CoBot – Mobile Collaborative Service Robots
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PUBLICATIONS AT www.cs.cmu.edu/~coral/cobot

Integrated perception, cognition, and action
Kinect – RGB+Depth, Omnidirectional motion
Onboard computation, Wireless access

Real-time plane filtering
- Planes are mapped as walls, floor
- People are reliably removed
- Robot estimates location and pose

Robot designed and built by Michael Licitra

Symbiotic Autonomy: Ask Humans
- CoBot can localize, navigate, plan
- CoBot has perceptual, cognitive, and actuation limitations
- CoBot asks for help from humans
- HUMAN-CENTERED PLANNING:
  plan, reason, learn human models

Multi-Robot Task Planning
- >200km test and deployment in four floors ~300-office building
- Web-based user task requests

Multi-Floor Deployment

Execution Monitoring
Learning from Human Correction
Active Environment Learning

Localization & Navigation

3D Depth-Based Plane Filtering Scene Understanding

"Please, bring me coffee" (where is coffee??)
Ask the web: Is coffee in office, kitchen, classroom?
Plan probabilistic path according to response

Robot Platform