

Artemis

**an autonomous mobile robot for
search and rescue operations**

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Project Goals

- Create maps for search and rescue teams to use for their operations
- Follow a guide to learn 'safe paths'
 - In contrast with autonomous exploration, which increases risk to robot in dangerous environments





Related Work

- Robots used to map search and rescue areas
 - Autonomous Wandering
 - Teleoperation
- Robots used for identification and following
 - Facial Recognition or other CV algorithms - computationally expensive, not always necessary

Approach

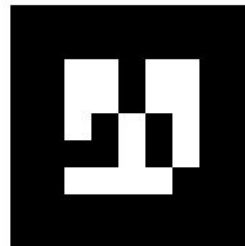
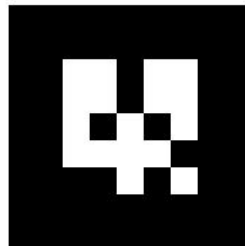
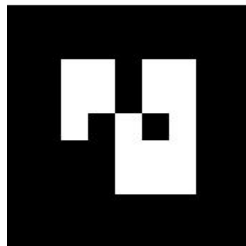
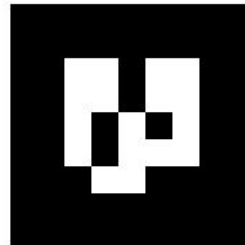
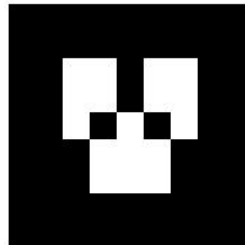
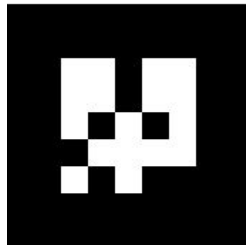
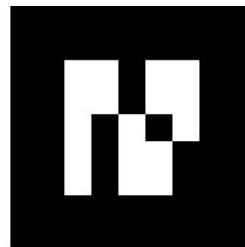
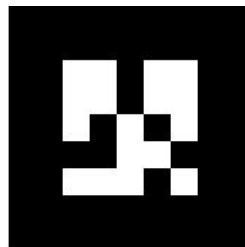
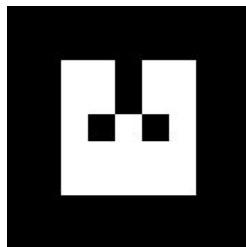
- ROS implemented on Turtlebot
- Separated into three sections
 - Tracking
 - Following
 - Mapping





Tracking

- Utilized augmented reality tags
- The toolbox code that processed the tags provides positional data for the tags
- Has a long range
- Slow update speed





Following

- Following behavior is loosely based on go to goal behavior
- Reasoning for this approach was how infrequent AR tag tracking info was updated
- Set temporary goals whenever AR tag info updated with temporary goal set to be one meter away

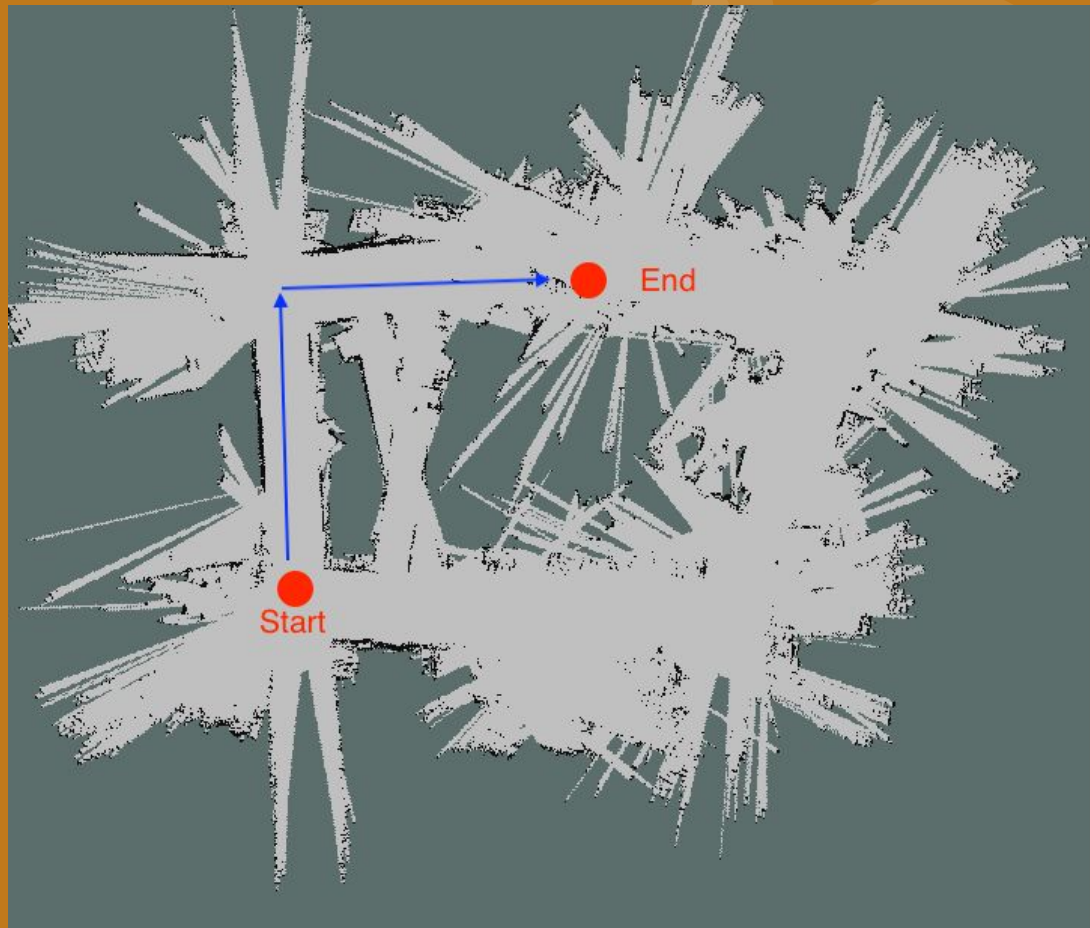




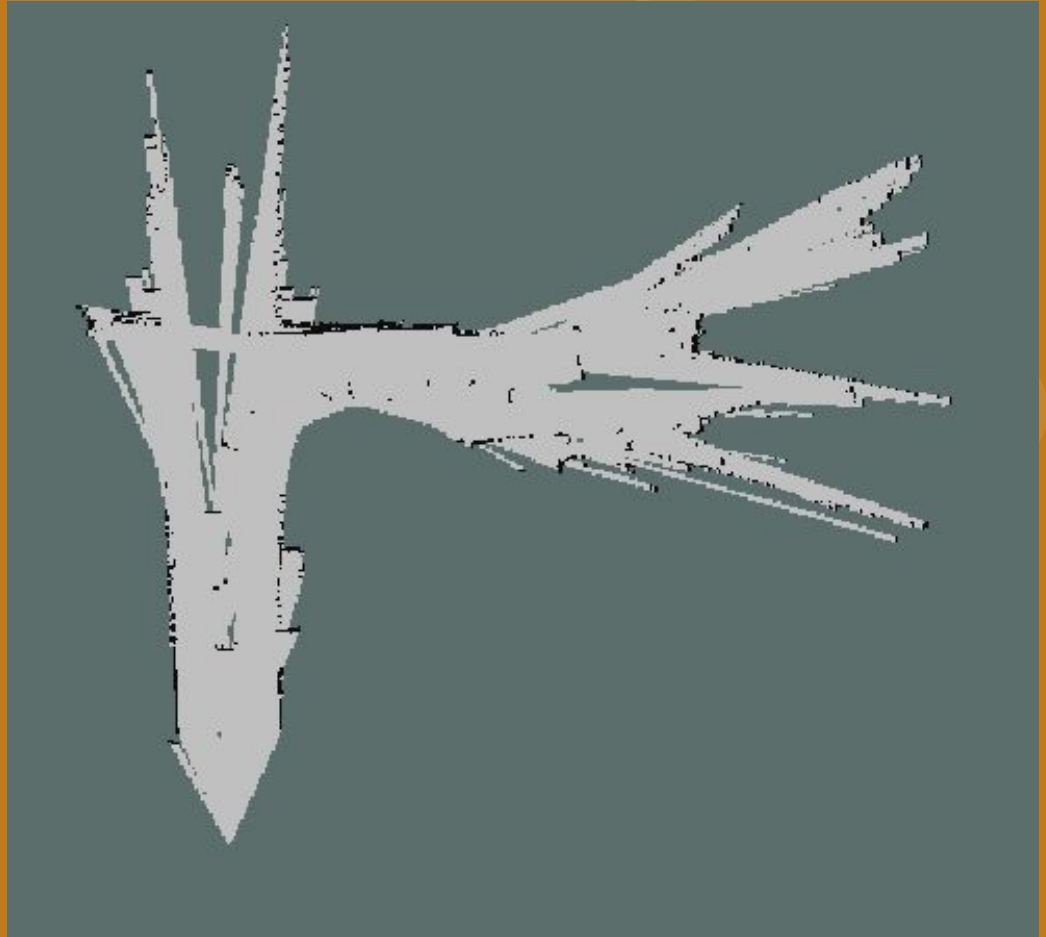
Mapping

- Mapping was done using a prebuilt ROS package called gmapping
- Created by the OpenSLAM organization
- Works similar to a particle filter

Map of the whole area (Link Lab)



**Map of the
path we
made the
robot follow**



Questions?

