Research Planning

COMP 90044 SM 1 2019, Week 6, Dana McKay

Outline

▶ Housekeeping

▶ Why plan research?

▶ Stages of research planning

  ▶ Choosing a topic

  ▶ Choosing a supervisor

  ▶ Planning data gathering

  ▶ Conducting data gathering

  ▶ Writing up

Housekeeping

- Your optional submission due tomorrow
- It should contain
  - A research question
  - A basic introduction to your lit review
  - 4-6 references (your final review will need more)
  - A basic structure for the rest of your review (bullet points
- No more than 500 words + references!
- We will get this back to you in a week

Why plan research?

- ▶ To ensure a useful outcome
- ▶ To attract good collaborators
- ▶ To understand how much time you should spend
- ▶ To cope better with "surprises"

Research planning is

- Deciding what questions you will ask

- Putting together a team

- Undertaking any administrative tasks (such as ethics)

- Thinking about what outputs you might generate

Research planning is NOT

- Deciding what answers you will get

- Closing your eyes to the interesting findings along the way

Choosing a topic

- Two methods
  - Supervisor proposed topic
  - Student proposed topic
- Good topics (a.k.a. research questions):
  - Solve genuine problems
  - Deal with real data, of a real volume
  - Can plausibly be answered in the negative
  - Can be answered in the scope of your project
  - Suggest something useful to measure
  - Have interesting results even if the gains are small

Assessing a research question

- ▶ Is it a good fit for you?

- ▶ Is the data available or can it be collected?

- ▶ Does the literature point to the question?

- ▶ Is the related literature manageable within the scope of your project?

- ▶ Is there a feasible method for answering the question?

- ▶ Is the answer already known?

Pop quiz

- 'How could Google's presentation of search results be improved'
  - Is a good research question
  - Is a bad research question
  - Could be better framed as….

- **Does P=NP?**
  - **Is a good research question**
  - **Is a bad research question**
  - **Could be better framed as….**

Research is not

- I am planning to build a new…
- I want to show A is better than B
- I want to find out about…
- I think X is a good tool for…
- I have an interesting algorithm
- I want to use method Y….
- I am going to collect data on…

Choosing a supervisor

- They should know something about your topic
- They must have time to supervise you
- If you are doing a masters, they need to be around during your project
- They should be a good fit for you
  - Authoritative or supportive
  - Free thinking or constrained
  - Theory or practice
- YOU will do the research

Pop quiz

- It is more important that:
  - You are interested in your topic
  - Your supervisor is interested in your topic

Planning data gathering

▶ Have you checked the literature?

▶ What kind of data do you need?

▶ How much do you need?

▶ Where will you gather it?

▶ Are there any pre-conditions (access to equipment, ethics approval)?

▶ Will you analyse as you go, or at the end?

▶ Always allow extra time

Gathering data

▶ Document the process

▶ Document any surprises

▶ Document decisions you make along the way

▶ Store the data securely

Analysing data

▶ Make sure your methods are appropriate

▶ Use statistics wisely and with care

▶ Do NOT 'massage' the data—be honest

▶ Is there anything else you could get out of the data?

Pop quiz

- It is better to
  - Analyze data as it comes in
  - Wait until the end and analyse it all there

Writing up

- What are you writing? Thesis? Publication?
- Allow plenty of time
- Write up all your results, not just the favourable ones
- Go back to the literature:
  - What is new or surprising about your findings?
  - How do they relate to other findings?
- Acknowledge the limitations of your work
- Point to future research questions

Pop Quiz

It is better to

Review all the available literature at the beginning of a project and re-scan it at the end

Do a basic literature scan at the beginning of a project and an intensive review focusing on your findings at the end

Summary

▶ Planning is important to maximise benefit

▶ Your supervisor is a support to you

▶ You want to answer a new question

▶ In some projects, you may go through the cycle several times

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