

Machine Learning

Course Highlights

Machine Learning is the study of how to build computer systems that learn from experience. It is a subfield of Artificial Intelligence and intersects with cognitive science, information theory, and probability theory, among others. The course will explain how to build systems that learn and adapt using real-world applications from industry and science (e.g., learning to classify astronomical objects, to predict medical diagnoses, to play chess).

Topics

- Concept learning
- Hypothesis spaces
- Decision trees
- Neural networks
- Bayesian learning
- Computational learning theory
- Instance-based learning
- Genetic algorithms
- Rule-based learning
- Analytical learning
- Reinforcement learning

Labwork

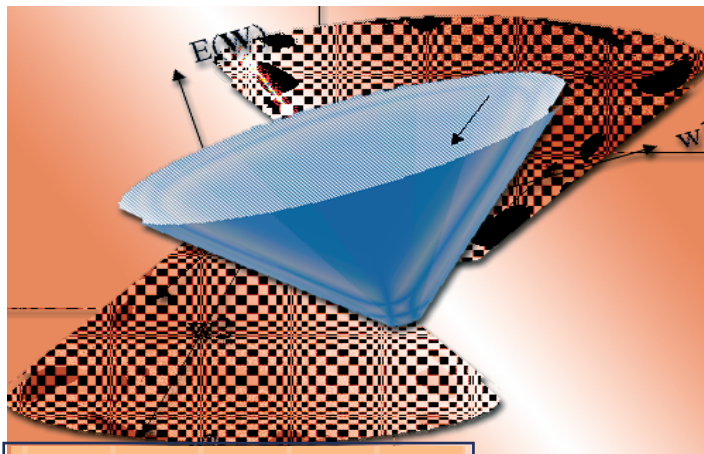
- two midterm exams,
- a final exam,
- homework assignments
- A final project that involves some amount of programming

About the Instructor



Dr Ricardo Vilatla is assistant professor in the department of computer science at the University of Houston. He holds a MS and Ph.D. degrees in computer science from the University of Illinois at Urbana-Champaign.

His research interests are in machine learning, pattern classification, artificial intelligence, and statistical learning.



Is this course for you ?

The course provides an introduction to current techniques in machine learning. It is of particular interest to those interested in fundamental concepts behind artificial intelligence, and adaptive behavior, as well as those looking for modern approaches to pattern classification and data analysis. The expertise would enable students to be involved in robotics (e.g., rovers for exploration tasks), and pattern analysis of data (e.g., in genetics, astronomy, geology, etc.). The course requires a background in programming, probability theory, and statistics.

And student(s) say.

"This course is the only course, which explains all the algorithms necessary to work in the areas of data mining, bioinformatics, artificial intelligence and, of course, machine learning. So if anybody wants to do a specialization in these areas this course is a must."

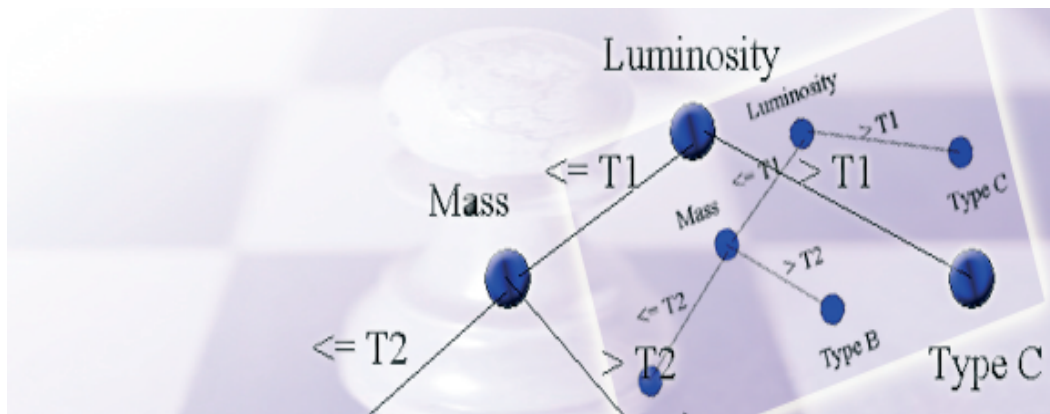
**Murali Krishna, UH
Computer Science**

Reference Material

- "Machine Learning" by Tom Mitchell, 1st Edition. Ed. McGraw-Hill, 1997.
- "Pattern Classification" by Duda, Hart, and Stork 2nd Edition, Wiley-Interscience, 2000.
- "Computer Systems that Learn" by Kulikowski and Weiss. 1st. Edition, 1991.

Related Courses

- Pattern Classification
- Artificial Intelligence



For more information, visit: www.cs.uh.edu/~vilalta

