

Postgraduate Opportunities at Lancaster

December 2014



Postgraduate Opportunities

- MSc Statistics
- MSc Data Science
- PhD Mathematics
- PhD Statistics
- STOR-i Doctoral Training Centre

Centre for Doctoral Training in Statistics and Operational Research in partnership with Industry

Introducing Lancaster



Lancaster's STOR Research Philosophy

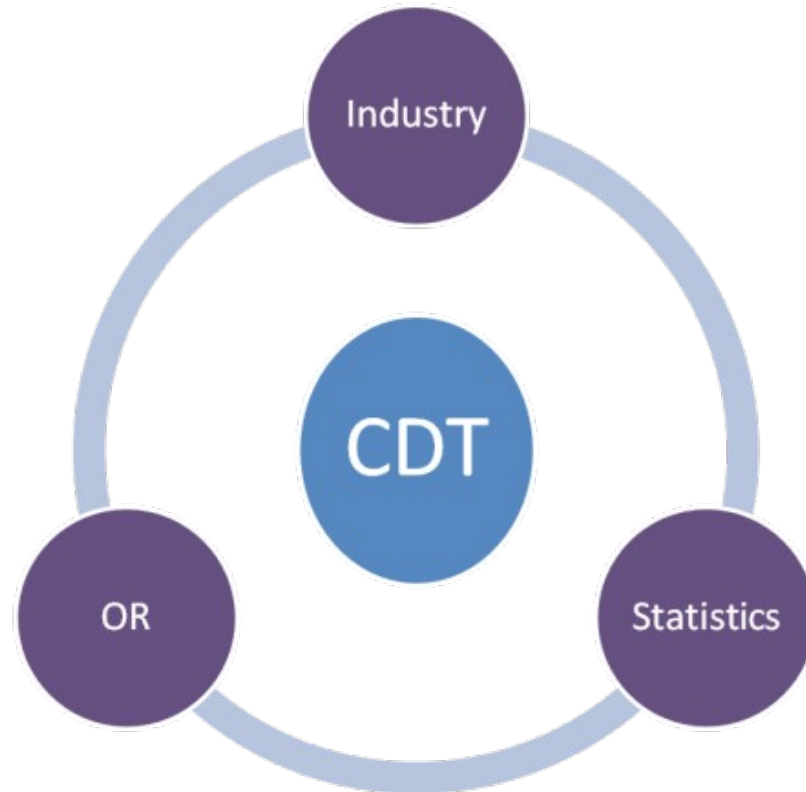
Best research is:

- Methodological innovation motivated by, and fed back into, substantive applications

This can only be achieved by:

- **Fully integrated collaboration** with experts in the application area
- End-to-end problem solving skills

What's the STOR-i?



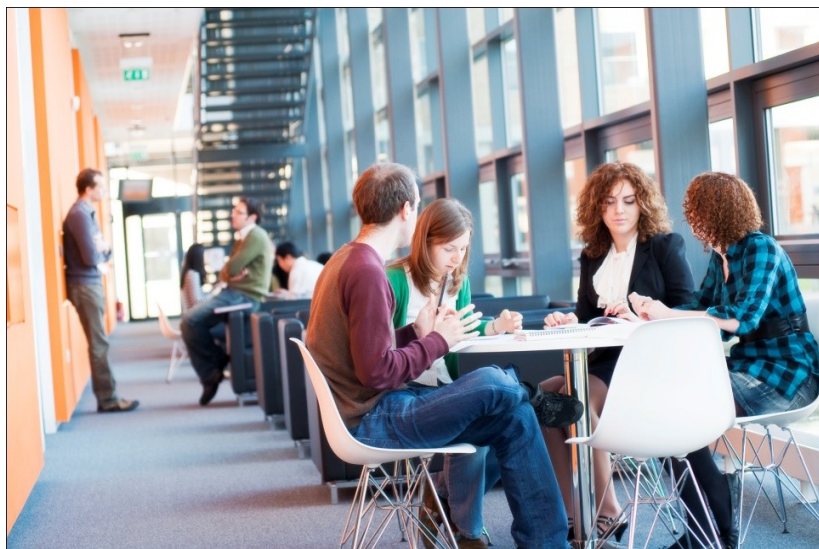
Introducing STOR-i

- 4 year programme (MRes + PhD)
- Training and Research focus: the interfaces of statistics, OR and industry
- Training from staff in departments of Mathematics and Statistics and Management Science
- Programme designed and delivered with industry to produce high-quality researchers

Aims of STOR-i CDT

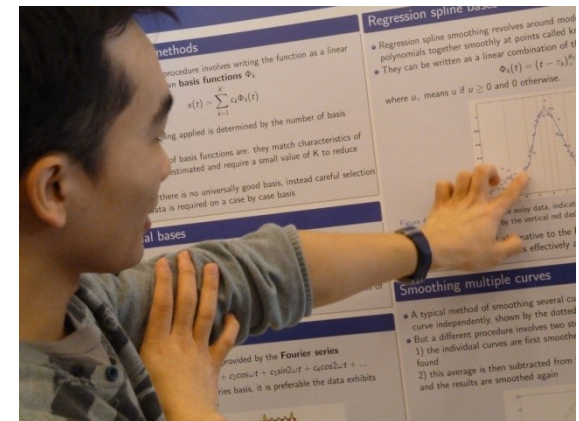
- Train graduates to be capable of producing high quality research with industrial and scientific impact
- Produce highly employable graduates with the skills needed for effective careers in academia or industry.

The STOR-i Experience



New Style of PhD Training

- Exciting and vibrant training programme
- Training as a group with substantial interaction between year groups
- Training focused on engagement with scientific and industrial applications
- Development of skills for advanced problem solving
- Broad career skills not simply technical skills



MRes (Year 1)

Preparation for research and structured support for selecting a research topic

Mathematical Core

- Core skills lectured modules in Statistics and OR

Training for Research and Industry

- Scientific Modelling
- Industrial Problem Solving Days
- Topical Research Overviews

Masterclasses on hot topic areas

- Lectures from experts on leading-edge STOR topics

Research Planning

- PhD Research Proposal (3 month project)

Training in Years 2-4

New Technical Skills

- National training courses (APTS, NATCOR)
- Internal master-classes

New Career skills courses

- Public and Media Engagement
- Impact of Research
- Leadership and Project Management

Training in Years 2-4

Practice of career skills

- Development and supervision of projects
- Mentoring
- Leading group activities
- Organising workshops
- Applying for and managing grants

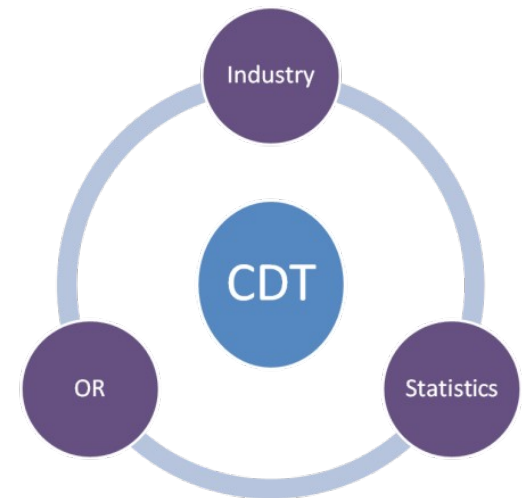
Research Projects in Years 2-4

Aim: 80% industrially linked projects

current industrial partners include:

AstraZeneca, ATASS, BT, IBM, SSE,
Shell, Unilever, NNL, ...

work placement 1-3 months per year.



- Core of each PhD project will be methodological development arising from industrial problems
- Projects attract enhanced stipend

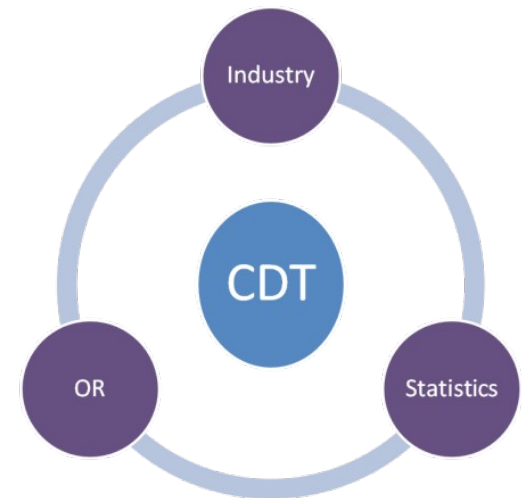
Research Projects in Years 2-4

Remaining 20% linked to one of four international academic partners:

SFI (Oslo), NPS (US),

U. Washington (US) Northwestern (US)

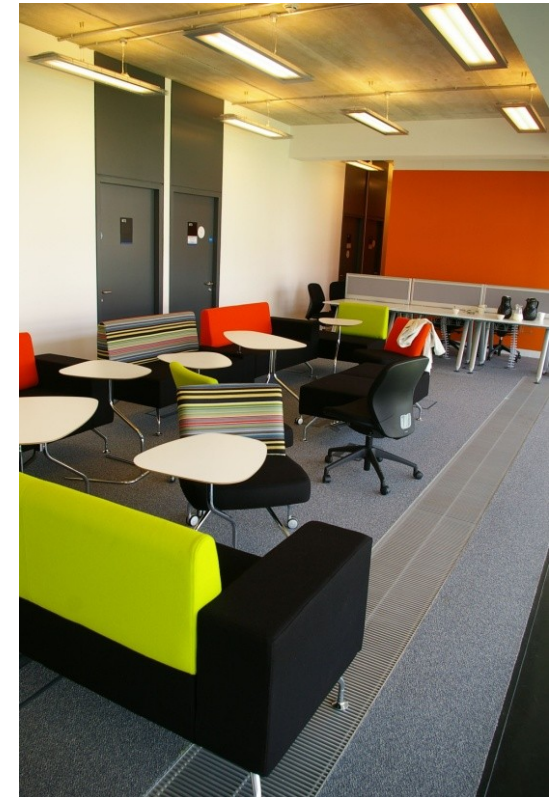
- Again, each project will have a joint supervisory team



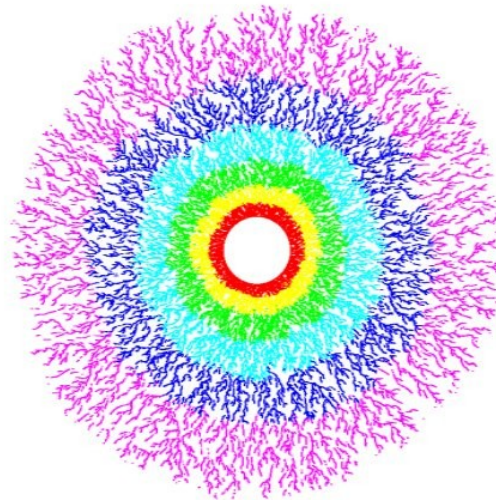
- Expectation is that each student will also undertake a research internship during PhD

Environment

- Training based in the Postgraduate Statistics Centre
- International conference
- Annual workshop with industry
- Away days – team building
- Series of high-profile academic visitors



Research Themes & Projects



Primary Research Themes

Statistical modelling and inference

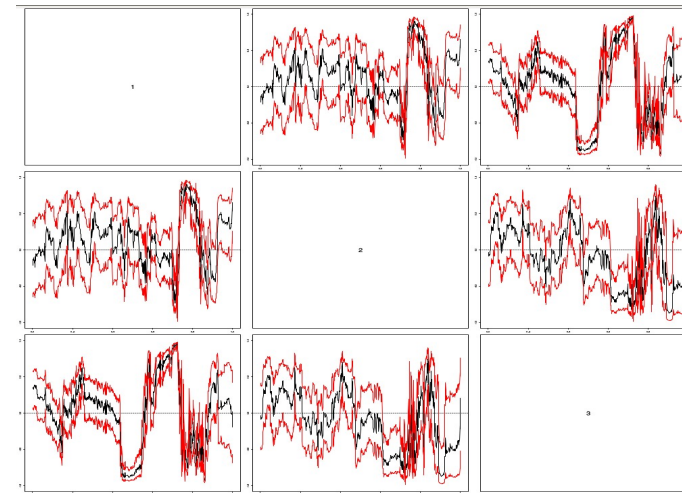
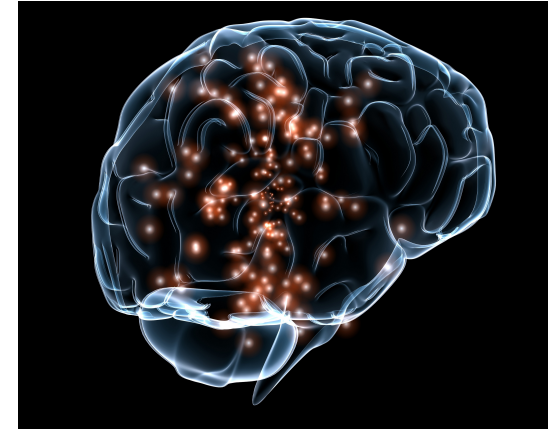
- change-point analysis
- extreme value theory
- longitudinal data analysis
- spatial statistics
- game theory

Operational Research

- forecasting
- optimisation
- simulation

Wavelets – Helping to understand the brain

- Many diseases are linked to problems in the function of the brain
- Application Challenge:
Can we map connections in the brain?
- Multiscale methods such as wavelets are one approach which can be used here.



Wind Energy

Forecasts needed to predict electricity output from wind-farms.

Required to balance supply with demand across the electricity grid.

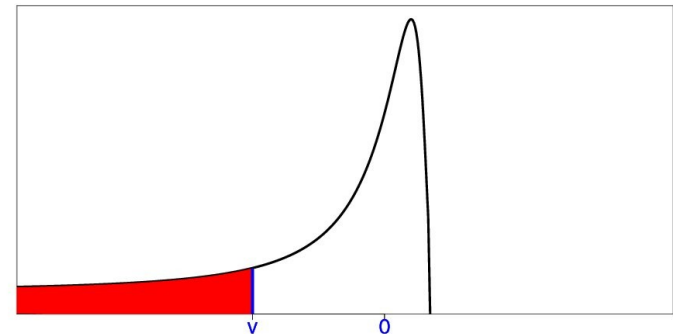


Risk and the City

Need to determine the risk of a large loss from holding a portfolio of stocks?

How to change investments to reduce risk of large loss without incurring too much cost?

Brings together: times series, multivariate analysis, extreme values, stochastic optimisation and **finance**.



Why should you apply?



Excellent funding for eligible students

We can offer 12 new 4-year studentships a year for four years.

Funding covers

- Tax-free salary of £15.5k (based on previous funding years)
- Rising to £18.5k if on industrial projects in years 2-4
- All fees
- Good travel and subsistence support
- Standard EPSRC eligibility conditions

Other opportunities include a research fund

(e.g. visits to work abroad with another research, get other researchers to visit)

What we are looking for from you

- Evidence of excellence from previous undergraduate or postgraduate training
- Substantial mathematical knowledge
 - knowledge of statistics and operational research is **not** required
- Strong inter-personal skills
 - drive, enthusiasm, engaging, communication
- Keen to be involved with the STOR-i agenda

Want to find out more?

Visit the STOR-i website
<http://www.stor-i.lancs.ac.uk>

