Midterm presentation: Shadow scenes

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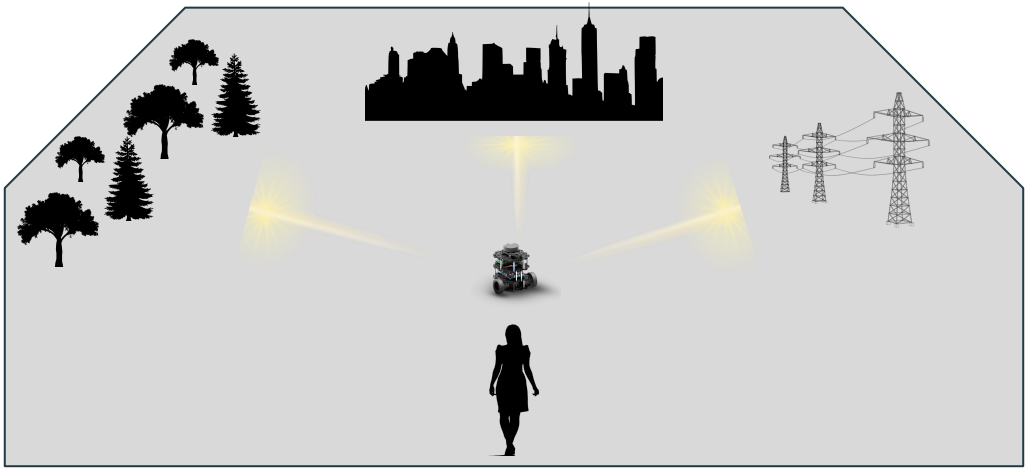
Creative concept

Concept

Project a moving scene onto a background using shadows

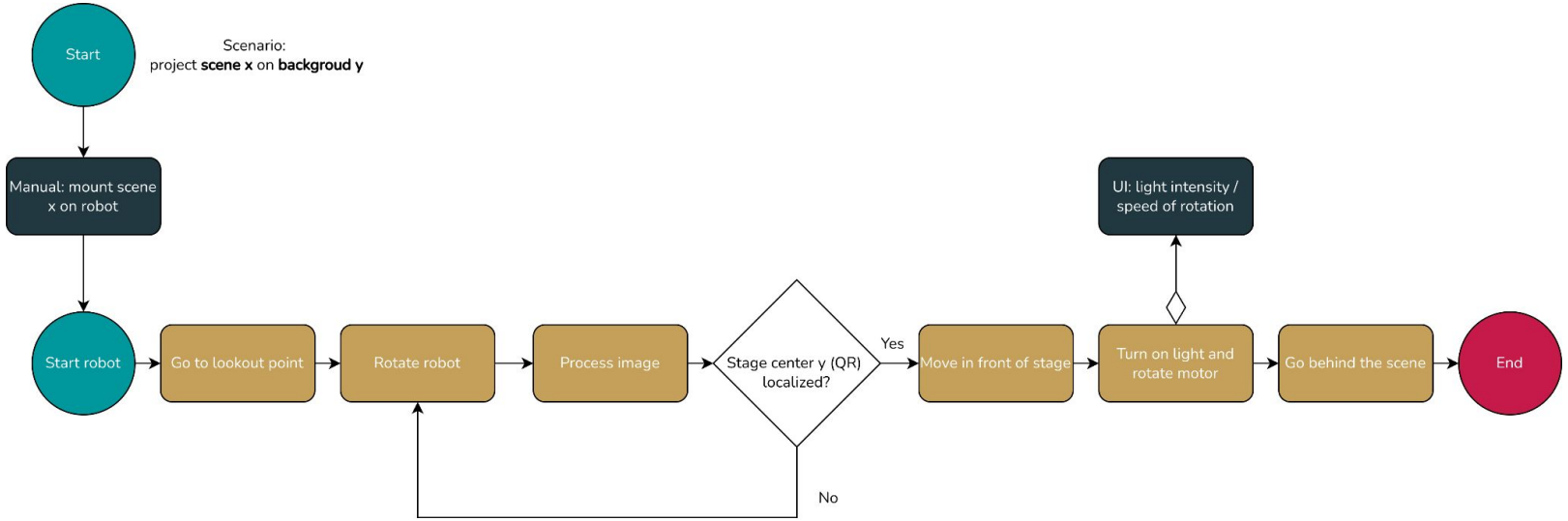
Concept - stage distribution



Spectators

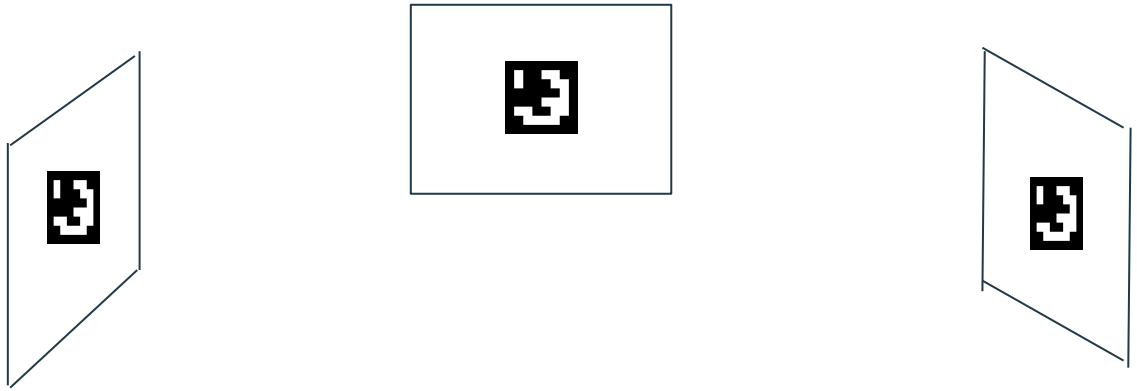
Technical plan

Technical - flow

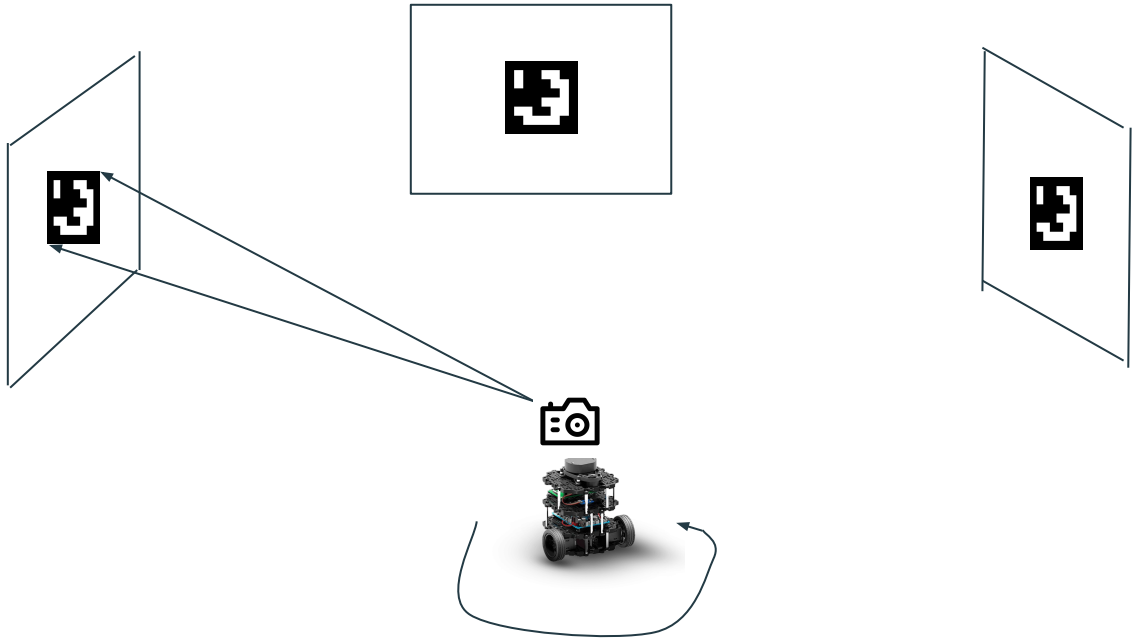


Technical - localization through images

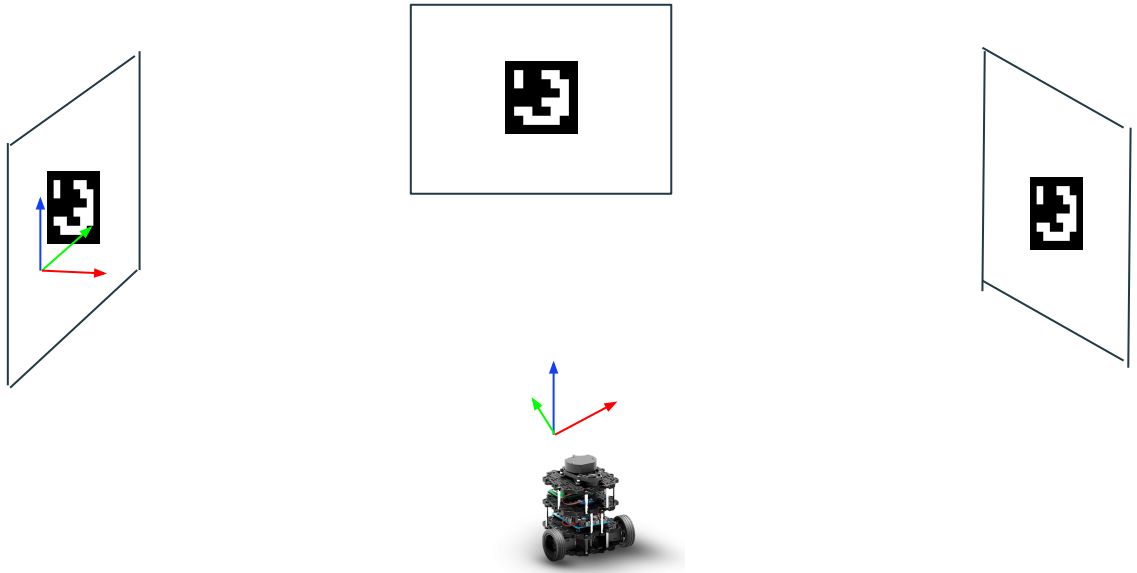
Technical - go to lookout point



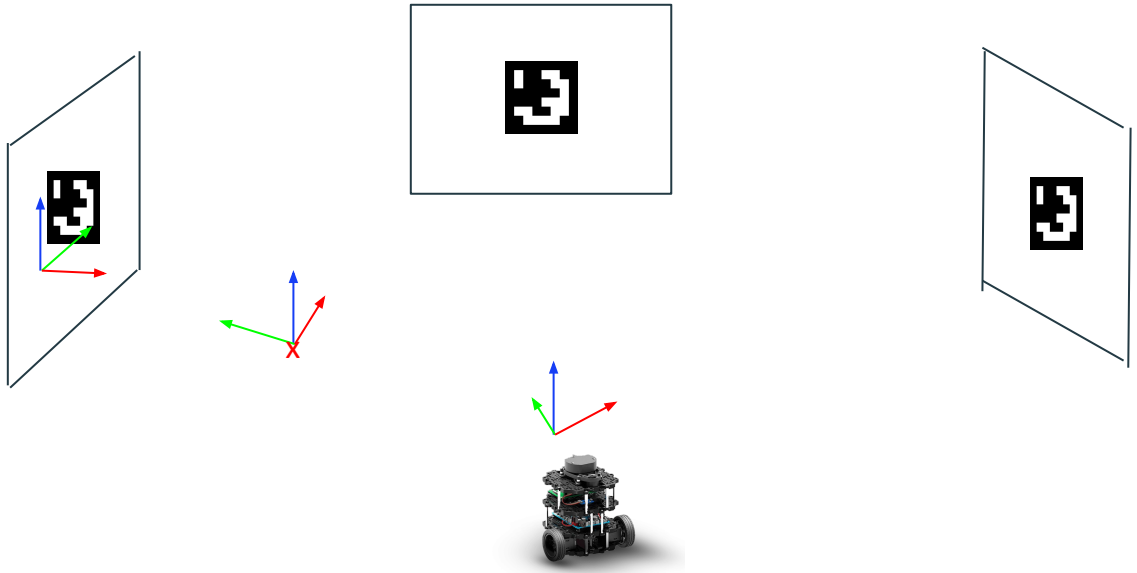
Technical - find ArUco code



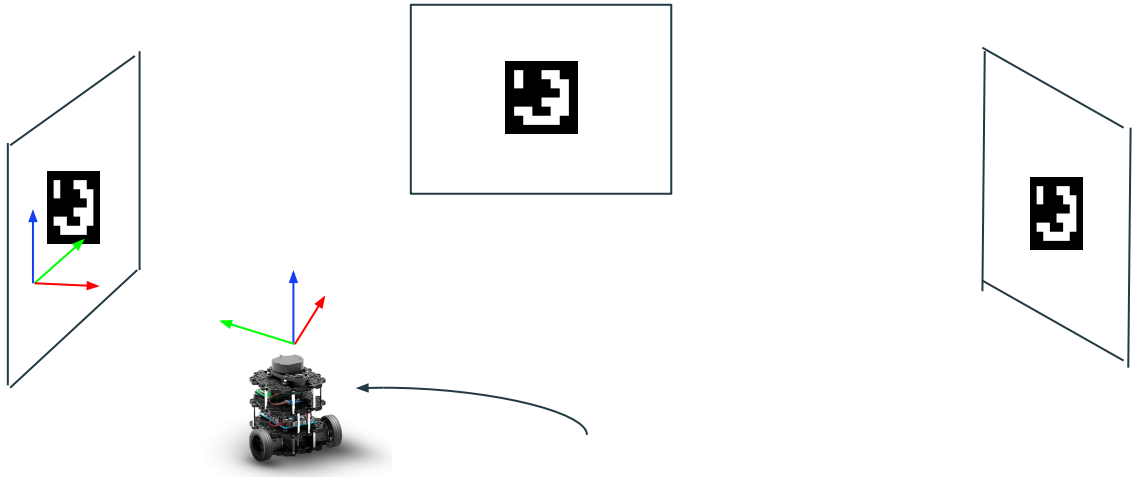
Technical - estimate relative pose of robot



Technical - compute goal pose



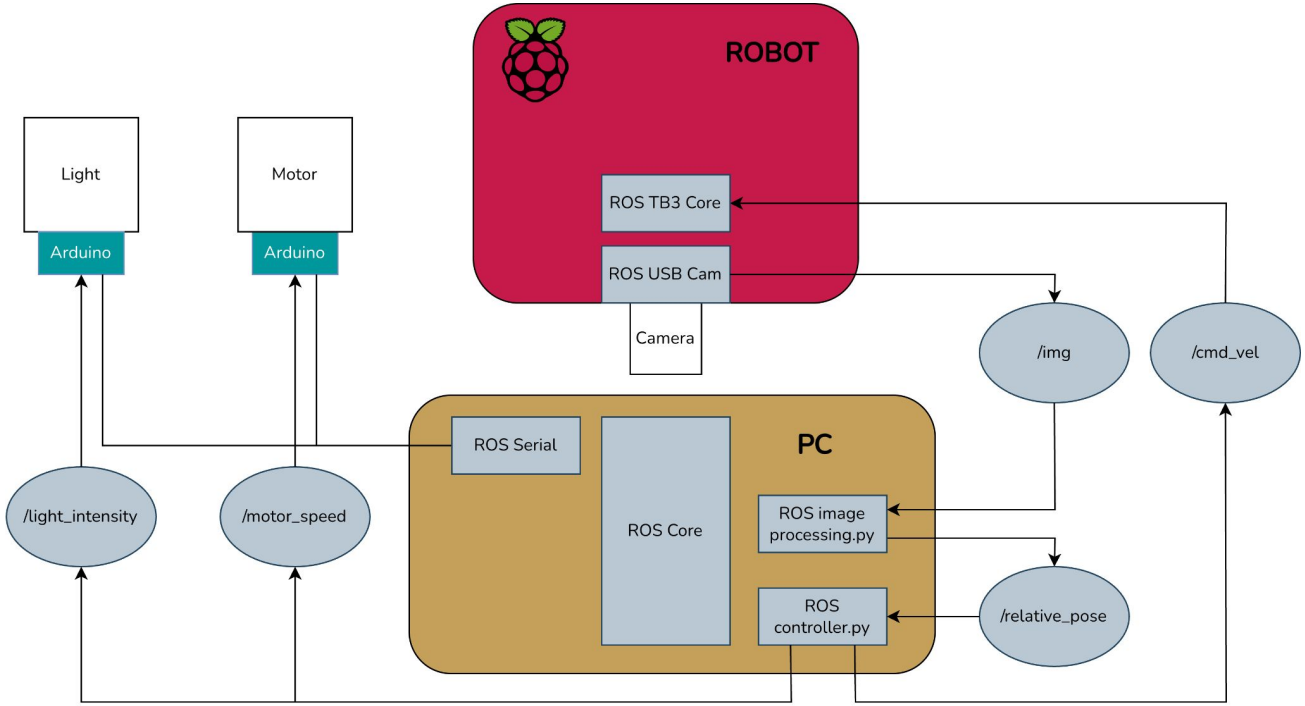
Technical - go to goal pose



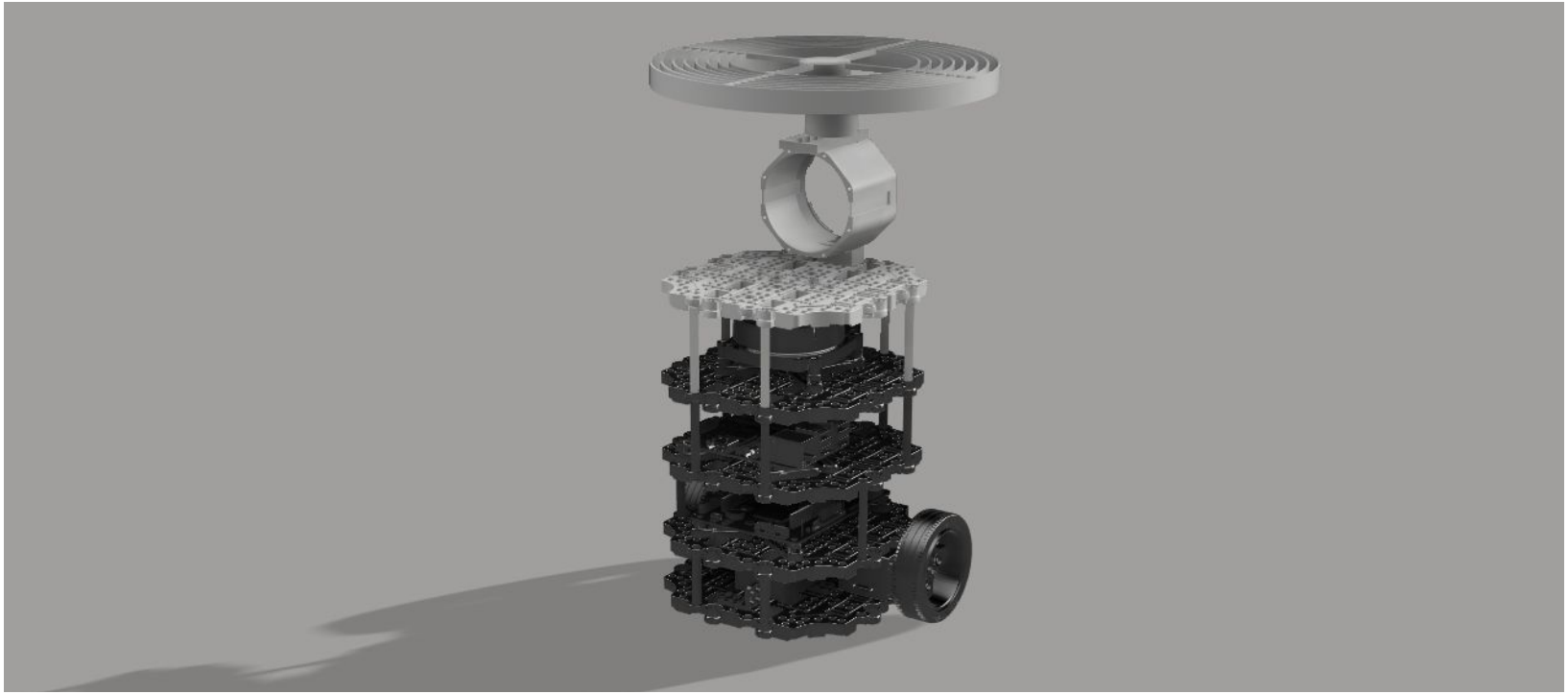
Technical - shadow generation

Demonstration

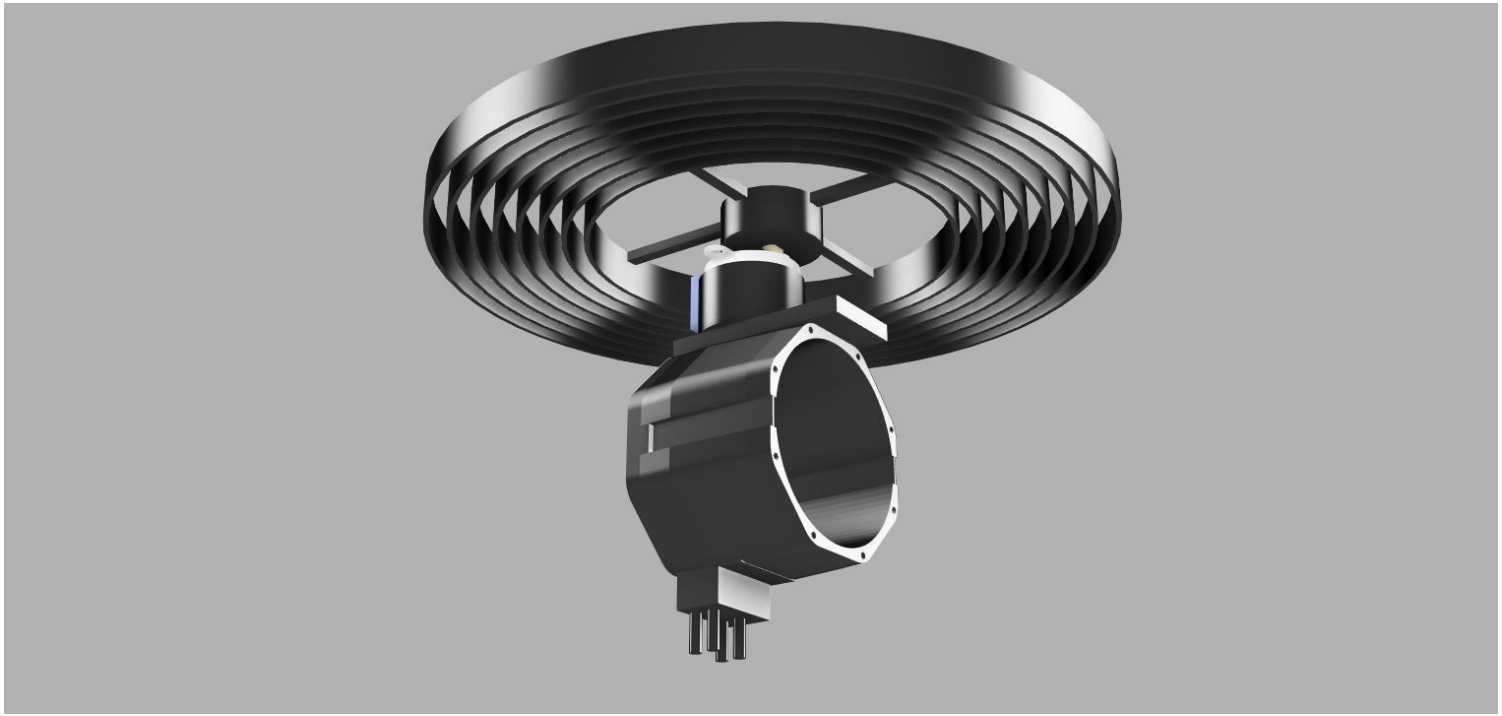
Technical - system architecture



Technical - robot design



Technical - 3D printing parts



Technical - prototype stages

- Version 0
  - Project light through cut out paper
  - Make paper rotate
  - Adjust light intensity and motor rotation through UI
  - Move to predefined goal pose
- **Version 1**
  - Define goal pose – localize stage (QR) using camera
- Version ♾️
  - Track laser point to orient projection of shadows
  - Add more DOFs to light orientation