General Information
Course Organization

Lecturer: Andreas Pieris (apieris@inf.ed.ac.uk)


Lecture: Wednesday, 9:00 – 10:50
Room G.16, 7 Bristo Square

Assessment: Essay 1 (15%), due 9 February, ITO before 4pm

Essay 2 (15%), due 9 March, ITO before 4pm

Essay 3 (15%), due 6 April, ITO before 4pm

Final Project (40%), due 27 April, ITO before 4pm

Project Presentation (15%), in class, to be scheduled
General Information

- **This is a demanding course**

- Highly condensed lectures that you need to supplement by a lot of reading

- **Goal of lectures:** tell you about some hot topics in foundational research on data management

- **Goal of your work:** make sure you can follow and understand what’s hot

- Read papers and present a summary (essays), and for one paper you should show that you **really** understand all the details (final project + presentation)
Essays and Final Project

• **Guidelines for essays:**
  - Between 5 to 7 pages (including references)
  - Should present a summary of a paper understandable to someone who has not read the paper
  - Definitions and statements must be formal and complete
  - Proper citations are expected
  - No copy-and-paste – it is your essay. It is crucial that you present your own thoughts and/or analysis

• **Guidelines for final projects:**
  - Between 7 to 9 pages (including references)
  - Similar to essays, but in more depth – don’t forget, you should show that you understand all the details in the paper
  - **In addition, a piece of your own work is expected:**
    - Extend some of the results
    - Close an open problem
    - Implement an algorithm and analyze its performance
    - Isolate special cases that improve existing solutions
    - Etc. (the list is not exhaustive)
Main Topics

1. Foundations of relational query languages
2. Approximation of conjunctive queries
3. Semantic optimization of conjunctive queries
   - Essay 1
4. Foundations of XML
   - Essay 2
5. Graph databases: Data model + query languages
6. Ontology-based data access (OBDA)
   - Essay 3
7. Query rewriting in OBDA
8. Consistent query answering in OBDA
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1. Foundations of relational query languages
2. Approximation of conjunctive queries
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5. Graph databases: Data model + query languages
6. Ontology-based data access (OBDA)
7. Query rewriting in OBDA
8. Consistent query answering in OBDA (but, on a different topic)
Discovering new patterns and knowledge from data

Four year PhD programme
Courses + PhD dissertation
(No previous MSc required)

- Machine learning
- Databases
- Algorithms and systems
- Statistics and optimization
- Big data
- Natural language processing
- Computer vision
- Speech processing

http://datascience.inf.ed.ac.uk/