University of Nottingham
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COMP3055 Machine Learning

Topic 1 – Introduction

Dr. Zheng LU

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CS2313 Computer Programming

Assistant Professor Zheng LU (卢正)

Year	Degree/position	Institution
2017 – Now	Assistant Professor	Dept. Computer Science, University of Nottingham **Ningbo China**
2013 – 2017	Assistant Professor	Dept. Computer Science & School of Creative Media, City University of **Hong Kong**
2011 – 2013	Postdoc Fellow	Dept. Computer Science, University of Texas at Austin, **USA**
2007 – 2011	PhD	Dept. Computer Science, National University of **Singapore**
2000 – 2004	B. Comp	Dept. Computer Science, National University of **Singapore**

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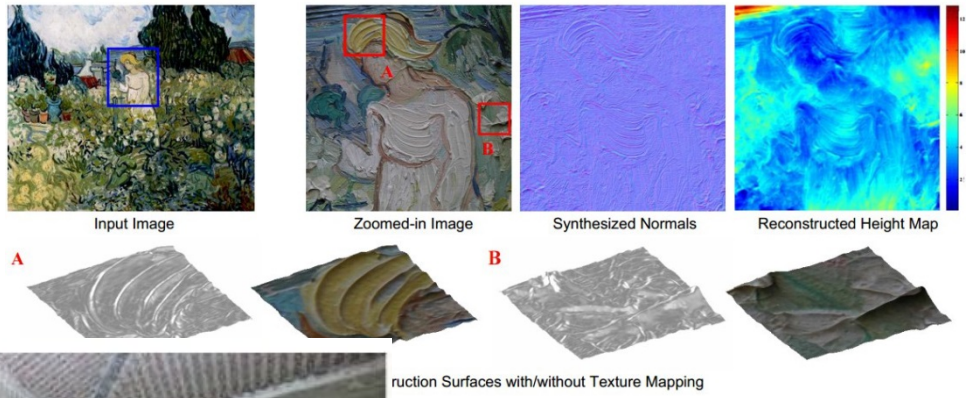
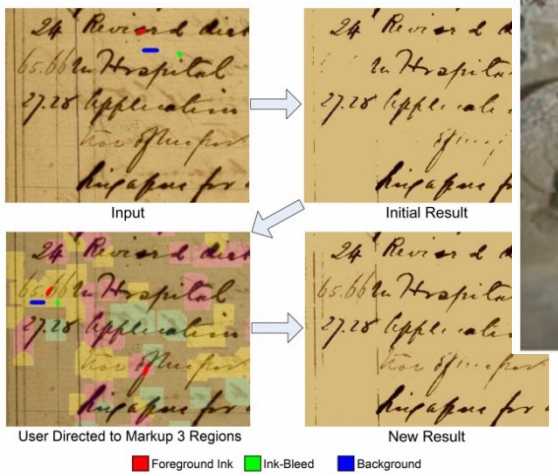
Wechat: course group?

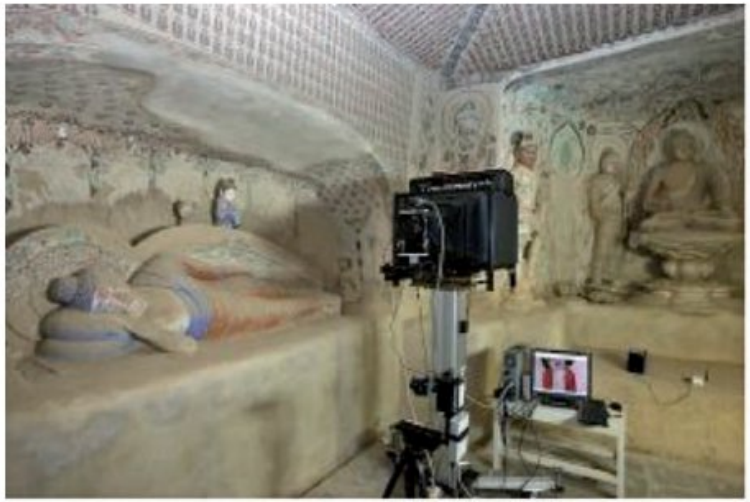
Zheng Lu

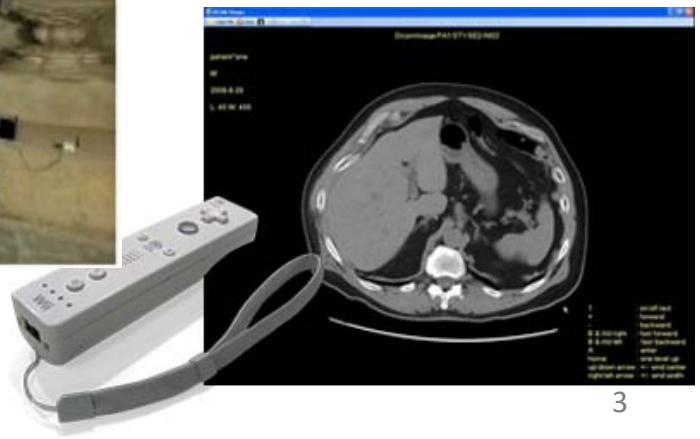
Research

- **Computer vision**
  - Object recognition and visual discovery
- **Machine Learning**
- Image / video processing









Lecture Schedule

- Two sessions every week
- Please see Moodle page
- Tentative schedule
- Regular update
- Plan ahead

Lab Schedule

- One session every week
- Lab sessions will provide you hands on experiences on what you learned during the lecture sessions
- Lab sheets will be published in Moodle page

Assessments

- Exam: 70%; 2 hour written examination
- Coursework: 30%; 1 piece of individual programming assignment

Summary of Content

- Provide you with an introduction to **machine learning**, pattern recognition, and data mining techniques

- Enable you to consider both systems which are able to develop their own rules from trial-and-error experience to solve problems, as well as systems that find patterns in data without any supervision. In the latter case, data mining techniques will make generation of new knowledge possible, including very big data sets. This is now fashionably termed 'big data' science.

- Cover a range of topics including: machine learning foundations; pattern recognition foundations; artificial neural networks; deep learning; applications of machine learning; data mining techniques and evaluating hypotheses.

- You'll spend around six hours each week (on average) in lectures and computer classes for this module.

Assessments

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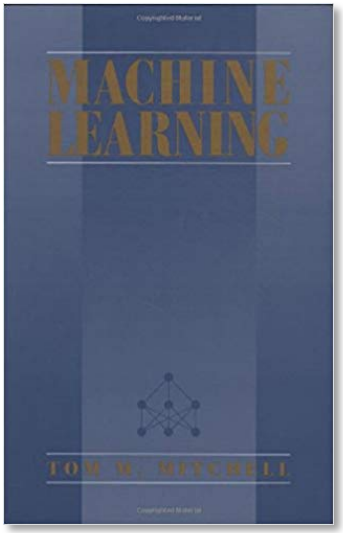
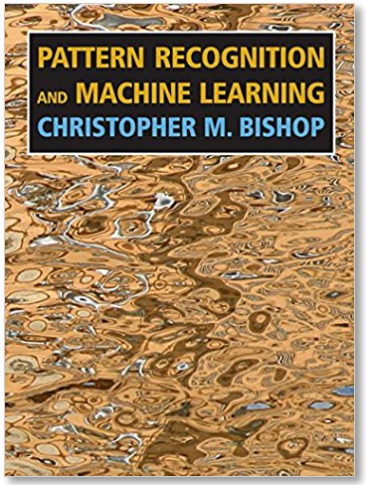
Textbooks

- Tom M. Mitchell, Machine Learning, McGraw-Hill



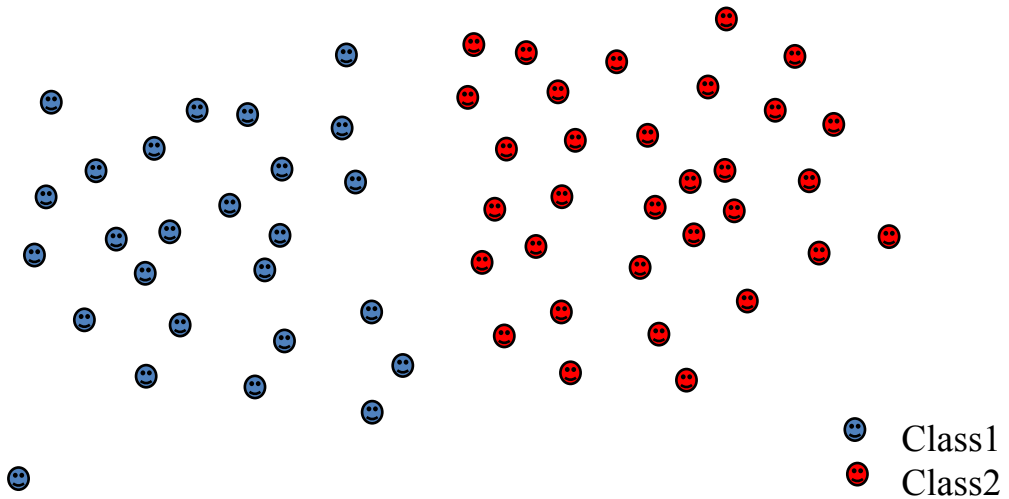
- Chris Bishop, Pattern Recognition and Machine Learning, Springer



- Some of recent technical papers

Provisional Topics

- Perception, multilayer perception.
- Instance based learning, KNN etc.
- Bayesian learning.
- Decision tree, random forest.
- Unsupervised learning, clustering, Kmeans etc.
- Support vector machine.
- Deep learning, CNN etc.
- …
- (to be determined)



How to Get 70+

- **Studying…**
  - You are recommended to study the relevant notes before attending the lecture or lab.
  - Review as soon as possible to maximize retention.

- **Practice…**
  - **Do the lab exercise yourself** and repeat the practice for better learning.
  - If you get help on the labs, don't just blindly accept it, but try to understand what each part of the code is doing.
  - Do the Math in the lecture for better understanding.
- **Assignments…**
  - Start work on the assignment **when they are released**, and come up with a good plan to finish it.
  - Many times fixing problems in your program will take **longer** than you expect, so make sure you have plenty of time to complete.

Do the thing right, Do the right thing

Any Questions?