Sub-project 4.5: Symbiotic human-swarm cooperation

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Main goal: Self-organized control and coordination of robot swarms acting and interacting in symbiotic peer-to-peer modality with humans

Distributed gesture recognition for human-swarm interaction
- Use gestures to instruct the swarm: intuitive, and no dedicated hardware needed for human
- Visual gesture recognition based on SVM or CNN
- Distributed consensus to get reliable recognition
- Gesture recognition algorithm trained and tested off-line; implementation on robots in preparation

Sharing of common spaces
- Navigation algorithms to let a large group of robots share space with humans efficiently
- Inspiration from models of human navigation behavior
- Tests in simulation; implementation on real robots in preparation

Communication based swarm behaviors
- Coordinated execution of human commands
- Spatial awareness through local communication
- Self-organized cooperative navigation
- Tests in simulation and implementation on real robots