Informatics Research Proposal

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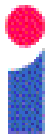


MSc: Two components

- **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
    - —**IRP**: 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 (IRP):**
  - write a detailed plan for what you're going to do
- **April/May:**
  - pass 120 credits with 50% average
  - IRP is worth 10 credits
- **Summer:**
  - work on your project (build things, test them, analyse results)
  - write a dissertation

IRP vs IRR

- *Proposal* of a *research project* (***your*** summer 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.
- Talk to the supervisors before making choice
- Self-proposed projects are possible

Goal of IRP

- Learn skills of *research planning*
- *Confirm* choice of *research area*
- *Scope* out your *summer project*

Further goals of IRP

- 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 IRP Timeline

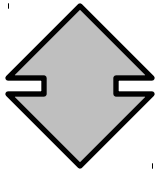
- Jan. Introductory Lecture
- Jan. IRR DEADLINE
- Jan. MSc project topics announced
- Jan. submit your project preferences
- Feb. projects assigned to students
- Feb – Apr: IRP

  attend weekly tutorials

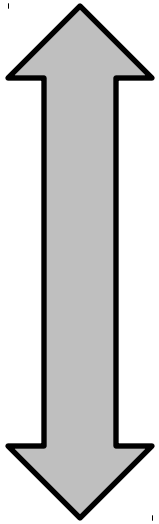
  ask your tutor about:

  - presentations within group
  - first draft deadline + feedback

- Apr. submit IRP



contact potential supervisors



regular meetings with your supervisor

Components of the IRP

- Regular meetings with project supervisor:
  - schedule a regular time, do not let it slip
  - supervisor marks your IRP (not the tutor)

Components of the IRP

- 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 IRP

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 IRP.

- Good: Show initiative.
- Good: Search and read secondary literature.
- Good: Start thinking about doing the actual project.

IRP: 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)

IRP: 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

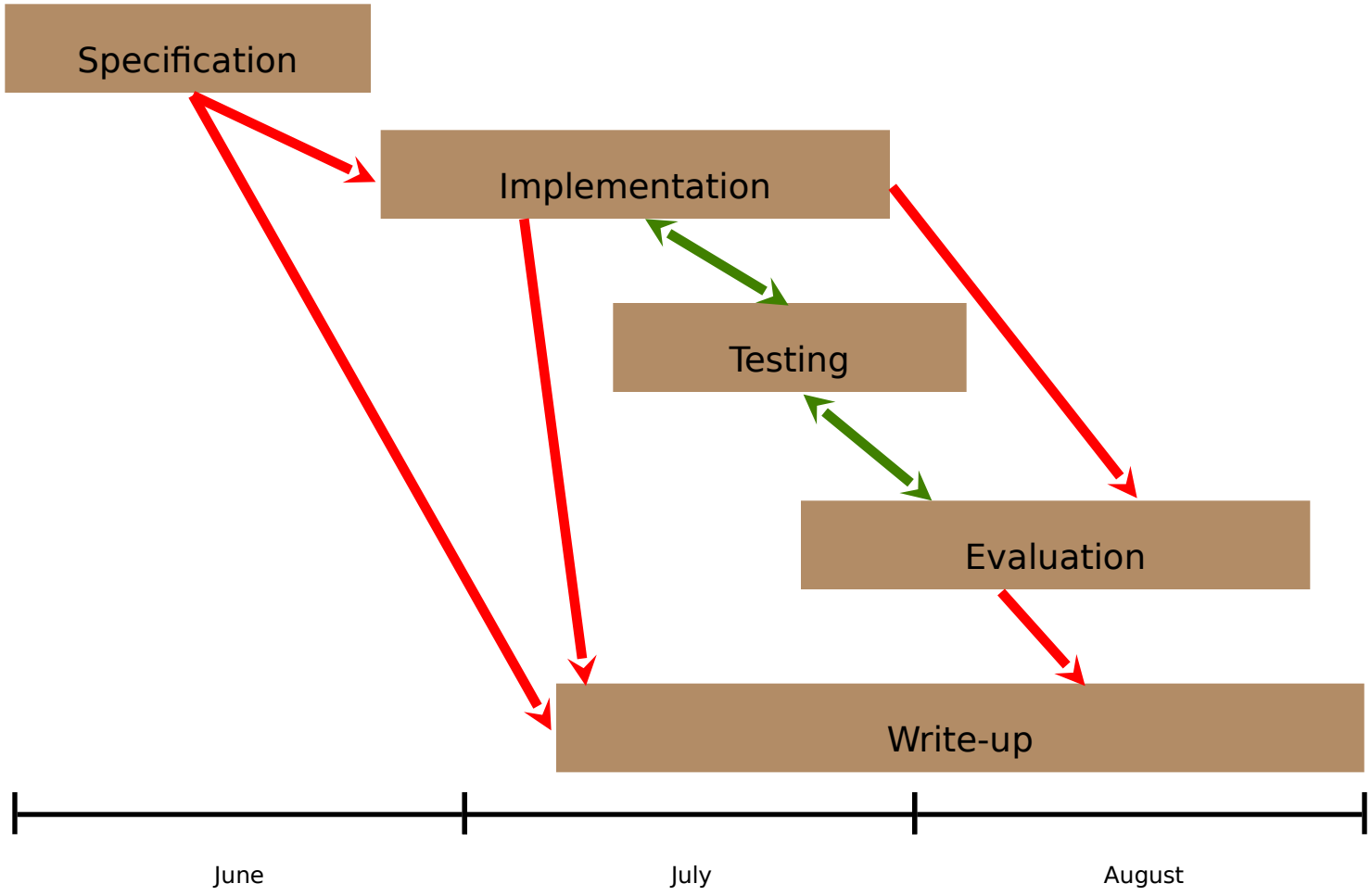
How will you evaluate your project?

- 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 IRP) one month for writing.

Example Gantt chart



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*

IRP marking guidelines

Criterion	Possible considerations	absent	poor	fair	good	v. good	excellent
Literature	Concise review of literature, correct referencing.						
Introduction	Accessible to non-experts; motivation and relevance; audience						
Objectives	Clear statement of objectives; hypotheses.						
Approach	Method; plan of work; evaluation metric; time-table.						
Presentation	Reasonable length, correct English, correct level						

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 IRP in your MSc thesis

- The work but not the words of IRP can be used in thesis
- University policy: cannot be marked twice for the same work
- Cannot copy-and-paste sections from IRP into your MSc dissertation
- Two options:
  - **Quote the included sections** with a citation to your own IRP

    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.