Dr. Duncan Hull

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About

Hello, my name is Duncan. I'm a lecturer in the Department of Computer Science at the University of Manchester where I lead the Industrial Experience (IE) program. This elective course has over 100 students every year working for 12 months in industry in the penultimate year of their degree.

I teach undergraduate courses, supervise tutorials, final year projects and masters projects. I serve as second year tutor, employability tutor, while also serving on the mitigating circumstances committee and the exam board. I'm interested in methods for delivering high quality learning and student experience by using innovative techniques like vertical tutoring, industrial mentoring, live music, live coding and editing Wikipedia.

If you are an employer who would like to recruit a summer intern, placement student or graduate please get in touch. During term time, we highlight opportunities for students in the Wednesday Waggle.

Background

My background is a mixture of Natural Sciences (Plant Sciences, BSc), Computer Science (MSc & PhD) and software engineering. I've worked as a consultant and software developer for various organisations including BBC Monitoring, the Ford Motor Company and the National Health Service (NHS).

While working on Apache Taverna, myGrid and the Refine project I completed a PhD at the University of Manchester and postdoc at the Manchester Institute of Biotechnology (MIB). More recently, I was employed as a software engineer of a biochemical database (Chemical Entities of Biological Interest: ChEBI) in Cambridge, UK at the European Bioinformatics Institute (ebi.ac.uk).

I have taught english, maths, science and engineering at a range of levels from from primary through to postgraduate. In 2011, I completed a PGCE at the University of Bath and trained at co-educational non-selective state-funded schools in Swindon, Shaftesbury and Stockport. I enjoy the challenges of teaching and have taught primary & secondary school children (K–12), undergraduates & postgraduates in the UK, India and America.

Tools

This website is written in R markdown and built using bookdown, gitbook, JabRef, JavaScript, knitr, LaTeX, Pandoc, RStudio and Visual Studio Code. Thanks to Yihui Xie for the excellent tools and documentation. The source is available on github, but you'll be better off reading Authoring Books and Technical Documents with R Markdown. If you're reading this on an iPhone or iPad, there is known bug with the menu bar at the top of this page which means it might not display properly. I could have (should have?) used blogdown and Hugo, but opted for bookdown because it is much ~~less bloated~~ easier to use.

Chapter 1

Students

I teach, mentor, tutor, lecture on and supervise a variety of undergraduate and postgraduate courses. You can find me in the labs, my office and the lecture theatre.

\begin{figure}

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\caption{Question everything, or *Nullius in verba* as the say at the Royal Society} \end{figure}

1.1   All years: debug your CV

- You can drop-in to my weekly one-to-one CV clinics for Computer Science students in LF25 during term-time.
- If you haven't written a CV (two pages), résumé (one page) or LinkedIn profile before, you might find the *Debug your CV* guide useful at git.io/mycv.
- Get feedback on your CV from as many people as possible, because "given enough eyeballs, all bugs are shallow"
- Outside of term time, it's best to book an appointment

1.2   First year

- Teaching on First year team projects: COMP101 led by Ulrike Sattler
- Mentoring one group of six first year students
- Organising first year guest lectures, which mostly run in the second semester, February to May

1.3   Second year

- Teaching on Second year software engineering: COMP23311 led by Suzanne Embury
- Organising the labs for the software engineering mentoring program
- Leading second year tutorials COMP2CARS which focus on wellbeing and working out your next steps.

1.4   Penultimate year

- Leading the course for "with industrial experience" (IE), an elective and intercalated year in industry.
- Visiting students on placement

1.5   Final year

- Supervising final year educational projects based in secondary schools in Manchester, see git.io/computinged.

1.6   Masters

- Supervising Master of Science projects in Computer Science and Data Science. This usually involves research using Wikipedia, Wikdata and chatbots.

1.7   Extra-curricular

- Organising, facilitating and promoting extra-curricular activities, usually off-timetable (for example Wednesday afternoons, evenings and weekends). I'm proud to have served as a judge of the fantastic studenthack.com and greatunihack.com since 2014. These hackathons are organised by UniCS, a student-led tech society formerly known as Hack-Soc and CSSoc.

Chapter 2

Employers

We work with a wide range of employers from the smallest bedroom startup
to the worlds largest multi-national corporations, and are always looking
for more organisations that can offer our students a stimulating working
environment. According to highfliers.co.uk, the University of Manchester is
the most targeted University in the UK by the Times Top 100 Graduate
Employers. We can still do better, for example by engaging with a more
diverse group of employers, especially those in Manchester and the
Northern Powerhouse (see git.io/manc).

2.1   Recruiting students

If you are recruiting computer scientists and software engineers as a summer interns, placement students or as graduates please get in touch with me or Mabel Yau (careers and placements officer). We typically have around 250 undergraduate students graduating annually, alongside a smaller number of Masters and PhD students.

If you are looking to recruit students from related degree disciplines like Physics, Maths, Chemistry, MACE, Materials and EEE you should talk to the Careers Service centrally at careers.manchester.ac.uk

2.2   Careers fairs

Our annual Computer Science careers fair is held in the Kilburn building in autumn, we typically have around 30 employers exhibiting over two days. As space is limited, we are always over-subscribed and are not able to accommodate every employer that are students will be interested in.

If you aren't able to exhibit at our careers fair, we also run drop-in sessions where employers can come in and set up a stand in the foyer to talk to students informally on their way to and from lectures. These usually happen during lunch in term time. If you're interested in exhibiting at either of these events, please contact the careers and placements officer Mabel Yau.

The central careers service also organises:

- the big careers fair in Manchester Central every autumn, see the Big Careers Fair
- a smaller careers fair in Fallowfield Armitage centre in May
- hundreds of other employer events on campus during term time

2.3   Industry Club

All employers are welcome to join our industry club mailing list by sending an email to listserv@listserv.manchester.ac.uk with the the text **subscribe cs-industryclub yourfirstname yoursecondname** in the body of the email message. The industry club is part of our wider business engagement activities.

The mailing list is low-traffic, typically two to three updates per year and an invitation to our annual industry club meeting. We promise not to spam you or sell your email details on to third parties.

2.4   The Wednesday Waggle

During term time, we highlight events and vacancies for Computer Science students from a wide range of sources in the Wednesday Waggle. If you have vacancies or events you would like our students to know about, get in touch with us or contact the careers service.

2.5   Buzzing!

At peak times, we can get **very busy** with many concurrent employer events on campus. Please be patient and persistent if we do not reply

Table 5.8 Universities Targeted by the Largest Number of Top Employers in 2018-2019			
	Ranking in 'Good University Guide' *		Ranking in 'Good University Guide' *
1. Manchester	20	14. Exeter	12
2. Bristol	19	15. Edinburgh	28
3. Birmingham	14	16. York	22
4. Warwick	10	17. London School of Economics	9
5. London University College	8	18. Newcastle	21
6. Cambridge	1	19. Southampton	18
7. Nottingham	16	20. London King's College	35
8. Durham	7	21. Loughborough	5
9. Leeds	11	22. Glasgow	17
10. Oxford	2	23. Cardiff	32
11. London Imperial College	4	24. Liverpool	31
12. Sheffield	25	25. Leicester	38
13. Bath	13		
Source - The Graduate Market in 2019			* The Times & Sunday Times Good University Guide 2019

Figure 2.1: According to [highfliers.co.uk](https://www.highfliers.co.uk), the University of Manchester is the most targeted University in the UK by the [Times Top 100 Graduate Employers](https://www.top100graduateemployers.com)

immediately. Unfortunately, we are not always able to respond to everyone because our students, staff and space are all finite resources. We give priority to employers that have already given their time and expertise to our community.

Chapter 3

Research

My research interests are in Computer Science Education (CSE) and pedagogy. I'm interested in methods for delivering high quality learning and student experience using innovative techniques like vertical tutoring, industrial mentoring, live music, live coding and Wikipedia editing.

\begin{figure}

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\caption{Too many educational practices are not backed up by good evidence that they actually work. More evidence is needed to support many of the claims made about effective pedagogy. *Wikipedian Protester* cartoon by Randall Munroe at xkcd.com/285 Creative Commons Attribution-NonCommercial 2.5 License} \end{figure}

3.1   SIGCSE

Computer Science has only been taught to undergraduates in the UK for 50 short years, so there's lots of open questions about how to teach both the practical and theoretical aspects of the subject. To that end:

- I'm an active member of the Association for Computing Machinery (ACM) Special Interest Group (SIG) in Computer Science Education (SIGCSE.org).
- As part of that I founded and chair a journal club for educators in Manchester, if you'd like to join us, subscribe to the mailing list by emailing listserv@listserv.manchester.ac.uk with the text **subscribe sigcse-journal-club yourfirstname yoursecondname** in the body of your message
- I'm serving on the program committee for Computing Education & Practice (CEP) conference at Durham University in 2020.

3.2   Industrial mentoring

Since we started the Industrial mentoring scheme for software engineers in 2015, more than 1000 students have been through the mentoring scheme with 250 students taking the course every year. We are very grateful for continued support from our industrial partners in making this happen.

3.3   Vertical tutoring

We are currently piloting a vertical tutoring (VT) scheme, see vertical tutoring for details.

3.4   Code Club

I lead an after school CodeClub as part of a global network of free coding clubs for 9–13 year olds. The aim is to have fun using scratch, python and other interesting technology we can get our hands on including Raspberry Pi, Micro:bits, LEGO® MINDSTORMS®, Oculus Rift, Sonic Pi and CodeBug etc.

3.5   Wikipedia

Wikipedia (and its sister project wikidata.org) are great tools for improving digital skills and communication skills, regardless of your age or level of computer literacy. As an experienced and long serving editor of Wikipedia since 2004, I organise and participate in edit-a-thons which recruit and train new Wikipedia editors. More information at:

- wiki-loves-scientists.org.uk
- en.wikipedia.org/wiki/User:Duncan.Hull

3.6   Informal publications

Informal publications can be found on my sporadically updated blog

- duncan.hull.name/lablog

3.7   Formal publications

Formal peer-reviewed publications can be found on DBLP, ORCID and Google Scholar...

- dblp.org/pid/h/DuncanHull
- orcid.org/0000-0003-2387-503X
- scholar.google.com/citations?user=iDJ-t7IAAAAJ

...and even wikidata:

- wikidata.org/wiki/Q47012855

Chapter 4

Vertical tutoring

We are currently piloting a vertical tutoring (VT) system for undergraduate students. VT is already widespread in secondary education (see verticaltutoring.org), but as far as we know has not been used in higher education.

Extending the idea of Peer Assisted Study Sessions (PASS) pass.manchester.ac.uk, vertical tutoring creates tutorial groups with a representative from *one of each* year of undergraduate study combined with alumni.

4.1   Full stack mentoring

A vertical tutor group will typically contain five members as shown in Figure~**??**. The group meets physically where possible, or virtually via a slack channel which consists of:

1. One first year student
2. One second year student
3. One penultimate year student (out on industrial placement)
4. One final year student (returned from placement or summer internship)
5. One member of our alumni, recent graduate or via network.manchester.ac.uk

Vertical tutor groups meet twice per semester. It is very unlikely that a free timetable slot for all years and alumni can be found during normal office
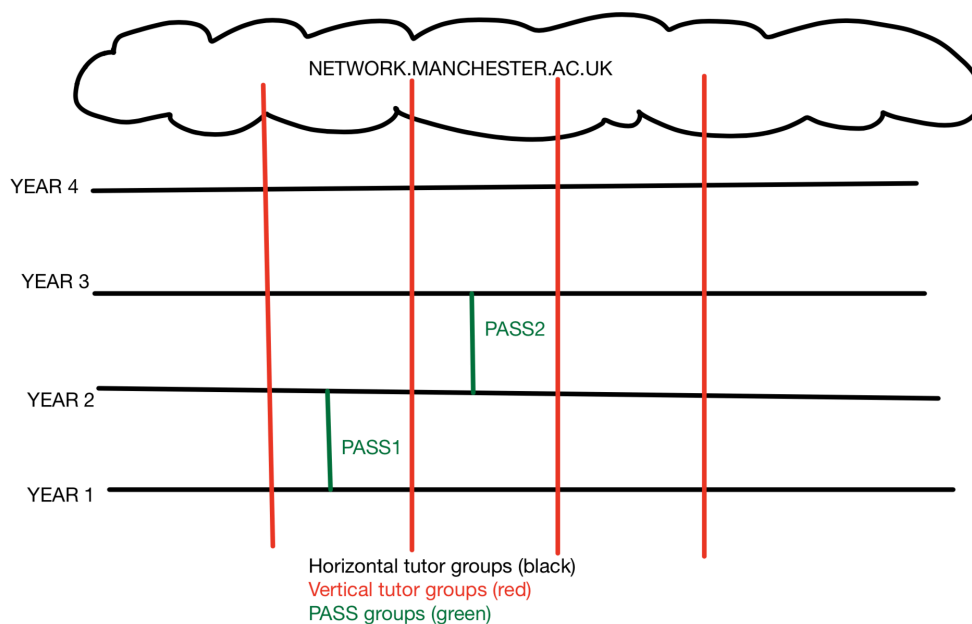
Figure 4.1: Conventional horizontal tutor groups (shown in black) bring together a group of students in the same year. For example, year 1 students meet as a small group once per week during term time with their tutor. Vertical tutor groups (shown in red) are made of of one student from each year and an alumni. Vertical tutor groups extend the idea of PASS, to full stack mentoring, crossing all levels

hours, because of the complexities of timetabling. So evenings will be likely to work best. Where possible, tutor groups will meet face to face, with remote members (e.g. placement students and alumni) typically joining virtually by slack or similar.

4.2 What is it good for?

Vertical tutoring is an attractive idea but does it actually work? If so, how? What is it useful for? We would like to find out:

1. If there is any appetite for vertical tutoring amongst students and alumni
2. How it could work e.g. with slack.com or discord etc?
3. How many times can/should vertical tutor groups meet? Twice per semester? More frequently? Less frequently?
4. What are suitable topics for discussion in a vertical tutorial? Careers, wellbeing, networking etc
5. What kind of specialist groups could be useful e.g. all female groups, research focussed tutorial groups (with MSc & PhD students), ordinary "vanilla" groups etc

As this is an experiment, students have been selected on a voluntary basis. If you're a student or former student and would like to get involved, let me know.

4.3 How long will all this take?

We ask that tutees commit to:

- two one hour sessions per semester
- some setup and administration, slack channels, scheduling suitable times and dates with your group
- Two hours of time for feedback and review after each semester, by email survey

Chapter 5

Contact

You can contact us using the the details below

5.1   Office

From the Byte cafe, our office can be found in the Kilburn building, past the Student Support Office (SSO), through the double doors, down the ramp.

Dr. Duncan Hull, Lecturer

- Room LF25, Kilburn Building:
- email: duncan.hull ATE manchester.ac.uk
- telephone: +44 161 275 6186
- linkedin.com/in/duncanhull

Mabel Yau, Careers and placements officer

- Room LF26, Kilburn Building:
- email: mabel.yau ATE manchester.ac.uk
- telephone: +44 161 275 6140
- linkedin.com/in/mabel-yau

5.2   Elsewhere

You can get in touch via t'internet at:

- Slack: search for "Duncan Hull" or my work email
- Skype: search for "duncanhull"
- Blog: duncan.hull.name
- Github: github.com/dullhunk
- Twitter: twitter.com/dullhunk

5.3   Postal address

Send post   to :

Dr. Duncan Hull, Lecturer
Department of Computer Science, Kilburn Building
The University of Manchester
Oxford Road
Manchester, M13 9PL

5.4   Kilburn building directions

From the train stations, it takes about 20 minutes to walk from Manchester Piccadilly (MAN) and ten minutes from Manchester Oxford Road (MCO). Our official postcode (M13 9PL) takes you to University Place next door, so you're better of using the what3words locations below which are more accurate:

- Google map of the Kilburn building bit.ly/directions-to-kilburn-building
- There are two ground floor entrances to the Kilburn building, North and South

  - North entrance: what3words.com/port.museum.rips
  - South entrance: what3words.com/common.wiping.email

- There is no formal reception so the best place to meet is bit.ly/ByteCafe on the first floor
- See also cs.manchester.ac.uk/about/maps-and-travel/

5.5   Nearest car parks

If you are driving, the nearest car parks are:

- **University Car Park B** Manchester Aquatics Centre Car Park, NCP M13 9SS
- **University Car Park D** Booth Street West Car Park, M15 6AR, access via Higher Cambridge Street
- See estates.manchester.ac.uk/services/operationalservices/carparking