

Assignment Project Exam Help

About COMP9318 (2018 s1)

<https://powcoder.com>

Wei Wang @ CSE, UNSW

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Lecturer-in-charge:

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Research Interests:

- Knowledge graph / natural language processing
- High-dimensional data / Similarity query processing
- DB + AI

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Course Info

- Homepage: <http://www.cse.unsw.edu.au/~cs9318>
- Communications:
 - Main form: Piazza Forum: <https://piazza.com/configure-classes/spring2018/comp9318>
 - Email: weiw@al.cse.unsw.edu.au
 - Only for matters that cannot/should not be resolved via piazza.
- Lectures:
 - 1800 – 2100 Mon Keith Burrows Theatre
- Tutorials: several *online* tutorials + ipython notebooks
- Consultations: by appointment only.

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Overview

- 1 written assignments + 1 programming project + lab
- `lab = np.mean(sorted([lab1, lab2, lab3, lab4, lab5], reverse=True)[:3])`

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Read the spec to find out late penalty policies.

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Exam

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- If you are ill on the day of the exam, **do not attend** the exam — I will **not** accept medical special consideration claims from people who have already attempted the exam.

Final Mark

- Final mark

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$final_mark = 0.15 \cdot (ass1 + proj1 + lab) + 0.55 \cdot exam$

- Also requires $exam \geq 40$.

This course has

- Broad coverage
- Heavy workload
- High fail rate $\geq 20\%$
- Plagiarism is not allowed. Make sure you read all types of plagiarism, esp. **collusion** in

<https://student.unsw.edu.au/plagiarism>.

Specially, we do not accept personal plea or excuses; if you have valid reasons that affect your performance, apply for a UNSW

Special Consideration:

<https://student.unsw.edu.au/special-consideration>.

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Example excuse

- I spent so much time and effort on this course but still failed?
- I did the work by myself and may have shared it with my classmate for discussion.
- If I fail this course, I will [...]. Please.

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Lecture Slides

- Contains many materials not found in the text/reference books.

Text Book

- Leskovec *et al*, *Mining of Massive Datasets* (ver 2.1), Available at <http://infolab.stanford.edu/~ullman/mmds.html>
- Jensen *et al*, *Multidimensional Databases and Data Warehousing* (Accessible from a UNSW IP)
- Han *et al*, *Data Mining: Concepts and Techniques*, 1st/2nd edition, Kaufmann Publishers.

Reference Books

- Tan *et al*, *Introduction to Data Mining*, Addison-Wesley, 2005.

- Witten *et al*, *Data Mining: Practical Machine Learning Tools and Techniques with Java Implementations*, 1st/2nd edition, Morgan Kaufmann.

- Churu Aggarwal *Data Mining: The Textbook*, Springer, 2015.

Software

- Anaconda
- Python 3
- Jupyter notebook
- Python libs such as numpy, pandas, matplotlib, scikit-learn, ...

Reading Materials

- Papers from machine learning/data mining conferences/journals, white papers, surveys, etc.
- All available from the course Web page.

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Week	Contents	Assignments
1	Course overview + Introduction	lab
2	Data warehousing and OLAP	
3	Maths review + Data Preprocessing	lab
4	Data Preprocessing + Classification	
5	Classification	ass1
BREAK		
6	Classification	
7	Classification	lab, proj1
8	Classification	
9	Clustering	
10	Clustering + Association Rule Mining	lab
11	Association Rule Mining	lab
12	Advanced topic + review	

Course Objective and Requirements

Objectives:

- Cover practically useful data mining/machine learning algorithms and concepts
- Foster **deeper** understanding of maths, models, and algorithms
- Gain hands-on experience with solving real problems

Requirements:

- You need to have a solid background in Maths (Linear Algebra, Calculus, Probability & Statistics) and programming (mainly python)
- **Understand** (not memorize) concepts/equations/algorithms.
 - Ask *why*.
 - Describe it in your own language to a layman.

Feedback welcome (throughout the course).

Example

Example

John got a positive result for the α test, and the probability that patients with the deadly β disease having a positive α test result is 99%. Should John be worried about having the β disease?

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$$P(\beta \mid \alpha) = \frac{P(\alpha \mid \beta)P(\beta)}{P(\alpha)} = 0.99 \frac{P(\beta)}{P(\alpha)}$$

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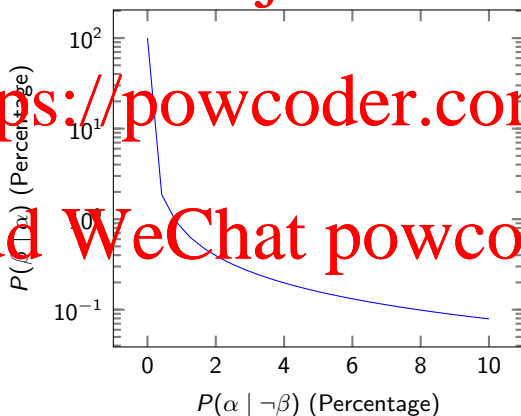
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$$P(\beta | \alpha) = \frac{P(\alpha | \beta)P(\beta)}{P(\alpha | \beta)P(\beta) + P(\alpha | \neg\beta)P(\neg\beta)}$$

Exercise

Exercise: plot the function $P(\beta | \alpha)$ with respect to $P(\alpha | \neg\beta)$

given $P(\beta) = \frac{8}{100,000}$.



For those new to the computing environment at CSE, UNSW

- Use Linux/command line.
 - Project marked on linux servers
 - You need to be able to upload, run, and test your program under linux.
- Assignment/Project submission
 - Give to submit. Watch out for possible error messages.
 - Classrun. Check your submission, marks, etc. Read <https://wiki.cse.unsw.edu.au/give/Classrun>
 - Common errors:
 - File corrupt (during SFTP?), not in the correct format.
 - Submission not accepted by the system (wrong filename? too large? ...).
- Lab submission: our home-made Web submission system.

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Other specialised courses in the Database or Data Science stream:

- COMP9319: Advanced algorithms on compression, text/XML databases, etc.
- COMP9313: Big data systems (hadoop, spark, etc)
- COMP9314: Information retrieval, Natural language processing, Search engines.

Other machine learning courses:

- COMP9417: Machine Learning and Data Mining
- COMP9444: Neural Networks and Deep Learning
- COMP9418: Advanced Machine Learning

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Talk to me about PhD/Master/Honour/Research Project opportunities in the area of data management, text mining, machine learning, and natural language processing.

- PhD scholarship and/or top-ups available.
- Special research project (12UoC or 18UoC) for MIT students — needs to contact me by the end of this semester.

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Things to ponder:

- The long-term impact of the latest development in AI/DS/Hardware.
- What do you want out of this course?

Requirement:

- Plan ahead for the course.
- Learning happens outside your comfortable zone.
- Review teaching materials after the lecture.
- Use the Jupyter notebooks.

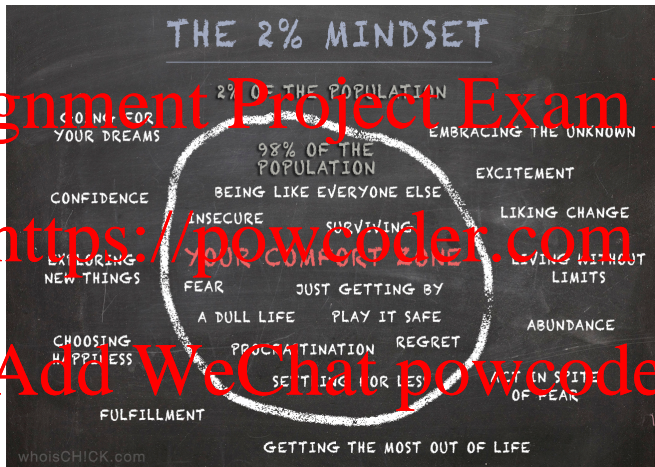
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