

COURSE SYLLABUS

YEAR COURSE OFFERED: 2024

SEMESTER COURSE OFFERED: Fall

DEPARTMENT: Department of Computer Science

COURSE NUMBER: COSC 6368

NAME OF COURSE: Artificial Intelligence

NAME OF INSTRUCTOR: Jianyi Yang

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Learning Objectives

This course introduces a variety of topics in Artificial Intelligence (AI). It covers fundamental concepts, algorithms, and applications of AI, with a focus on machine learning, search and decision making, knowledge and reasoning and several merging topics.

After completion of the course, students should demonstrate proficiency in understanding the fundamental concepts of AI, applying AI techniques for different applications, designing and implementing AI algorithms and AI programming. Students will get some exposure to some selected emerging topics of AI.

List of discussion/lecture topics

Introduction to AI

Machine Learning

- Supervised Learning
- Neural Networks
- Generalization
- Unsupervised Learning

Search and Decision Making

- Problem Solving and Search
- Markov Decision Process
- Reinforcement Learning

Knowledge and Reasoning

- Bayesian Network
- Logic
- Knowledge Informed Learning

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Recommended Reading

Textbooks

Russell and Norvig, *Artificial Intelligence: A Modern Approach*, Fourth Edition.

Richard S. Sutton and Andrew G. Barto, [*Reinforcement Learning: An Introduction*](#), Second Edition.

Hastie, Tibshirani, and Friedman, [*The elements of statistical learning: Data Mining, Inference, and Prediction*](#), Second Edition

Kush R. Varshney, [*Trustworthy Machine Learning*](#)

Websites

[Artificial Intelligence: Principles and Techniques](#) (Stanford CS221)

[Deep Learning for Computer Vision](#) (Stanford CS231n)

[Deep Reinforcement Learning](#) (UC Berkeley CS 294)