Artificial Intelligence and Neural Computing (COMP0024)

**Description**

**Aims:**
This module introduces artificial intelligence and neural computing as both technical subjects and as fields of intellectual activity. The overall aims are:
1. to introduce basic concepts of artificial intelligence for reasoning and learning behaviour;
2. to introduce neural computing as an alternative knowledge acquisition/representation paradigm, to explain its basic principles and to describe a range of neural computing techniques and their application areas.

**Learning outcomes:**
On successful completion of the module, a student will be able to:
1. identify problems that can be expressed in terms of search problems or logic problems, and translate them into the appropriate form, and know how they could be addressed using an algorithmic approach;
2. identify problems that can be expressed in terms of neural networks, and to select an appropriate learning methodology for the problem area.

**Content:**
Artificial intelligence:
- Nature of artificial intelligence;
- Searching state spaces;
- Utility theory;
- Logic for artificial intelligence;
- Reasoning about concepts;
- Reasoning about uncertainty;
- Machine learning;

Neural Computing:
- Overview of network architectures and learning paradigms;
- Binary decision neurons;
- Single-layer perceptrons and their limitations;
- Multilayer perceptrons;
- The Hopfield model;

**Key information**

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<thead>
<tr>
<th><strong>Year</strong></th>
<th>2019/20</th>
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<tbody>
<tr>
<td><strong>Credit value</strong></td>
<td>15 (150 study hours)</td>
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<tr>
<td><strong>Delivery</strong></td>
<td>UG L6, Campus-based</td>
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<td><strong>Reading List</strong></td>
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<tr>
<td><strong>Tutor</strong></td>
<td>Dr Denise Gorse</td>
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<tr>
<td><strong>Term</strong></td>
<td>Term 2</td>
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<tr>
<td><strong>Timetable</strong></td>
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</tbody>
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**Assessment**

- Written examination (main exam period): 90%
- Coursework: 5%
- Coursework: 5%

**Find out more**

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)
- Reinforcement learning;
- The Kohonen self-organising feature map.

**Requisites:**
In order to be eligible to select this module, a student must be registered on a programme for which it is a formally-approved option or elective choice AND must have (i) passed BSc/MEng Computer Science (Years 1 and 2) at UCL; OR (ii) a strong background in university-level maths (in particular, in logic).
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