AlgoCraft: Teaching AI and algorithms using Minecraft

Programming is quickly becoming a necessary skill to have in the 21st century.

AlgoCraft is a platform for teaching programming, algorithms, and AI concepts in an environment that encourages exploration of programming concepts through gamification. By packaging the project into a Docker container, generating connections for noVNC, and using jupyter notebooks for writing and executing code, AlgoCraft can be ran entirely in the cloud and accessible from the browser. Through a simplifying wrapper for Microsoft’s Project Malmo, the same libraries used for advanced reinforcement learning research can be used to teach simple algorithm concepts and encourage progression into harder AI concepts.

AlgoCraft is a platform for teaching programming, algorithms, and AI principles in an environment that encourages exploration of programming concepts through gamification. AlgoCraft can be ran entirely in the cloud and accessible from the browser, allowing everyone easy access. Through a provided wrapper for Microsoft’s Project Malmo, the same libraries used for advanced reinforcement learning research can be used to teach simple algorithm techniques and encourage progression into harder AI concepts.   
  
The AlgoCraft project is written in Python, packaged into a Docker container, displayed using noVNC, and uses Jupyter notebooks for writing and executing the code that interacts with a Minecraft client. AlgoCraft was originally developed to be used by middle school and high school participants of the Kentucky STLP program.

AlgoCraft is a platform for teaching programming, algorithms, and AI principles in an environment that encourages exploration of programming concepts. It uses gamification in the form of Minecraft to make learning more effective and enjoyable. AlgoCraft can be run entirely in the cloud and is available from the browser, allowing easy access for users. Through the provided wrapper of Microsoft’s Project Malmo, the same tool constructed for reinforcement learning research can be used to teach simple algorithms and encourage progression into harder AI concepts.   
  
The AlgoCraft project is written in Python, packaged into a Docker container, and displays graphics using noVNC. It also uses Jupyter notebooks for writing and executing the code that interacts with a Minecraft client. AlgoCraft was initially developed for educating middle school and high school students, for example, participants of the Kentucky Student Technology Leadership Program.