Course Number: CIS 290
Course Title: Advanced Topics in CIS: Artificial Intelligence
Number of Units: 4
Schedule: Three hours of lecture and one hour of discussion per week.
Prerequisites: CIS 260, CIS 230, and CIS 160

Catalog Description:
Includes an introduction to artificial intelligence as well as current trends and characterization of knowledge-based systems. Search, knowledge representation schemes, production systems, and expert systems will be examined. Additional areas include knowledge discovery and neural learning.

Expanded Description:

- Scope of AI: Games, theorem proving, natural language processing, vision, expert systems, AI techniques-search knowledge.
- Problem Solving: State space search; Production systems, search space control: depth-first, breadth-first search, heuristic searches: Hill climbing, best-first search, branch and bound, Problem Reduction, Constraint Satisfaction End, Means-End Analysis.
- Knowledge Representation: Predicate Logic: Unification, modus ponens, resolution, and dependency directed backtracking.
- Structured Knowledge Representation: Semantic Nets, slots, default frames, conceptual dependency, and scripts.
- Knowledge discovery in database.

Course Objectives & Role in the Program:
The objective of the course is to present an overview of artificial intelligence (AI) principles and approaches. Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning. Students will implement a small AI system in a team environment. The knowledge of artificial intelligence plays a considerable role in some applications students develop for courses in the program.

Learning Outcomes:
Upon successful completion of this course student will:
- be able to design a knowledge based system,
- be familiar with terminology used in this topical area,
• have read and analyzed important historical and current trends addressing artificial intelligence,

Method of Evaluation

• Project participation and contribution (will be graded on individual basis and will include forum participation, source code, architecture, documentations contributions and presentation) - 20%
• Home Assignments – 15%
• Final Exam (3 hours – Open book)– 30%
• Midterm Exam (2 hours – Open book) – 20%
• Class participation (including outside reading presentations, quizzes and active learning) – 15%

Required Books:

Textbooks:
2. Introduction to Artificial Intelligence, Rajendra Akerkar; Prentice Hall of India, 2005.

Reference:
3. Other course material will be provided during the course.

Modified by: R. Akerkar
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