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A Short Essay on AI

Within the first lecture on the unit of AI Professor Visser explained what exactly an AI system is along with describing the use of rational agents to interact with the world. Professor Visser gave insight into logic and "Rational Thinking", which would later be broken down with Professor Sutcliffe's next lecture, while also giving the definitions of AI and expressing its wide range of applicable uses. Different methods of creating an artificial intelligence range from using the science of biology, neurology, and physiology to create a neural network to using the math of graph theory and combinatorics to work in Heuristic searches. A plethora of methods are used to create systems all labeled under "Artificial Intelligence" but created to perform very different tasks. Defining AI is expressed in a relatively simple sentence, "The study of computations that make it possible to perceive, reason, and act" (Winston, 1992) but this sentence simply blankets the four different studies of an artificially intelligent system. There are systems researched to either think or act like humans and systems worked on to either think or act rationally.

A major definition within the science of artificial intelligent is an "agent" and furthermore a "rational agent". The simplest definition of an agent is anything which can react to its environment using sensors and effectors. This definition of an agent is the most encompassing, and the degree of autonomy, rationality, and intelligence that a system must contain to be considered an "agent" is disagreed upon. A rational agent is an agent that chooses the correct action to achieve a desired outcome. Rational agents therefore are those which intrinsically pick the most successful option, and this performance is measured subjectively with internal evaluations and objectively, where an outside observer dictates whether the agent was the most successful it could have been. A major requirement for an agent to effectively complete its goal is the ability to communicate to other agents in a group. Without this communication agents would be completely unable to work together to accomplish a task, such as the soccer robots scoring a goal. Agents always interact with their environment, but the environment changes depending on the proposed task and therefore agents must be built with that accommodation in mind. An agent's actuators and sensors will allude to the type of task required, for example a soccer robot's sensors include cameras, pressure sensors, microphones, and other tools to maintain fluid motion and the actuators are the arms, legs, and speaker of the robot.

This lecture made apparent the connections between artificial intelligence research and the study of cognition. AI researches are seemingly "chasing cognition" with the more conscious system being better at completing given tasks. Here many topics from Philosophy of Mind apply, with today's (presumably) unconscious AI perhaps giving the theoretical "zombie argument" legitimate footing with high functioning unconscious agents. Agents which are specifically designed to think or act like humans, are specifically interesting in this regard, as they may one day be able to write a code strong enough to simulate human conscious action, or at least the appearance of it, finally fulfilling the Turing test.