Informatics Research Proposal

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What is it?

- Proposal of a research project.
- Delivered by project supervisor.
- Full proposal six pages.
  - cf one page outline on projects website.
Relation to Summer Project

- Proposal is for Summer project.
  - Change of topic & supervisor possible up to 17 February.
- Allocated supervisor reflects your interests.
Why do it?

- Learn skills of research planning.
- Confirm choice of research area.
- Scope out your Summer project.
- Compulsory course in your MSc degree.
Skills to be Developed

- Project Design.
- Motivating Research.
- Self-Assessment.
- Succinct Presentation.
- Managing your Time.
What to do.

- Establish aims and objectives of project.
- Establish hypothesis and evaluation.
- Break project into work packages,
  - with durations, dependencies and deliverables.
- Write full six page report by 24th March.
Structure of Full Proposal

- Motivation: aims & objectives, hypothesis, timeliness, feasibility, significance, novelty, beneficiaries.
- Background material (use IRR, where relevant).
- Methods and techniques to be used.
- Evaluation: methodology for establishing hypothesis.
- Outputs: program? experimental results? theory? data?
- Research plan: work-packages with durations, deliverables & dependencies (via diagram?).
  - Risks and backup.
How to get started

- Is there already a project proposal?
- How would you change this in the light of your IRR literature survey?
- Do you need an exploratory study to identify a hypothesis?
- What hypothesis/claim are you investigating?
- What evidence is needed to establish this hypothesis?
Typical Claims in Informatics

X is better than Y on task Z along some dimension W.

- What kind of things are X and Y?
  - system, technique, parameter?
- What is task Z?
  - Speech recognition, information extraction
- What is the dimension W?
  - behaviour, coverage, efficiency, usability, dependability, maintainability?
How can claims be established?

- **Theoretical evidence**: proof of some property or relationship:
  - correctness, completeness, complexity, etc.

- **Experimental evidence**:
  - Run computer program and analyse:
    - run times, success rates, user’s reactions, etc;
    - compare two or more programs.
  - Test and compare human performance:
    - with program, on different program variants, with other humans, etc.
Think early about evaluation

- Key part of project,
  - evidence to support hypothesis.
- Too risky to leave until late in project,
  - evaluation required may not be feasible.
- Interacts with hypothesis formation,
  - and so, determines nature of project.
- Write note outlining evaluation plan,
  - and discuss with your supervisor.
Planning your project

- Try to break the overall project into work-packages.
- How do they depend on each other?
  - In which order should you tackle them?
  - In series or in parallel?
  - Which are essential and which optional?
- How long will each of them take?
  - Build in some slippage time.
  - Do these estimates fit the time available?
  - If not, trim the project to fit.
- What is the outcome of each package?
Diagrammatic Work Plan

Specify Program
Implement Program
Evaluation
Dissertation Write-Up

Jun  Jul  Aug
Assessment

- Your report will be marked by your supervisor.
- Assessment will be based on:
  - How well project is motivated.
  - Quality of research plan.
  - Demonstrated understanding of area.
  - Clarity of expression and presentation.
Basic criteria (need these to pass)

Clear explanation and justification of each of the following:

- Project aims and hypothesis.
- Deliverables of project.
- Research plan.
- Plans for evaluation of hypothesis.
- Relation to previous work.
- Timetable with dependencies.
Additional criteria

Convincing arguments about each of the following:

- Timeliness and significance of research.
- Potential commercial or academic impact.
- Backup plan if original plan fails.
Marking guidelines

- Pass: adequate on basic criteria.
- Fail: inadequate on two or more basic criteria.

If you fail this, then whether you pass the MSc overall will depend on decisions taken at the BoE meeting.
Common proposal shortcomings

- Hypothesis is unclear, woolly or ill-formed.
- Project insufficiently motivated.
- Not clear why you will succeed where others have failed.
- Insufficient technical detail to assess.
- Unaware of related research.
- Badly presented or incomprehensible.
Pacing yourself

- Work out timetable for writing.
- Leave plenty of time for feedback and correction.
- Write at a steady pace.
- Meet with your supervisor regularly.
Conclusion

- Identify hypothesis and how to evaluate it.
- Plan research programme.
  - Break project into work-packages.
  - Gauge duration, deliverables and dependencies.
- Motivate: significance, feasibility, novelty.
- Pace yourself.
  - Leave time for feedback and correction.
  - Self-assessment against marking criteria.