How to get a PhD in AI

Citation for published version:

Link:
Link to publication record in Edinburgh Research Explorer

Document Version:
Peer reviewed version

Published In:
Artificial Intelligence Skills

General rights
Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.
How to Get a PhD in Informatics

Alan Bundy

University of Edinburgh

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.

A Daunting Prospect?

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

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?

Psychological Hurdles

- Loneliness of the long distance researcher.
- Research impotence.
- Early morning — Cold start.
- Fear of exposure.
- Dealing with criticism

Postgraduate Diseases

- Manna from Heaven.
- Ivory Tower.
- Solving the World.
- Ambitious Paralysis.
- Computer Bum.
- Stamp Collecting.
- Misunderstood Genius.
- Beating Around the Bush: philosophy + history.

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?
**Exercise**

In relation to your project, define the outer, middle and inner circles for your reading.

---

**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.

---

**Thesis Message: Example**

*The Computational Modelling of Religious Concepts*

by Fr. Aloysius Hacker

1. We apply ideas from Computer Science to the understanding of religious concepts.
2. Previous attempts to explain religious concepts, e.g. the holy trinity and miracles, have often encountered philosophical problems.
3. These problems arose because the appropriate terminology was not available. Computational terminology often provides an appropriate analogy.
4. Although some problems still remain, e.g. free will,
5. We are seeing the beginning of a new, computational theology.
Relations with your Supervisor

- Meet regularly.
- Provide written and oral reports.
- Talk over problems.
- You *can* swap them.

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.

Overall Summary

- The scientific *nature* of Informatics, exploration of a space of techniques;
- *Criteria* for assessing Informatics research, similar to other science;
- The *methodology* of Informatics, signs of a maturing field.
- Research success is *not magic*, practical hints on how to achieve it.