OpenMind: Human-Swarm Interaction
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Motivation
The field of swarm robotics is increasingly popular, however, human-swarm interaction is poorly understood.
Here, we seek to understand how:

- One person can control a swarm
- Many people can work efficiently alongside swarms
- What metrics can be used to evaluate swarms

These robots work collectively to build user-specified 3D structures*. This is a complicated task, and failures are likely. The Open Mind framework will observe the robots and prompt a human user for help when necessary.

*Minecraft Implementation
By developing a ‘mod’ for the online game Minecraft, we can experiment with large collectives of construction agents analogous to the real robots. Agents observe surrounding bricks and use a set of provably correct rules to decide whether to move along the structure, deposit a brick, pause, or return to the start.

Future Direction
Next, we will implement a large collective with realistic errors and sensor noise. We will also allow human players to work alongside the autonomous agents. This platform will enable studies of human-swarm interaction; showing how a ‘foreman’ user may support the collective by adjusting global and local discrepancies, such as wrong depositions or malfunctioning agents.