Informatics Project Proposal

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MSc: Two components

- **Taught component (100 credits)**
  - lectures, tutorials, coursework, exams
  - learn established techniques that work

- **Research component (80 credits)**
  - do something that’s never been done before
    - study a new problem, develop a new method, etc.
    - probably the most exciting (and hard) part of Msc
  - culminates in you writing a ~50-page dissertation
    - mark is based solely on the quality of your write-up
  - two courses prepare you:
    - IRR: write a literature review in area of interest
    - IPP: write a detailed plan for your MSc project
MSc project timeline

- **Semester 1 (IRR)**
  - learn about a relevant area: read research papers
  - write a 3000-word summary of what you learned
- **January:**
  - staff proposes project topics (or students self-propose)
  - you pick topics that you like, talk to supervisors
- **Semester 2 (IPP):**
  - write a detailed plan for what you’re going to do
- **April/May:**
  - pass 120 credits with 50% average
  - IPP is worth 10 credits
- **Summer:**
  - work on your project (build things, test them, analyse results)
  - write a dissertation
IPP vs IRR

- *Proposal of a research project*
- Assessed by project *supervisor*
- **Mandatory** tutorial groups and meetings with supervisor

- Literature review
- Assessed by tutors
- Mandatory tutorial groups
Projects

• Will be announced shortly.

• If unsure talk to the supervisors before making choice.

• Self-proposed projects are possible.
Goal of IPP

• Learn skills of research planning.

• Confirm choice of research area.

• Scope out your summer project.
Further goals of IPP

• Knowing what to work on is a big part of research
  • *Motivation* is identifying a void in the *literature*, or a real-world *problem* that has *not* been *solved*.
  • Coming up with a feasible way to address the problem.
  • Propose ways of evaluating the *techniques*.
  • Present expected outcomes succinctly and objectively.

• Important skill:
  • For PhD applications
  • For grant writing
Approximate IPP Timeline

- Jan. Introductory Lecture
- Jan. IRR DEADLINE
- Jan. MSc project topics announced
- Jan/Feb. submit your project preferences
- Feb. projects assigned to students
- Feb – Apr: IPP
  - attend weekly tutorials
  - ask your tutor about:
    - presentations within group
    - first draft deadline + feedback
- Apr. submit IPP

contact potential supervisors
regular meetings with your supervisor
Components of the IPP

• Regular meetings with project supervisor:
  • schedule a regular time, do not let it slip
  • supervisor marks your IPP (not the tutor)
Components of the IPP

• Continue to meet with IRR groups:
  • meet every week, tutor will arrange meeting times
  • same groups, same tutors (mostly)
  • Get in touch if you want to switch groups
    note that precise group is not very important
  • tutors are there to help you. Use them.
  • attendance is mandatory: ignore meetings = fail IPP
Relation with supervisor

• Weekly meetings are a good starting point, but cancel if you had no time to work on things.

• On the other hand, do not cancel if you are stuck!

• Bad: Last minute cancellations.

• Bad: Asking feedback on many versions of your IPP.

• Good: Show initiative.

• Good: Search and read secondary literature.

• Good: Start thinking about doing the actual project.
IPP: Structure of proposal

• **Motivation**: aims and objectives, hypothesis, timeliness, significance, feasibility, novelty, beneficiaries

• **Background** material (use your IRR if you can)

• **Methodology** and *techniques* to be used

• **Metrics** for evaluation

• **Outcomes**
  • application? experimental results? new data?

• **Research plan** (in the form of a Gantt chart, or simple list)
IPP: Getting started

• The *supervisor’s proposal* is a good starting place

• How would you *change it* to make it *clear what to do*?
  • consider both *research* perspective, and *skills* perspective
  • your IRR may also be helpful here

• *Further study* to identify the *exact scope* of the project?

• What is the actual *hypothesis/claim* your will be *investigating*?

• What *evidence* is necessary to *support* the hypothesis/claim?
How can claims be established?

- *Theoretical* claims: *proof* of some property
  - Correctness, soundness, completeness, complexity, *etc.*
- *Experimental* evidence: analytical *metrics*
  - Running times (raw performance)
  - Success rates (*e.g.*, precision and recall in IR)
  - Comparison between different approaches
  - Match between data and simulation
  - Comparison between computer and human output
How will you evaluate your project?

- Think about: “When is this project successful?”
- A crucial part of the project (although it is dependent on the field)
- Thought experiment: suppose everything works as planned….
- Identify the metrics
  - metrics help you form the hypothesis and solution
  - in essence, the nature of the project
- Must be clear in the proposal
  - discuss it with your supervisor
  - do not leave it until the last minute
Plan ahead

• Break your project into *work-packages*

• What are their *dependencies*?
  
  • How should you *tackle* them?

  • In *series*, or in *parallel*?

  • Some will be *essential*, some will be *optional*

• How much *time* will each *work-package* need?

  • Build in some *slippage time*

  • *Do they fit* into the time available?

  • If *not*, *trim* the project!

• Assume for the project (not the IPP) one month for writing.
Example Gantt chart

- Specification
  - Implementation
  - Testing
  - Evaluation
  - Write-up

June | July | August
Assessment

• Your *report* will be *marked* by your *supervisor*, *numerical mark*

• *Assessment* will be based on:
  
  • How well the project is *motivated*

  • *Quality* of research *plan*

  • Demonstrated *understanding* of area, including knowledge of literature

  • Clarity of *expression* and *presentation*
# IPP marking guidelines

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Possible considerations</th>
<th>absent</th>
<th>poor</th>
<th>fair</th>
<th>good</th>
<th>v. good</th>
<th>excellent</th>
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<tbody>
<tr>
<td>Literature</td>
<td>Concise review of literature, correct referencing.</td>
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<tr>
<td>Introduction</td>
<td>Accessible to non-experts; motivation and relevance; audience</td>
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<td>Objectives</td>
<td>Clear statement of objectives; hypotheses.</td>
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<tr>
<td>Approach</td>
<td>Method; plan of work; evaluation metric; time-table.</td>
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<td>Presentation</td>
<td>Reasonable length, correct English, correct level</td>
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Comments: **Strengths** (box)

Comments: **Weaknesses** (box)

Comments: **Areas for Improvement** (box)

Final Mark (numerical):
Basic criteria (you need these!)

- Clear *explanation* and *justification* of each of the following
  - Project *aims* and *hypothesis*
  - Project *deliverables*
  - Research *plan*, with timetable of dependencies
  - Plans for *evaluating work / measures of success*
  - Relation to *previous work*
Additional criteria (it would be nice to have these)

• Convincing *arguments* about each of the following

• *Timeliness* and *significance* of research

• Potential commercial or academic *impact*

• *Backup* plan if original plan fails
Common problems

- *Hypothesis* is unclear, ill-formed

- Assuming, without reason, that *you will succeed* where *others have failed*

- *Insufficient detail* to assess outcomes

- *Unaware* of *related* research

- *Bad* presentation, *incomprehensible* report

  Audience: fellow student

- Too ambitious (better two good results, than five half results)
Avoid plagiarism

• Copying text from online sources is plagiarism
  • if you edit the words, it is still plagiarism
  • copy text verbatim (with no changes) and place it in quotation marks
  • explicitly cite where you copied from

• All text should be written in your own words from the start
  • not an edited version of someone else’s text

• Guides on plagiarism
  • http://www.inf.ed.ac.uk/admin/ITO/DivisionalGuidelinesPlagiarism.html
  • http://www.ed.ac.uk/schools-departments/academic-services/students/undergraduate/discipline/academic-misconduct
Plagiarism carries severe penalties

- Better to **submit nothing** than to **submit plagiarized** material

- **Submit nothing** : lose 10 credit points

- You **may still progress** to the MSc dissertation, decided by the Board of Examiners on a case-by-case basis

- **Submit plagiarized** report: **Academic Misconduct review**

- Average case: **downgraded to a diploma** (not an MSc but something)

- Worst case: **kicked out** of the program altogether
Re-using IPP in your MSc thesis

• The work but not the words of IPP can be used in thesis

• University policy: cannot be marked twice for the same work

• Cannot copy-and-paste sections from IPP into your MSc dissertation

• Two options:
  • Quote the included sections with a citation to your own IPP
    They will not be considered original material during the marking
  • Re-narrate those sections. (This is the better option)
    By August you will likely have a different understanding of the material.
As usual, pace yourself

• Work out a timetable for your writing

  • Split your time into reading, thinking, and writing

  • Leave plenty of time for feedback

  • Write at a steady pace

• Meet with your supervisor regularly

  • If they say no, keep contacting them

  • If problem persists, contact me: mvanross@inf

• For other problems: personal tutor. The earlier the better.