How to Get a PhD in Informatics

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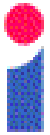


Starting on a Research Project

A Daunting Prospect?

- Significant and Original Research.
- Creativity is learnable.
- Researchers Bible.
- Anyone can do it:
  - sufficiently bright;
  - work hard;
  - take this advice.

Choosing a Project

- **Criteria project must meet:**
  - **inspiring;**
  - **significant and original;**
  - **do-able;**
  - **supervisable.**
- **Sources of ideas:**
  - **supervisor & other colleagues;**
  - **read literature of chosen area;**
  - **further work suggestions of others;**
  - **previously, badly done work.**

Types of Research

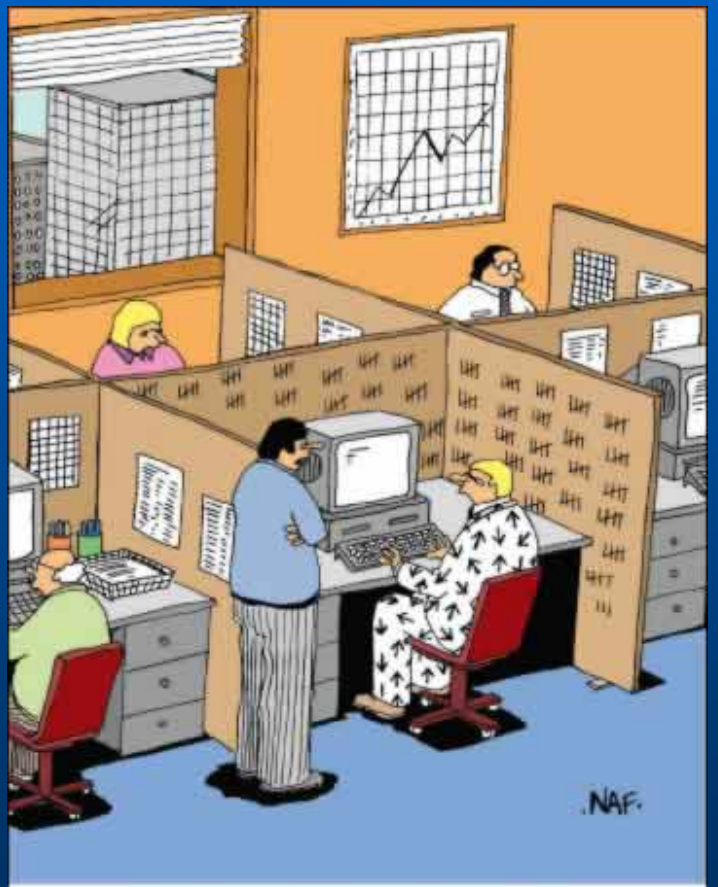
- Development of new techniques.
- Exploration of existing techniques:
  - theoretical analysis;
  - 'rational' reconstruction;
  - experimental exploration and hypothesis testing;
  - comparison of several techniques;
  - comparison to natural systems.
- Extension and improvement of existing techniques.
- Application of known techniques to new domains.

Hypothesis and Evidence

- What hypotheses will you investigate?
- Along what dimensions will you explore properties or relations of techniques or systems?
- What kind of evidence will you present to support your hypotheses?

When Things Go Wrong

I'm starting to get the impression that you're not happy here, Jones.



Postgraduate Diseases

- Manna from Heaven.
- Ivory Tower.
- Solving the World.
- Ambitious Paralysis.
- Computer Bum.
- Stamp Collecting.
- Misunderstood Genius.

Psychological Hurdles

- Loneliness of the long distance researcher.
- Self doubt.
- Early morning --- Cold start.
- Theorem envy.
- Fear of exposure.
- Dealing with criticism.

Good Working Habits: Keeping Regular

- **Regular hours:**
  - get a routine.
- **Regular reading:**
  - outer, middle and inner circles.
- **Regular writing:**
  - notes, technical reports and journal articles.
- **Regular talking:**
  - informal chats, seminars and conference talks.
- **Regular check-ups:**
  - where am I going?
  - what will it be like when I get there?
  - what step should I take next?

Sorting Out Your Ideas

Structure of Thesis

- **Introduction**: motivation, extended contents.
- **Literature Survey**: broad and shallow.
- **Background**: technical introduction.
- **Specification**: what you required.
- **Implementation**: what you did.
- **Results**: how well it worked.
- **Related Work**: deep and narrow.
- **Further Work**: what is left to do.
- **Conclusion**: significance of achievement.
- **Appendices**: glossary, full results, example traces, selected code, etc.

Thesis Message

- **Abstract of thesis.**
- **Each sentence corresponds roughly to thesis chapter.**
- **Whole reads as central argument of thesis.**
- **Helps ensure thesis hangs together ...**

  ... and nothing is missing.

The Computational Modelling of Religious Concepts
by Fr. Aloysius Hacker

- We apply ideas from Computer Science to the understanding of religious concepts.
- Problems with previous attempts to explain religious concepts,
  - e.g. the holy trinity and miracles.
- These problems arose because the appropriate terminology was not available.
  - Computational terminology often provides an appropriate analogy.
- Although some problems still remain,
  - e.g. free will,
- We are seeing the beginning of a new, computationa theology.

Relations with your Supervisor

- **Meet regularly.**
- **Provide written and oral reports,**
  - **before meeting**
  - **and summary of main actions afterwards.**
- **Talk over problems.**
- **You can swap them.**

Summary

- You too can get a PhD ...
  - ... just by following this simple advice.
- Keep doing meta-research.
- Keep regular --- stay healthy.
- Communicate!

  Recommended Reading: Researchers Bible.

http://homepages.inf.ed.ac.uk/bundy/how-tos/resbible.html