2013 Catalog Data: Machine Intelligence & Synthesis (3) Recommend to be taken after EEL-5840 but not required. Theory of machine intelligence applied to the general problem of engineering intelligent computer systems and architecture. Applications emphasized.


Coordinator: A. Antonio Arroyo, Associate Professor of ECE

Goals: To study the engineering applications of Machine Intelligence, its impact on EE research and some of its most important tools and paradigms.

Prerequisites by Topic:

1. Recursive programming
2. Introductory AI principles
3. Logic and the predicate calculus

Tentative First Half Topics:

1. First Order Predicate Logic review
2. Deduction, Logic Programming & Prolog
3. Communicating, Perceiving and Acting

Other Topics:

4. Classical Machine Learning Principles
5. Uncertainty & Reasoning
6. Artificial Life
7. Rule-Based Paradigm & Shells
8. Schema-based Representations
9. Smalltalk & Object-Oriented Paradigms

Grading & Performance

The students using Prolog and other systems will program two or three medium-sized projects. Instructor will choose the topics to be covered after Spring Break and will supplement textbook material with papers and/or other material to keep the course topics current. Students will also read and make an oral and/or written presentation on a current journal paper.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Take-home Midterm</td>
<td>50%</td>
</tr>
<tr>
<td>Paper Presentation</td>
<td>30%</td>
</tr>
</tbody>
</table>

Computer Usage:

Weekly programming assignments using a PC-based Prolog (e.g., SWI-Prolog). One major problem from the examples discussed in class will be assigned as a project. Homework and programs count 1/3 of the grade.