LONDON'S GLOBAL UNIVERSITY

Computer Science

Applied Machine Learning (COMP0081)

Description

Aims:

To give a detailed understanding of topics related to efficient implementation of large-scale machine learning with a focus on optimisation in both linear and non-linear machine learning models.

Students will also gain experience in tackling real world problems through solving online machine learning challenges.

A key aim is that students understand the challenges of optimisation and associated time and space complexities of various approaches.

Learning outcomes:

On successful completion of the module, a student will:

1.have a good understanding of practical issues arising in implementing machine learning in practice, including engineering challenges as well as the data ethics considerations;

2.become familiar with techniques used in practice to solve real world machine learning problems and will be able to apply these techniques;

Content:

Second Order Optimisation methods (Newton and Quasi Newton approaches and Conjugate Gradients);

Methods for solving Large Scale Linear, including Conjugate Gradients;

Automatic Differentiation methods for efficiently computing first and second order gradients;

Classical methods for Regression and Classification including linear and logistic regression;

Clustering Methods for Unsupervised Learning;

Matrix and Tensor Factorisation;

Key information

Year	2018/19
Credit value	15 (150 study hours)
Delivery	PGT L7, Campus-based
Reading List	View on UCL website
Tutor	Dr Dmitry Adamskiy
Term	Term 2
Timetable	View on UCL website

Assessment

- Written examination (main exam period): 70%
- Coursework: 10%
- Coursework: 10%
- Coursework: 10%

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Visualisation methods including tSNE;

Ensembling, Gradient Boosting Machines;

Data Ethics;

Prerequisites:

To be eligible to select this module, students must have:

understanding and abilities with Linear Algebra, Multivariate Calculus and Probability at mathematics FHEQ Level 4 (Undergraduate Year 1);

and familiarity with coding a high level language in order to complete assessments (strongly recommend that students are skilled in Python);

And, must have taken in Term 1:

Introduction to Machine Learning (COMP0088);

or Supervised Learning (COMP0078);

And, are recommended to have taken in Term 1:

Graphical Models (COMP0080);

or Probabilistic and Unsupervised Learning (COMP0086);

Please note that this module is not an introduction to machine learning.

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