

In artificial intelligence, much effort is expended to develop more efficient and effective ways to simulate learning in machines. A relatively new and exciting machine learning technique called multi-task feature learning will be my topic of study. Multi-task feature learning is a learning paradigm that allows multiple features to be learned jointly. It is built on the basis that each task comprised of multiple features is related to another task. The benefit of learning multiple tasks cooperatively is that it is less time-intensive and it produces more favorable results than if each instance were learned separately. For example, if we wanted to create a robot that is meant to enter burning buildings and save victims, we must teach the robot to know where to look. Data instances, in this case, are the information vectors the robot is receiving from its sensors as it searches the building. The idea is such that if the robot can recognize the type of room it is in by making feature connections with rooms it has seen previously, the robot can make a more accurate conjecture as to the likelihood of finding a victim in a room it has never seen before. With newly learned information as well as source knowledge from previous experiences, a machine can accurately accomplish its objectives.

I will be working to help develop previously created algorithms in order to develop a better method of feature learning. To test our algorithms we will be using USARSim, a robotic simulator, as well as Player, a device server that provides access to robot sensors. The programming languages we will be using are Java and C++.