Statistics PhD information session

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Outline

- ► What is a PhD?
- ► Statistics at Southampton
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What is a PhD?

- A PhD involves the creation of a body of original academic research.
- Full time, it typically takes at least 3 years (and hopefully less than 4 years).
- Each PhD has a supervisory team
  - Normally a main supervisor and a secondary supervisor.
- The supervisory team will help to guide your research.

What is a PhD?

- ▶ At the end, the research is collected into a thesis.
- ▶ The PhD is then examined by a viva.
- ▶ There will be two examiners:
    - ▶ internal examiner (from Southampton);
    - ▶ external examiner (another expert in your field from outside Southampton).
- ▶ There will also be an independent chair (and maybe your supervisor).
- ▶ Viva usually lasts 1-4 hours.

What is an iPhD?

- ▶ If you do not possess an MSc or MMATH degree you will do an iPhD.
- ▶ The "i" stands for *integrated*.
- ▶ This means that your PhD is 4 years long where your 0th year (or ith year) is essentially equivalent of a Masters degree in Statistics.
- ▶ At the end you still have a PhD.
- ▶ If you leave after the 0th year, you **do not** receive an MSc.
- ▶ If you receive a studentship, i.e. funding, you are funded for all four years.

Summary
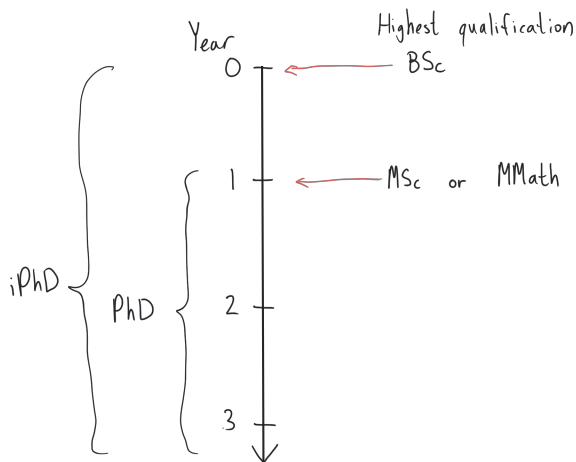
Departments

The School of Mathematical Sciences at Southampton has the following research departments

- ▶ Pure
- ▶ Applied
- ▶ Operational Research
- ▶ Statistics

Research groups

- ▶ The Statistics group has 11 academic staff and 25 PhD students.
- ▶ There are the following research groups
  - ▶ Biostatistics
  - ▶ Design of experiments
  - ▶ Modelling & Computation
- ▶ Staff and PhD students are loosely affiliated with one of these groups but a research project can typically span more than one group.
- ▶ PhD opportunities are available in all of these groups.

Design of experiments

Members:

> Dave Woods   Stefanie Biedermann
> Antony Overstall

Indicative project titles:

- ▶ Hierarchical experiments and likelihood approximations
- ▶ Mixture experiments with non-normal responses
- ▶ Sequential Bayesian design of experiments

Biostatistics (Medical Statistics)

Members:

> Dankmar Böhning   Stefanie Biedermann
> Alan Kimber

Indicative project titles:

- One Stage Meta-Analysis for Studies with Mixed One and Two Arm Information
- Mixture Models with an Extra Inflation Component for Zero-Truncated Count Data arising from Capture-Recapture Studies

Modelling & Computation

(Includes actuarial science and statistical finance)
Members:

Zudi Lu	Wei Liu	Sujit Sahu
Erengul Dodd	Helen Ogden	Ramin Okhrati
Antony Overstall		

Indicative project titles:

- ▶ Inference for infinitely many future values using statistical calibration
- ▶ Bayesian modelling for macronutrients data from Christchurch harbour estuary
- ▶ Penalized likelihood inference for mixed-effects models
- ▶ Statistical machine learning
- ▶ Statistical intelligent modelling of time series data

S3RI

- ▶ S3RI stands for Southampton Statistical Sciences Research Institute
- ▶ Staff and PhD students from the Statistics department from Mathematical Sciences are automatically members of S3RI.
- ▶ Also has statistical scientists from the Social Statistics division of Social Science and Medicine.
- ▶ S3RI has over 100 staff and PhD students and is one of the largest groups of academic statisticians in the UK.

Funding opportunities

- ▶ PhD students are usually funded by studentships from the Engineering and Physical Sciences Research Council (EPSRC).
- ▶ These pay tuition fees and a stipend for living expenses (currently £14,700 tax-free).
- ▶ There will be a number of these studentships available for PhD students starting in September 2019.
- ▶ They are available for students from the UK or EU (as long as they have been resident in UK for 3 years).
- ▶ They are allocated through competition.
- ▶ For non-UK/EU students there are sometimes funding opportunities available from your government, e.g. China Scholarship Council or Commonwealth Scholarship Commission.
- ▶ Funding decisions are made after you have been offered a place.

Facilities

- ▶ When they start, PhD students are given a new computer (laptop or desktop) (Windows/Mac/Linux).
- ▶ Also given a desk in an office with access to a printer.
- ▶ This will either be in Mathematics Building (where we are now) or the S3RI Building.

Milestones

- At various points of your PhD you will need to reach certain milestones.
- These are to make sure that your are making sufficient progress and that everything is going OK.
- The main milestones are yearly reviews.
- For these you will write a report on your research and attend a meeting with staff (not just your supervisory team) who will discuss your work with you.

Training

- ▶ As well as completing your research project, you will need to do a certain amount of training.
- ▶ The aim of this is to improve your employability when you finish your PhD.
- ▶ This is split into
    - ▶ generic;
    - ▶ subject-related (i.e. statistics).
- ▶ Training activities are worth a certain number of points each and you must accrue 50 points by submission of your PhD.
- ▶ It should be organised so that you collect 20 points in each of your first two years.
- ▶ Of your 50 points, at least 30 must be in subject-related training.

Generic Training

- ▶ Induction activities (compulsory): [1]
- ▶ Ethics 1 - Good research practice (compulsory): [1]
- ▶ Teaching skills for postgraduates, ITSPG1 (compulsory): [1]
- ▶ Teaching skills for postgraduates, ITSPG2 (compulsory): [1]
- ▶ Computing workshop (four 2-hour sessions in Semester 1, Year 1) (compulsory): [2]
- ▶ Attendance at external workshop on e.g. project planning: [1]
- ▶ Attendance at a computing course: [1]

Subject-Related Training

- ▶ Regular seminar participation, per semester (compulsory): [2]
- ▶ Regular PG course (School, MAGIC, APTS, NATCOR): [4]
- ▶ Regular MMath or Msc course: [4]
- ▶ Reading course [seek approval from PGRC and DPD]: [4]
- ▶ Giving a talk at an internal seminar: [2]
- ▶ Giving a presentation at an external conference: [4]
- ▶ Giving a poster at an external conference: [2]
- ▶ Preparing a paper for publication: [4]
- ▶ Assisting in refereeing a paper: [2]
- ▶ Conference attendance (maximum 2): [2]

APTS

- ▶ APTS stands for Academy of PhD Training in Statistics.
- ▶ APTS is a collaboration between major UK statistics research groups to organise courses for first-year PhD students in statistics and applied probability nationally.
- ▶ APTS organises four residential weeks each of which consists of two modules on core statistical topics.
- ▶ Southampton is a underwriting institution of APTS and members of the group teach two of the eight modules.
- ▶ Southampton PhD students will usually go to all 4 weeks (and collect the 32 training points).
- ▶ Good networking opportunity - about 100 students at each week.

APTS

- December 2018 - Cambridge
  Statistical Computing
  Statistical Inference

- April 2019 - Southampton
  Applied Stochastic Processes
  Statistical Modelling

- July 2019 - Durham
  Computer Intensive Statistics
  High-dimensional Statistics

- September 2019 - Oxford
  Flexible Regression
  Design of Experiments

S3RI Seminars

- ▶ S3RI organises (roughly) weekly seminars.
- ▶ These are where a researcher from outside Southampton is invited to give a 50 minute talk on their research.
- ▶ It is compulsory for PhD students to attend these seminars.
- ▶ You get training points of 2 per semester, i.e. 12 for your PhD.

Teaching

- ▶ There are opportunities to do teaching (assistance in tutorials/computer labs and marking coursework) throughout your 3-4 years.
- ▶ The average hours per week is limited to 6.
- ▶ Training is provided (with associated training points).
- ▶ Teaching on its own can be very rewarding and also looks very good on a CV.
- ▶ Once you have done 10 hours in a year, you will get paid (£14 an hour). This includes preparation time.

Iridis Supercomputer

- ▶ Southampton has two supercomputers called Iridis 4 & 5.
- ▶ Iridis 4 has 12,230 processors.
- ▶ Iridis 5 has 18,560 processors.
- ▶ When Iridis 5 was built (November 2017) it was in the top 500 supercomputers in the world.
- ▶ It is free to use.
- ▶ It is really useful for farming out computationally expensive routines which are commonly used in Statistics.
- ▶ PhD students can register to use Iridis and get training to use it (and get a corresponding training point).

Conferences

- ▶ Academic statistics conferences are the most immediate way to disseminate your research and find out about current statistics research.
- ▶ As recognition of this you are given an RTSG (Research Training Support Grant) of £2,250 to attend conferences, workshops and other external meetings.
  - ▶ this is irrespective of your funding source.
- ▶ You get training points for attending conferences and presenting your work (poster or talk).
- ▶ Expenses for attending APTS come from a separate pot of money.

Destinations for recent graduates

- Academia
    - Lecturers - Manchester, Glasgow
    - Statistician supporting other fields of academia (Oxford)
- Industry
    - GlaxoSmithKline
    - IBM
    - Lubrizol
- Government
    - Office of National Statistics
    - Dstl

Summary 1

- ▶ Southampton has a big group of academic statisticians working in different areas.
- ▶ Southampton has a great working atmosphere.
- ▶ Southampton is well regarded in the Statistics community.
- ▶ As a PhD student, you will be treated like a staff member.

Summary 2

- Funding is available for the very best (UK/EU) students but it is highly competitive.
- To be realistic, to obtain funding we would expect PhD applicants to be on course for getting a Distinction in their MSc or a high first on BSc/MMath.

Summary 3

- ▶ If you are interested, email me (A.M.Overstall@soton.ac.uk) to discuss your interests.
- ▶ I will set up meetings with potential supervisors to discuss projects.
- ▶ The application is on-line and is very straightforward.
- ▶ There does have to be an interview.
- ▶ Application decisions are made quickly.
- ▶ Funding decisions will be made from February 2019 onwards.