Robotics Research Review 2

J. Michael Herrmann

University of Edinburgh

Based on and including material from M.v.Rossum

Last time:

- Identify relevant papers: (see below)
- Keep notes on each paper
- Attend related seminars: http://www.inf.ed.ac.uk/events/seminars
- Weave these into a story
- Write your report (10 pages or 4000 words)
- Submit by 4pm, 27th February 2017
- Submit via e-mail to both your supervisor and to michael.herrmann@ed.ac.uk

Telling a story

- Literature survey is part of *motivation*
- How did this field *develop*?
- How did it *start*?
- What are the *rival approaches*?
- How do pieces of work *relate*?
- Where are we *now*?
- What remains *to be done*?
- What are the *hot topics*?

5-Paragraph Essay
("Hamburger" essay)

1. Introduction: Motivation, topic, hypothesis
2. Narration: Evolution of the topic, literature overview, alternative hypotheses
3. Affirmation: evidence and argument in favour
4. Negation: discussion and refutation of arguments against and of alternatives
5. Conclusion: Summary and connection to larger issues

8-Legged Essay

Chinese tradition (and a modern interpretation)

1. Opening (topic)
2. Amplification (motivation)
3. Preliminary exploitation (literature)
4. Initial argument (results for trivial case)
5. Central argument (results for interesting case)
6. Latter argument (results for ambitious case)
7. Final argument (conclusion, assuming discussion was included already in 4.-6.)
8. Conclusion (outlook)

Methods, Models, Soft- & Hardware

(important aspect that is often not explicit in the classical schemes)

- Be brief about established methods (Refs!)
  - advantages and drawbacks (several dimensions for evaluation)
  - this evaluation helps to justify your own approach
  - if used, indicate which variant & justify your choice
- Be detailed about methods you have developed
  ⇨ Reproducibility
- Comparison of methods can continue as part of Results and/or Discussion

RRR as part of a thesis project

- Literature review
- Specification of a direction, goals and methods
- Justification of the approach
  - filling a gap that was identified in the literature
  - similar to examples from the literature
  - a new combination of existing approaches
  - application of a existing approach to a new domain
  - extension, generalisation, removal of assumption
  - improvement of existing approaches

RRR Structure

(to be adapted to your project)

- Introduction (motivation)
- State of the art (literature review)
- Hypothesis (including a justification and some preliminary expectations)
- Discussion (brief, but important!)
  - Approach (methods)
  - Research plan (first steps, overview)
  - Evaluation (criteria)
  - Discussion (potential difficulties, fall-back options)
- Conclusion (impact, outlook)

Marking (Theses)

- Basic criteria
  - Understanding of the problem
  - Completion of the project
  - Quality of the work
  - Quality of the dissertation
- Additional criteria
  - Knowledge of the literature
  - Critical evaluation of previous work
  - Critical evaluation of own work
  - Justification of choices made
  - Solution of any conceptual problems
  - Amount of work
- Exceptional criteria

Marking (Theses)

- If everything is just fine, you'll get 60-70%
- Are you aiming at more than this?
  - outstanding merit
  - indicating routes beyond the state of the art while still remaining realistic
  - work towards publishable results
  - public interest (“impact”)
  - excellent format, style and argument
- If basic or additional criteria are not met, the exceptional criteria won't help you

Marking RRR

(adapted from the DTC Neuroinformatics guidelines)

- Background explanation / Context
- Description of relevant methods and aims
- Conclusions lead to a feasible project
- State of the art, novelty of the project
- Writing - Clarity of expression and argument, Style and appearance

Inadequate (<50%),
adequate(>50%),
good (>60%),
very good (>70%),
outstanding (>80%)

RRR mark is the average over the five values

Marking RRR

Potential implicit criteria (may overlap with formal criteria):

- Evidence of knowledge, scholarship
- Evidence of ambition, interest, curiosity
- Evidence for a good understanding of the problem
- Amount of productive work (feasibility becomes obvious by presenting first results)
- Independence (does not exclude asking many questions!)
- Professionality of the report

Time scales

- 30s: Elevator, questions after presentations
- 3 min: round table discussion, expert opinion
- 30 min: Presentation, interview
- 3 hours: Read average paper, adaptation of a computer program
- 3 days: Important paper, workshop, tutorial course
- 30 days: Proposal for co-operation project, coursework, writing-up of an MSc thesis or paper
- 3 months: Internship, course, acquiring a new skill, productive part of the work towards a paper, writing-up of PhD thesis
- 3 years: PhD, research project
- 30 years: professional career

Elevator pitch

- Who are you?
- What is the problem?
- What are you proposing?
- Why is this a good idea?
- What will be the benefit?
- [Why you?]
- [What support do you need?]
- [What happens next?]