

COMP90051 Statistical and Evolutionary Learning

Credit Points:	12.50									
Level:	9 (Graduate/Postgraduate)									
Dates & Locations:	This subject is not offered in 2012.									
Time Commitment:	Contact Hours: 36 hours, made up of 24 one-hour lectures (two per week) and 12 one-hour workshops (one per week) Total Time Commitment: 120 hours									
Prerequisites:	<p>One of the following:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>COMP30018 Knowledge Technologies</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>COMP90049 Knowledge Technologies</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	COMP30018 Knowledge Technologies	Semester 2	12.50	COMP90049 Knowledge Technologies	Semester 1	12.50
Subject	Study Period Commencement:	Credit Points:								
COMP30018 Knowledge Technologies	Semester 2	12.50								
COMP90049 Knowledge Technologies	Semester 1	12.50								
Corequisites:	None									
Recommended Background Knowledge:	None									
Non Allowed Subjects:	433-484 Machine Learning 433-679 Evolutionary and Neural Computation 433-680 Machine Learning 433-684 Machine Learning									
Core Participation Requirements:	<p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the Disability support scheme can be found at the Disability Liaison Unit Website: http://www.services.unimelb.edu.au/disability/</p>									
Contact:	Associate Professor Tim Baldwin email: tbaldwin@unimelb.edu.au (mailto:tbaldwin@unimelb.edu.au)									
Subject Overview:	<p>With exponential increases in the amount of data becoming available in fields such as finance and biology, and on the web, there is an ever-greater need for methods to detect interesting patterns in that data, and classify novel data points based on curated data sets. Statistical machine learning and evolutionary computation provide the means to perform this analysis automatically, and in doing so to enhance understanding of general processes or to predict future events.</p> <p>Topics covered will include: association rules, clustering, instance-based learning, statistical learning, evolutionary algorithms, swarm intelligence, neural networks, numeric prediction, weakly supervised classification, discretisation, feature selection and classifier combination.</p>									
Objectives:	<p>On completion of this subject students should be able to:</p> <ul style="list-style-type: none"> # Describe a range of statistical and evolutionary learning algorithms # Design, implement and evaluate statistical and evolutionary learning systems to solve real-world problems, based on an appreciation of their relative suitability to different tasks 									
Assessment:	<p>Two projects due around weeks 7 and 11, expected to take about 36 hours (50%) An end-of-semester written examination not exceeding 3 hours (50%) To pass the subject, students must obtain: A mark of at least 25/50 on the exam and also a combined mark of at least 25/50 for the projects.</p>									

Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of the subject students should have the:</p> <ul style="list-style-type: none"> # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance Ability to manage information and documentation # Capacity for creativity and innovation # Ability to communicate effectively, with the engineering team and with the community at large
Related Course(s):	<p>Bachelor of Computer Science (Honours) Master of Engineering in Distributed Computing Master of Science (Computer Science) Master of Software Systems Engineering</p>
Related Majors/Minors/ Specialisations:	B-ENG Software Engineering stream