

Most current machine learning methods forget previously learned models when they are applied on a new data set. Therefore, it often takes current methods significant amounts of experience in order to learn a model for another unfamiliar environment. We desire to be able to incorporate the previous knowledge into the learning process when they are applied to new tasks, allowing the learning agent to reuse previously learned knowledge. This research will focus on developing methods to transfer previous knowledge selectively for different tasks and to enable the machine to learn and to develop its skills continuously. The goal of the research is to improve the learning process by combining the past knowledge with data on the new task. Furthermore, the users are allowed to shape the performance of the machine by training and instructing the system to do the desired tasks. During this summer, I will explore this topic by reading papers on transfer learning and lifelong machine learning. I will then implement a variety of algorithms from the literature, adapt them for lifelong learning scenarios, and evaluate their performance on benchmark data sets.