Statement of Teaching Philosophy

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April 2018

Teaching Experience

I have served as instructor of record for large core courses such as the Undergraduate Artificial Intelligence course at Rutgers University (Introduction to Artificial Intelligence). This course included over 100 students and included a combination of programming projects, exams and written assignments.

I structured my AI course into three major sections, A section on Deterministic Reasoning, a section of Reasoning under Uncertainty and a section on Learning and Reasoning in Unknown Environments. The section on Deterministic reasoning covered search, local search (hill climbing), adversarial search, logic and planning. The section on planning under uncertainty covered Bayesian Networks, Hidden Markov Models, Kalman and Particle Filters, Markov Decision Processes and POMDPs. The section on Learning and reasoning in unknown environments covered Decision Trees, Regression, Expectation Maximization, Support Vector Machines, Reinforcement Learning and Neural Networks. This syllabus is based loosely on structure of the textbook *Artificial Intelligence: A Modern Approach* [1] which I used while teaching this course.

1. Deterministic Reasoning	2. Reasoning under Uncertainty	3. Learning and Reasoning in Unknown Environments
(Heuristic) Search	Bayesian Networks	Decision Trees
Local Search	Hidden Markov Models	Expectation Maximization
Adversarial Search	Kalman and Particle Filters	Neural Networks
Logic-based Inference	Markov Decision Processes	Support Vector Machines
Planning	POMDPs	Intro to Reinforcement Learning

Figure 1: Syllabus for INTRO to Artificial Intelligence Course

I am qualified to teach any of the standard undergraduate courses along with graduate level courses in Artificial Intelligence, Robotics, Computational Geometry and Machine Learning, Algorithms and Complexity. I am especially interested in teaching courses in artificial intelligence, robotics and computational geometry. I would be particularly interested in teaching special topics courses in areas such as robotics or motion planning. In this course I would first go over some of the fundamental papers in the field (example: configuration space, PRMs and RRTs) then some of the most important and interesting recent work (example: Applications of machine learning to motion planning).

Teaching Philosophy

I believe that the purpose of teaching and education is to provide students with a compete and in-depth understanding of the material being studied with the goal of preparing students not just to apply the material but to build upon in. Such an understanding will allow students to incorporate the material in their own work and enable them to do research in the area.

I design my lessons to teach the fundamental concepts behind the material being studied, and to demonstrate these concepts through real-world examples. My assignments consist of a set of challenging problems that require students to apply the material to problems outside of those studied in class. These problems should be difficult enough to require students to think and reason about the material being studied. I also believe that it is important to teach experimentation and the scientific process whenever possible. To this end, I design projects which require students not just to implement code, but to experimentally evaluate and analyze the programs they create. As an example, I would incorporate into an algorithms course projects that require the student to implement some of the methods studied and experimentally validate their experimental bounds.

I also believe it is important to facilitate class participation and interactions with students during lecture. To this end I usually dedicate a section of each class to going over questions students have as well as to ask follow-up questions on material that I have covered. I also make use of communication technologies such as *discord* and *piazza* to facilitate communication between students.

References

[1] S. Russell and P. Norvig, *Artificial Intelligence: A Modern Approach*, 3rd ed. Prentice Hall, 2010.