CSC3031
Research and Project Skills

Prof. John Fitzgerald

Dr Simon Bowen

Welcome to CSC3031

Overview of this session:

1. Welcome: CSC3031 and your project
2. Our goals
3. The Module Leaders: John and Simon
4. Organisation
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    2. Classes
    3. Coursework
5. How to get help

Welcome to CSC3031!

- This module equips you with skills to undertake successful projects, both here and in your future professional practice.
- We look at research, project planning, managing and communicating
- Coursework is based on your individual “capstone” project
- You will research and plan your project in CSC3031 and carry it out it in CSC3032.

Welcome to CSC3031

Your project is:

- Demanding, but rewarding
- Fun!
- Culmination of 3 (or 4) years study at Newcastle
- Chance to show what you can do
  - Extend beyond taught material
  - Opportunity to show an employer after graduation

Your project is not:

- A large piece of coursework
- An independent version of the team project
- Easy (unless you want it to be…)

Our Goals

Research skills are at the foundation of innovative projects in Computing, whether in professional practice or in a Research & Development lab. We aim to help you develop your:

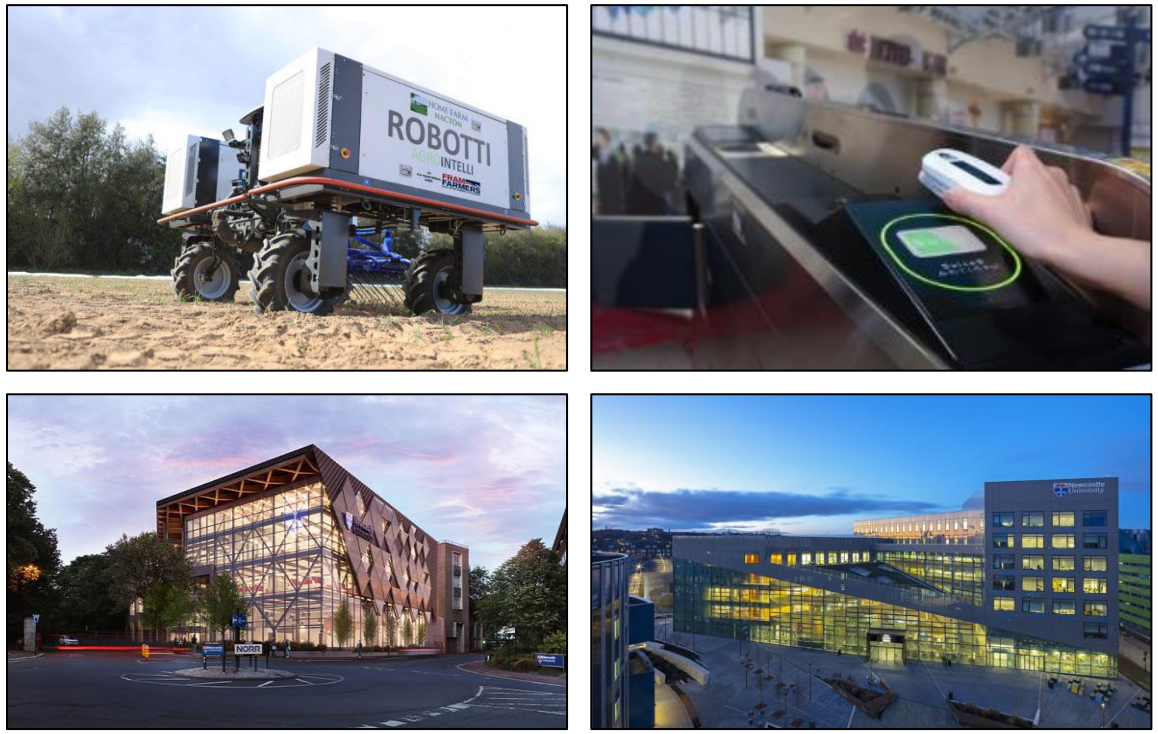
- understanding of the character, processes and methods of research in Computer Science (CS);
- confidence in approaching, using and appraising the CS research literature
- skills required to define, propose and plan a substantial individual project
- Appreciation of ethical and professional issues that arise in CS research and innovation

… and enjoy your project more as a result!

The Module Leaders

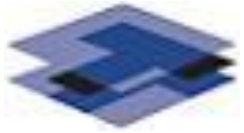
- We both have a background in designing and leading projects
- We have both worked in industry as well as research labs
- … but we work in very different areas of the subject, using different research methods and tools.

John Fitzgerald – what I do



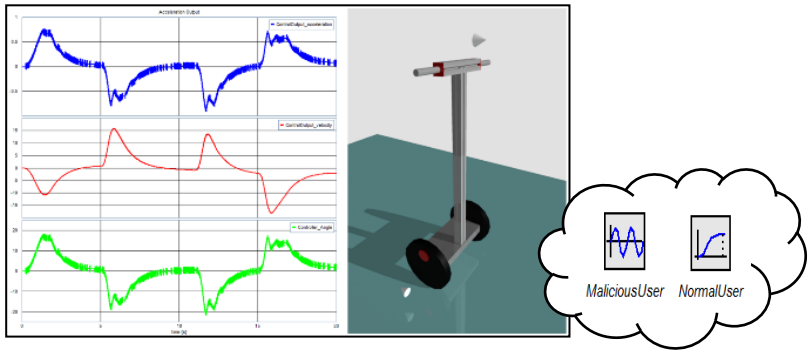
- John.Fitzgerald@ncl.ac.uk
- Professor of Computing
- Research and teaching on model-based engineering methods and tools.
  - Lead large international research projects and industry software design teams.
  - Academic lead for the Urban Sciences Building project.

John Fitzgerald – how I got here



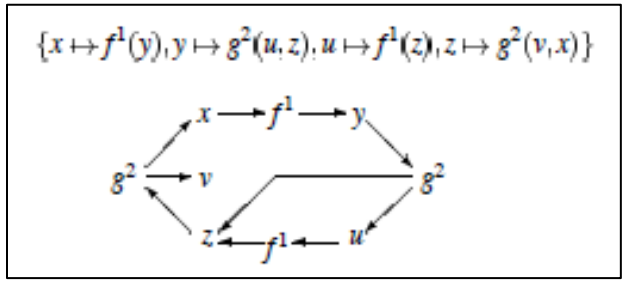
"The most amazing software you'll never see“

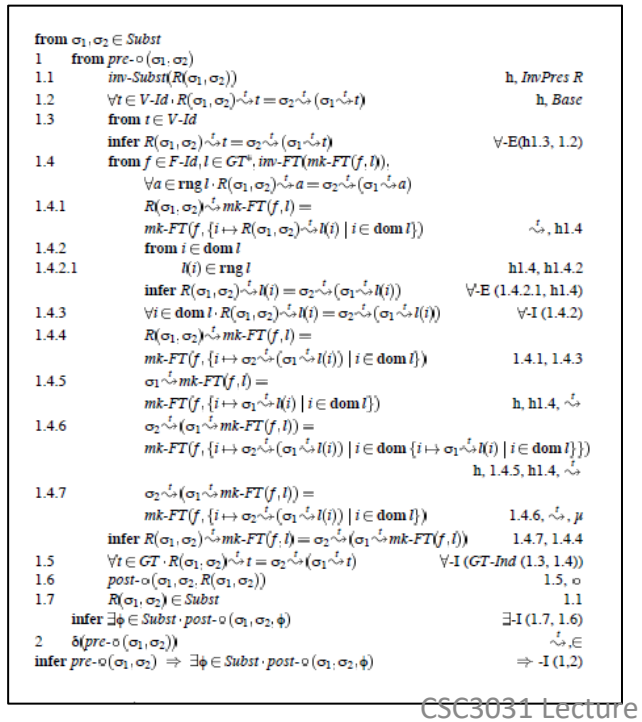
Steve Jobs



- BSc Computing & Information Systems(Manchester), worked for Short Bros. & IBM
- Research training: PhD on provably correct software
- Joined Newcastle Uni to do research on fault-tolerant avionic software
- Freelance Researcher: one of the first evaluations of formal models in industry
- Managed a design team in Industry

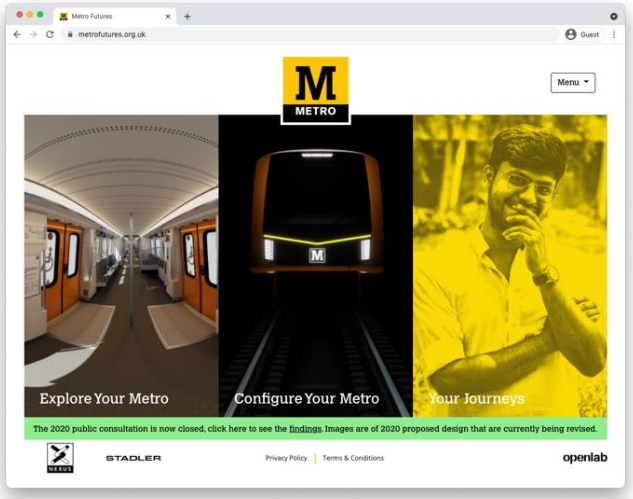
John Fitzgerald – my BSc Project





- I used new mechanisable proof techniques to prove the correctness of a *unification algorithm.*
- The tools weren't good enough – so it was all done by hand – literally!
- My supervisor and I published the findings.

Simon Bowen – what I do



openlab

Story:Web

UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

Nepal Red Cross Society

- Simon.Bowen@ncl.ac.uk
- Lecturer in Human Computer Interaction in Open Lab
- Research and teaching in designing 'socio-technical' systems *with* people, e.g.:
  - Systems for planning aid distribution after environmental crises
  - Digital tools for public consultations
  - Interactive artworks to enable climate action
  - Digital tools for creating and sharing community/local heritage

Simon Bowen – how I got here

- HND in Audio & Video Engineering (Salford)
- B.Eng in Communication & Control Engineering (Manchester)
- 8 years working with audio, video, web technology
- MA in Design, PhD in Design (Sheffield Hallam University)
- Post-doctoral research projects: Health service co-design, creative economy knowledge exchange, the Digital Economy Research Centre…

Simon Bowen – my B.Eng Project

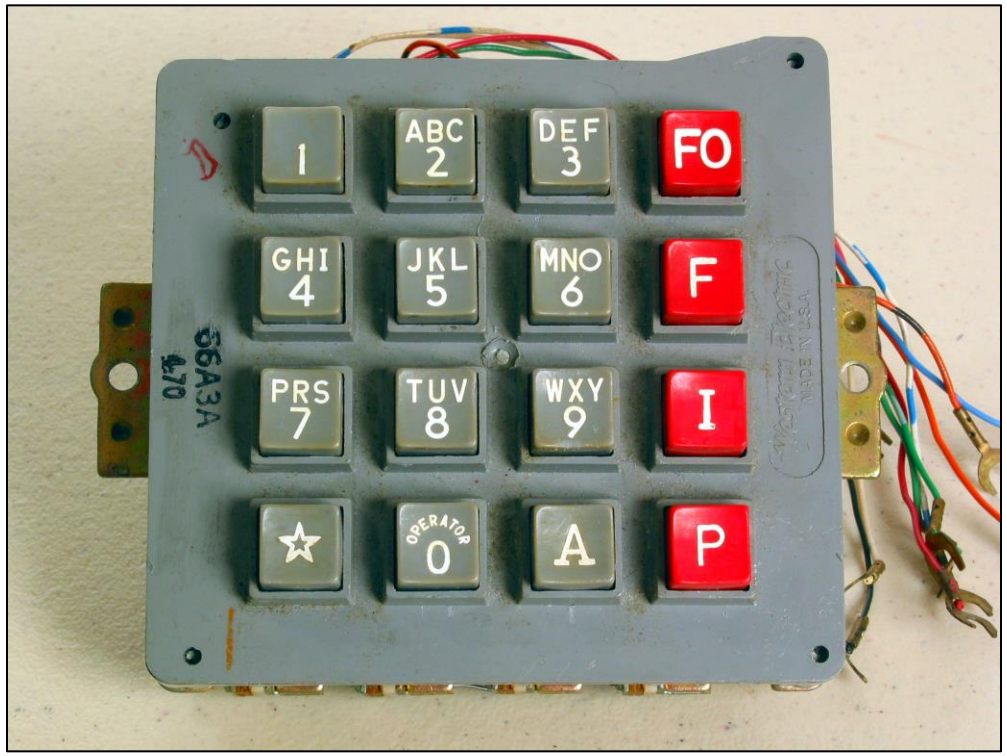


image: https://commons.wikimedia.org/wiki/File:66a3aDTMFpad.jpg#/media/File:66a3aDTMFpad.jpg

- Programming a dual-tone multi-frequency (DTMF) controller

CSC3031 Organisation – Structure

Our classes will cover two main areas:

Research

- What is Research?
- Scientific Method and Intellectual Discovery
- The Computer Science Knowledge Base

Project Skills

- Project Proposal and Planning
- Conducting a Project
- Communicating Findings

We'll also offer practical advice on making *your* individual project a success!

CSC3031: Our Current Plan …

Week Beginning	Lectures		What to do this week (at a minimum)
	Research	**Project Skills**	
31st Jan	• Knowledge, Originality and Gain • Research, Innovation and Impact • Intro. To Ethics and Data Management	• Project Proposals and Planning	• Fix your project title and supervisor and get signed up in NESS • Start informally reading around your subject.
7th Feb	• CS Research Methodology • Introducing the CS knowledge base	• Process models, monitoring and managing • What makes a good project proposal? • Project presentations: the good and the bad	• Develop your presentation and start background research in the literature
14th Feb	• Using CS Research methodology • Using the CS knowledge base (searching and appraising literature)	• Basics of good academic and technical authorship: papers and posters. • Elements of scholarship	• **16 Feb: presentation due** • Getting peer group feedback • Sketch out proposal and complete ethics ASAP.
21st Feb	Drop-in tutorials and surgeries all week		• Develop your proposal. • **21st Feb.: ensure you've given your peer group feedback** • **25th Feb: Ethics Form and Project Proposal due**

CSC3031: Organisation – Classes

- CSC3031 lasts for four weeks.
- You will spend the vast majority of your time working on your project.
- In Weeks 1-3, we hold Lectures as timetabled:
  - Monday 10:30 and 14:30
  - Tuesday 14:30
  - Wednesday 10:30
  - Thursday 14:30
  - Friday 09:30
- We will hold "Tutorials" which are drop-in online sessions:
  - Monday, Tuesday, Thursday 16:30
  - Friday 13:00
- All classes in the Week 4 will be drop-in tutorials both online and in person.

In lectures we introduce knowledge and skills, and offer general advice that you can apply in your project. We hope to have guest lectures too.

In tutorials we offer individual help on research and project skills. You only need to take part in these as and when you want to.

CSC3031: Organisation – Coursework

- CSC3031 is assessed entirely on coursework based on your individual project.
- 16th February: a short recorded presentation (25%)
  - Your project title, background, aims and objectives and a rough plan.
  - Load it up to NESS and to a small discussion group on Canvas.
- 21st February: offer feedback on one another's presentations in your discussion group.
- 25th February: Project Proposal (75%)
  - Motivation, Aims & Objectives, Background Research and Plan
- 25th February: Ethics Form (Pass/Fail)

How to get help

- Our lecture slides and other materials will all be on Canvas
  - Where possible, we'll get examples of good practice from past years
- We will be developing a FAQ as questions are asked.
- Build peer groups
- Your first port of call on anything to do with your individual project will be your supervisor.
- For other more general issues in CSC3031, or if in doubt, please contact us:
  - John.Fitzgerald@ncl.ac.uk
  - Simon.Bowen@ncl.ac.uk

How to get help: your supervisor

This is **your** project, and **you** are responsible for how it is managed.

Your supervisor should:

- Provide starting directions and references, suggestions and advice
- Act as a “customer” for what you produce
- Mark and provide feedback on your deliverables that are submitted
- Read and comment on drafts of your proposal and dissertation
- Meet regularly with you to discuss issues/progress

Your supervisor will not:

- Design, test or debug anything you produce
- Write sections of your dissertation for you
- Teach any background material
- It is up to you to research relevant material
- Remind you to attend meetings

How to get help: your supervisor

To get the best from your supervisor:

- Agree a regular schedule of meetings (weekly, every 2 weeks, etc.)
- Keep in touch!
  - If you have little to report, it's OK - meet anyway!
  - If you can't meet an appointment, then let them know in advance.
- Go in prepared and make notes during the meeting
  - It's your meeting – make sure you raise any questions you need
  - You will not remember everything!
- Discuss ideas and be open to your supervisor's ideas
- If you want a supervisor to read drafts, allow them enough time to read them before a meeting.

Next Step …

- Get in touch with Theme Leaders and Supervisors as requested, meet (online or in person) and get your project title signed up in NESS.
- You can change project title and description easily, so don’t get hung up on that
  - We often have to change project details as we discover more
- Good Luck – and Enjoy it!