free online courses

# Suggestions for wider reading

- Bruce, A and Bruce P (2017) *Practical Statistics for Data Scientists*. California: O'Reilly Media

- Dewdney, AK (2003) *The New Turing Omnibus: 66 Excursions in Computer Science*. London: Palgrave Macmillan

- Reitz, K and Schlusser, T (2016) *The Hitchhiker's Guide to Python! Best Practices for Development*. California: O'Reilly Media

- Singh, S (2002) *The Code Book: The Secret History of Codes and Codebreaking*. London: Fourth Estate

- Stevens, P (2020) *How to Write Good Programs: A Guide for Students*. Cambridge: Cambridge University Press

- Wheelan, C (2014) *Naked Statistics*. New York: W. W. Norton & Company

Q&A