MATH 7011 PREDICTIVE ANALYTICS

Credit Points 10

Legacy Code 301117

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Description The information age has allowed business and science to take advantage of the vast amount of available data for predicting outcomes and estimating trends, to make informed decisions. Machine learning is the process of allowing a computer to learn from data, which at its heart is used in making these important decisions. This subject provides students with the knowledge and practice required to implement and effectively use these predictive models such as Neural Networks and Support Vector Machines, and provides opportunity for students to investigate state-of-the-art. Students will use the Python programming language throughout this subject.

School Computer, Data & Math Sciences

Discipline Computer Science

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

Pre-requisite(s) MATH 7016

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Multiple linear regression models;
2. Linear models, and generalised linear models;
3. Simple Machine Learning techniques, Support vector Machines and Regression Trees;
4. Create appropriate models using selection procedures in various scenarios;
5. Use Computer software (R) to analyse data including model building, model selection and outcome prediction.

Subject Content

1. Gradient Descent
2. Regularisation and Feature selection
3. Neural Networks
4. Support Vector Machines
5. Naive Bayes
6. Machine Learning applications
7. Semi-supervised learning

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Online Quizzes	5 x 40 minutes (per quiz)	20	N	Individual
Intra-session Exam	2 hours	30	Y	Individual
Applied Project: Computer based assignment, part 1	2000 words	10	N	Group
Applied Project: Computer based assignment, part 2	2000 words	40	N	Group

Teaching Periods