课程/毕设报告
How to write thesis

东南大学 李竹颖 副教授
计算机科学与工程学院、软件学院、人工智能学院

课程内容进度

课次	日期	内容	作业
1	8月22日	课程简介，科研简介，生涯规划； 优秀学长学姐分享经验	海明的科研
2	8月24日	论文分类，论文评价，论文搜索,论文搜索示范； 科研报告（一）	搜索论文
3	8月29日	如何阅读论文,综述一个小领域； 科研报告（二）	阅读论文
4	8月31日	使用Latex； 科研报告（三）	用Latex综述自选方向
5	9月5日	如何做PPT报告（项目、论文）； 科研报告（四）	研究兴趣PPT 课程报告和汇报
6	9月7日	一般性课程报告写作、专业文档阅读； 科研报告（五）	
7	9月12日	学生分组报告汇报	
8	9月14日	学生分组报告汇报	

课程/毕设报告的写作

——以本科毕业设计论文为例

部分来源：《本科毕设开题工作--开题报告撰写、开题答辩及相关注意事项》，北京航空航天大学 张岩

“复杂工程问题”的特征

1. 必须运用深入的工程原理经过分析才可能得到解决
2. 需求涉及多方面的技术与工程因素，并可能相互有一定冲突
3. 需建立合适抽象模型才能解决，建模过程中需要体现创造性
4. 不是仅靠常用方法就可以完全解决的
5. 问题中涉及的因素可能没有完全包含在专业标准和规范中；
6. 问题相关各方利益不完全一致
7. 具有较高的综合性，包含多个相互关联的子问题

来源：专业认证《华盛顿协议》2013年第三版

基本流程

- 开题报告
- 撰写论文

开题报告要点

- 开题报告内容
  - 课题来源、研究目的及意义
  - 国内外研究现状 — 别人怎么做？
  - 研究内容 — 你要做什么？
  - 研究方案及技术路线
  - 进度安排 — 你要怎么做？
  - 预期达到的目标
  - 参考文献 — 别人怎么做？

课题背景、目标及意义

- 简要说明课题的来源、研究目的（即要解决的实际工程或理论问题）、研究意义
- 研究目标要明确，各项指标要具体，对算法软件类和硬件类课题要加以区分

国内外研究现状

- 别人怎么做？（很重要！）
  - 说明国内外相关研究成果（谁、什么时间、什么方法、什么成果？），用自己的话表述
  - 进行简要述评，引出自己的研究目标和方法

研究内容要点

- 要达到你的研究目标，需要开展哪些研究工作，各部分之间的支撑关系，并明确关键点

毕设内容要点（论文结构）：

①……

②……

③……

④……

拟采用的技术方案

- 给出目前现有的几种具体的实现方案以及相关优缺点对比分析，在此基础上给出你的论文拟采用的技术方案并论述新方案的可行性
  - 预期的难度
  - 优缺点是什么
  - 预计如何解决

拟采用的技术方案

- 给出毕设工作的总体框图、原理图、软件大致流程图、分析方法、主要公式等
  1. 理论研究类：要分析采用的理论方法、原理；要回答为什么采用这些方法，并给出验证方法。
  2. 工程设计类（偏硬）：要列清主要器件，分析其功能；要回答为什么采用这些器件、设计方法；性能改进？成本降低？
  3. 工程设计类（偏软）：要说明开发工具，仿真方法

进度安排

- 以图表的形式给出论文工作的时间安排
  - 包括分为几个阶段
  - 每个阶段的任务和成果
  - 时间安排

预期目标及成果形式

预期目标

- 论文工作预期实现的目标、需要的保障条件（如数据、软件等）

成果形式

- 软件、硬件、系统、仿真结果、理论方法及结果等

撰写论文中思考问题

1. 选题依据？
2. 研究该课题的意义和目的是什么？
3. 全文的基本框架、基本结构是如何安排的？各部分之间逻辑关系如何？
4. 在课题研究过程中，发现了哪些不同见解？是如何认识和处理的？
5. 毕业设计虽未论及，但与其较密切相关的问题还有哪些？
6. 毕业设计中哪些问题研究得不够透彻？

What to put in a project talk

A "Typical" Project Talk Outline

- **Title/author/affiliation** (1 slide) — Who am I?
- **Forecast** (1 slide) — What is the problem?

  Give gist of problem attacked and insight found
- **Outline** (1 slide)
- **Background**
  - **Motivation and Problem Statement** (1-2 slides) — Why is it important?
  - **Related Work** (0-1 slides) — What have others done?
  - **Methods** (1-3 slides) — What is my approach?
    - Explain your approach
    - illustrate algorithm

A "Typical" Project Talk Outline

- **Results** (2-6 slides)
  Present key results and key insights. This is main body of the talk, but don't try to show ALL results.
- **Summary** (1 slide)
- **Future Work** (0-1 slides)
  Backup Slides (0-3 slides)
  Optionally have a few slides ready to answer expected questions.

Other Things to Consider

- Oral communication is different from written communication
  - Keep it simple and focus on a few key points
  - Repeat key insights
- Be sensitive to your audience
  - The same talk may need to be adjusted for a different audience
- Make the audience want to learn more
- Handling Q&A is as important as the formal talk itself

How to write an academic paper

Compared to a thesis…

A top conference/journal paper is…

- Much shorter
- Focusing on one specific contribution, e.g., a system contribution
- More than ‘GOOD’

As a newbie

- Start EARLY
- Find a GREAT paper as your blueprint paper
- Keep writing, everyday
- Seek feedback, before you finish everything

Advice

- Follow your blueprint paper's structure
- Situate your work in an appropriate field
- Clarify your contribution
- Contextualize your EVERY decision
- You should have a clear map in your mind about your work
- Start as soon as possible
- Don't focus on perfect text the first time. Iterate iterate iterate.

Advice

- Use typical structure
  - Abstract
  - Introduction
  - Related Work
  - Method
  - Results
  - Discussion
  - Conclusion
  - Abstract
  - Introduction
  - Related Work
  - Algorithm
  - Experiments
  - Discussion
  - Conclusion
- Use the same language as other people in the field

Advice

- Use plain language
- Grammar!
- Use same words for the same concept!
- Reader-centered writing (What is your target audiences? What are their needs?)
- Make sure to generalize / replicability
- Carefully go through the webpage of your target conference/journal

TEEL Sentence Starters

Use these sentence starters to help you write your TEEL paragraphs.

T	E	E	L
Topic	Evidence	Explanation	Link
I strongly believe...	For example...	This shows...	From this we can conclude...
Another point to consider is...	This is illustrated by...	This means...	It is clear that...
First of all...	This can be seen...	Therefore...	In conclusion...
It is quite obvious that...	Data shows...	Because of this...	We can therefore see...

Example of TEEL Paragraph

Bats are the only flying mammal in the world and flying squirrels actually glide. Bats are not birds as they do not lay eggs and give birth to babies directly. They also have mammary glands and can feed their new born milk. They also do not have coat on the body and wings are totally different from birds. They are made up of skin flaps stretched over a long bony fingers. It also has a tail which is make them more like rodents than birds. Some argue that they have seen flying squirrels and bats are not the exception. This takes away the prized title of "only flying mammal" from them. Let's return it back to its right full owner using some facts. What is flying? It is generation of sustained flight using physical energy produced inside the muscles. This in turn from chemical energy from the food. The direction should be universal and not restricted. What is gliding? It is done by using stretched skin or to move in a particular direction. The path can only be continuous and direction can be changed but only altered a bit. The motion is always from a high to low and there is no involvement of muscles in the flight other then changing directions. Now, calling gliding as flying is really a unscientific comment. One must understand the difference and do not draw comparison. Otherwise, will also start claiming to flying using jet packs and para gliders. Therefore, we can safe conclude that the bats are the only mammals that can fly. There are some species of rodents that can glide but the process and implications are very different.

TOPIC SENTENCE EXPLANATION EVIDENCE

LINK COMMENT

Further Learning

How to write CHI papers

By Lennart Nacke

Director of the HCI Games Group

University of Waterlo

- Book
- Courses
- Apple Podcasts Preview