NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

SC1015

Introduction to Data Science and Artificial Intelligence

Dr. Smitha K G
Mr. Ong Chin Ann

School of Computer Science and Engineering
Nanyang Technological University, Singapore

Data Science Instructor and Course Coordinator

Smitha K G
Senior Lecturer

School of Computer Science and Engineering
Nanyang Technological University, Singapore

smitha@ntu.edu.sg | N4-02c-75

Artificial Intelligence Instructor

Ong Chin Ann
Lecturer

School of Computer Science and Engineering
Nanyang Technological University, Singapore

chinann.ong@ntu.edu.sg | N4-02c-108

LAB

Instructors

Graduate TAs

Mostly PhD students in ML/AI working with SCSE Professors.

If you miss your Lab slot, email your own Lab TA to know how to submit the exercises. It is crucial for the **graded exercises**.

Follow-up Absence Notice

sent by the Labs In-Charge.

Lab TA	Email Address	Coordinating
Xing Yun(4)	XING0052@e.ntu.edu.sg	FCE3, FCSD, FDAA, FDAC
DURASINOVIC Srecko (4)	SRECKO001@e.ntu.edu.sg	FCSI, FCSC, FDDB, FCEE
FU ZHOUJIE (4)	ZHOUJIE001@e.ntu.edu.sg	ACDA1, FCE2, FCSB, FDDC
Girish Kumar Deepank (4)	DEEPANK002@e.ntu.edu.sg	FCS2, FCSA, FCEB, FDAB
Hettige Kethmi Hirushini (4)	KETHMIHI001@e.ntu.edu.sg	FCS4, FCS5, FCEA, FDAD
Kuzmin Nikita (2)	s220028@e.ntu.edu.sg	FCED, FDDA
Li Quanzhou (3)	QUANZHOU001@e.ntu.edu.sg	FCS3, FCSH, FDAE
Li Xinze (1)	XINZE002@e.ntu.edu.sg	FCS6
LI YEWEN (5)	YEWEN001@e.ntu.edu.sg	FCS1, FCCA, FCEC, FCSF, FCSG
Liu Chengeng (4)	CHENGENG001@e.ntu.edu.sg	FCS7, FCMA, FCMB, FCSE
STYBORSKI JEREMY ANDREW (2)	STYB0001@e.ntu.edu.sg	ECDS1 FCE1

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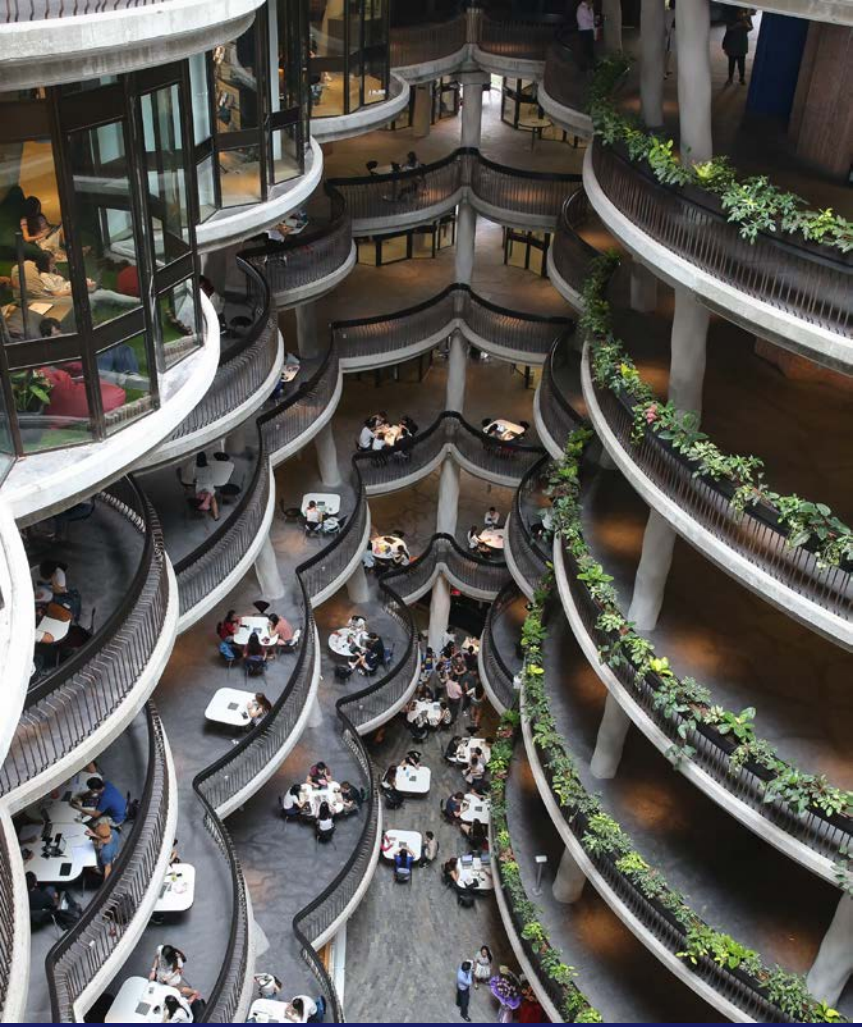
Learning Outcomes

- Identify and define data-oriented problems and data-driven decisions in real life;
- Discuss and illustrate the problems in terms of data exploration or visualization;
- Apply basic machine learning tools to extract inferential information from data;
- Compose an engaging “data-story” to communicate the problem and inference;
- Outline the roles and requirements of artificial intelligence in practical applications;
- Apply basic artificial intelligence techniques in search problems and game playing; and
- Discuss and explain concepts in miscellaneous modern topics of AI and ethics in AI.



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Course Delivery

Flipped Classroom

13 LAMS sequences

Online Video Lectures and Short Quizzes

Support : 10 online Review Lectures

Hands-on Learning

10 Lab Sessions

Hands-on Exercises and Discussions

Mini-Project : 8-week Group Activity

		The Theory (LAMS Videos + Lectures)	In Practice (Lab Sessions)
Module 01	1 Weeks	Data-Analytic Thinking and the Data Pipeline	Basic Data Handling in Python
Module 02	2 Weeks	Basic Statistics and Exploratory Data Analysis	Statistics and EDA in Python
Module 03	1.5 Weeks	Data-driven Prediction – Fitting a Linear Model	Linear Regression in Python
Module 04	1.5 Weeks	Data-driven Classification – Using a Decision Tree	Classification Trees in Python
Module 05	1 Week	Digital Storytelling – Visualization and Dashboards	Data Dashboards in Python
Module 06	1 Week	Artificial Intelligence – Current State-of-the-Art	No Lab Session for this Module
Module 07	2 Weeks	Intelligent Agents and Search Space Solutions	Uninformed and Informed Search
Module 08	1 Week	Constraint Satisfaction and Game Playing	Game with Constrained Search
Module 09	e-Learning	Miscellaneous topics in Artificial Intelligence	No Lab Session for this Module

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Performance Evaluation

No Final Examination

Continuous Assessments

Quizzes within LAMS sequences	5%
Quizzes based on Lectures	40%
Lab Exercises for DS and AI	25%
Mini-Project (Group Activity)	30%

Must attempt minimum 80% of Continuous Assessment

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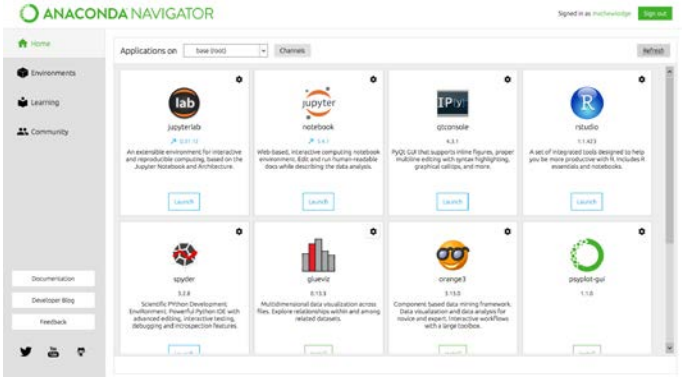
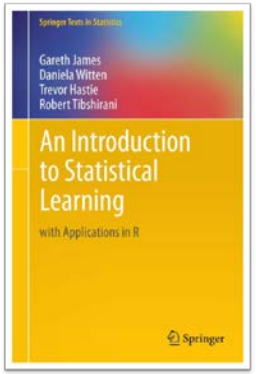
References and Resources

Computing Platform



We will use the Anaconda platform.
Python 3.9 within Jupyter Notebook.

No Single Textbook



You may refer to these two books (not mandatory).
Main resources will be LAMS videos and Slides.

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Course Calendar

Check on NTU Learn

Week 01 : No labs; all DS LAMS posted

Week 05 : No labs; enjoy the CNY week

Week 06 : Mini-Project details posted

8 March, Friday : DS Quiz at the Labs

Week 08 : DS over; all AI LAMS posted

Week 13 : No labs; last week of course

22 April, Monday : AI Quiz at the Labs

Week 14 : Submit Mini-Project

Questions or Comments?

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Course Coordinator for SC1015

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Extra Q&A : After the Review Lectures