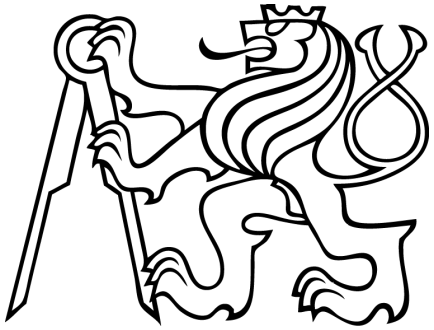

Learning SyRoTek

A collaboration between Czech Tech and Drexel

Alex Alspach & Sean Mason
Drexel University

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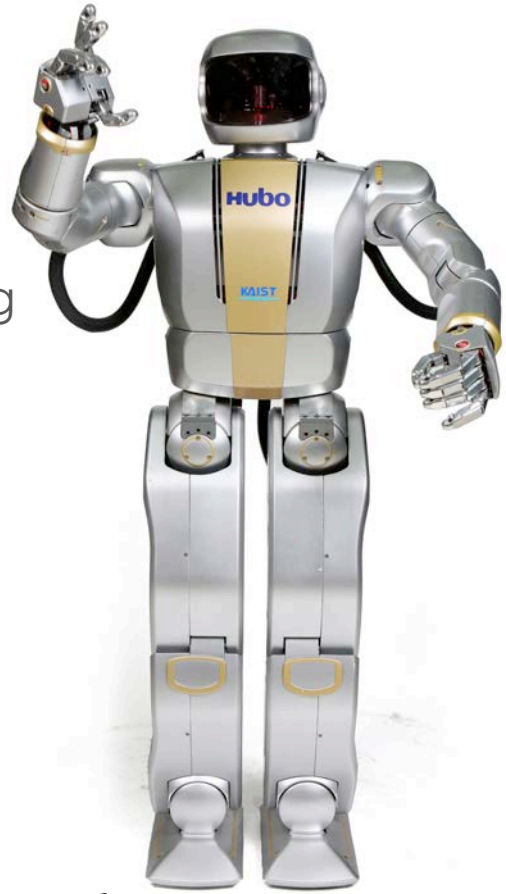
Why are we here?

- Online HUBO
  - Our lab, Drexel Autonomous Systems Lab
  - Regli's Lab, Applied Comm. And Info. Networking
- We are developing a system that will allow universities without a HUBO to test their ideas in a safe and secure environment.
- You have done this already!



What will we do?

- Learn about SyRoTek by using it
  - Implement SND Navigation algorithm using ROS
  - Document code, procedures and ideas for improvement
- For Online HUBO
  - Record great ideas from SyRoTek
  - Understand high-level system structure
  - Learn about the problems faced when developing SyRoTek

SyRoTek

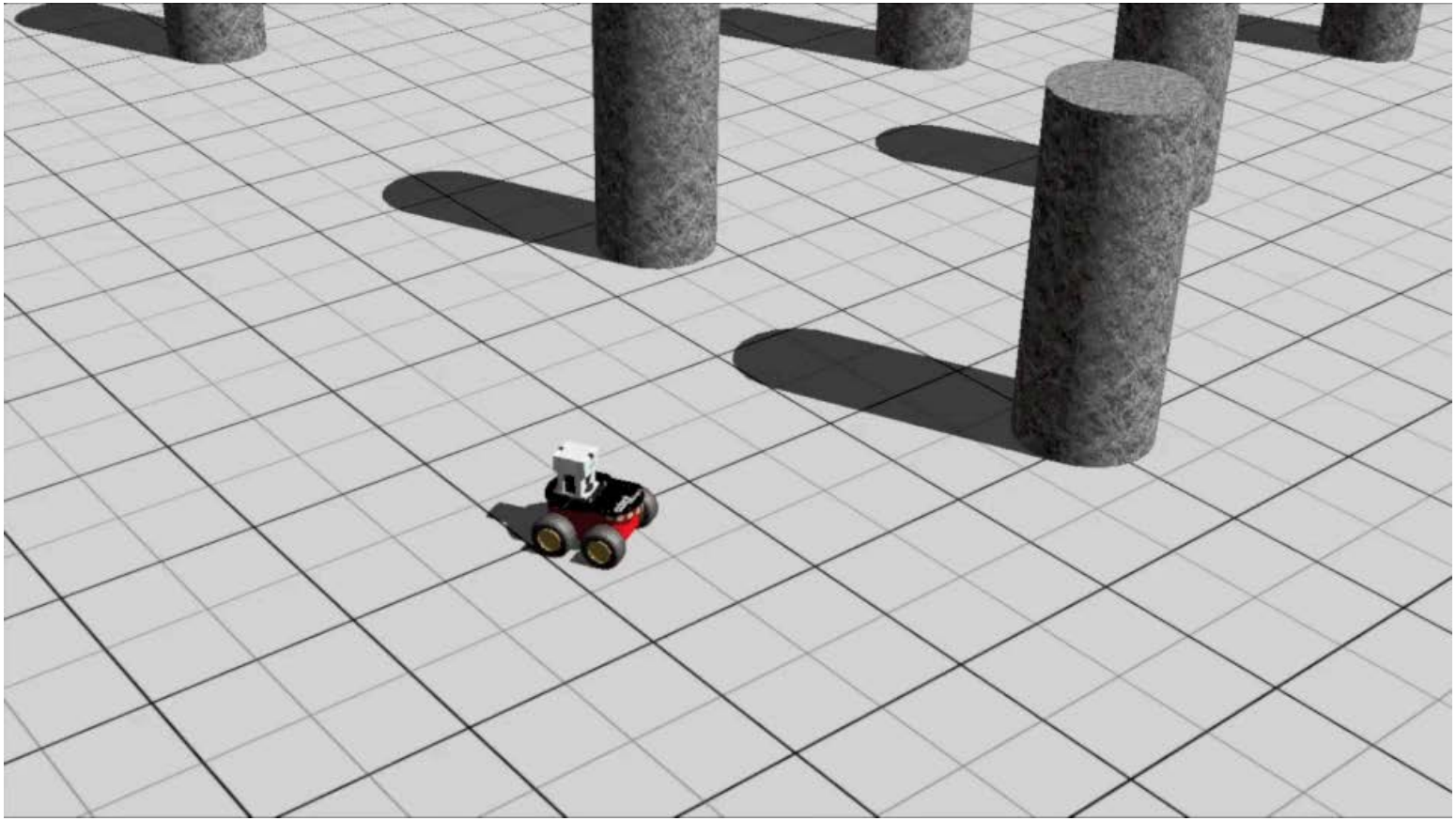
Smooth Nearness-Diagram (SND)

J.W. Durham, F. Bullo

- Provides a smooth trajectory through obstacle laden environments
- Simplified version of other Nearness-Diagram methods
- Navigation
  - Gap-based
  - Uses laser range data to detect traversable path
  - Global planner points robot towards goal
  - Local planner deflects from obstacles
- Implementation
  - MATLAB and Webots Simulator

Smooth Nearness-Diagram (SND)

J.W. Durham, F. Bullo



Smooth Nearness-Diagram (SND)

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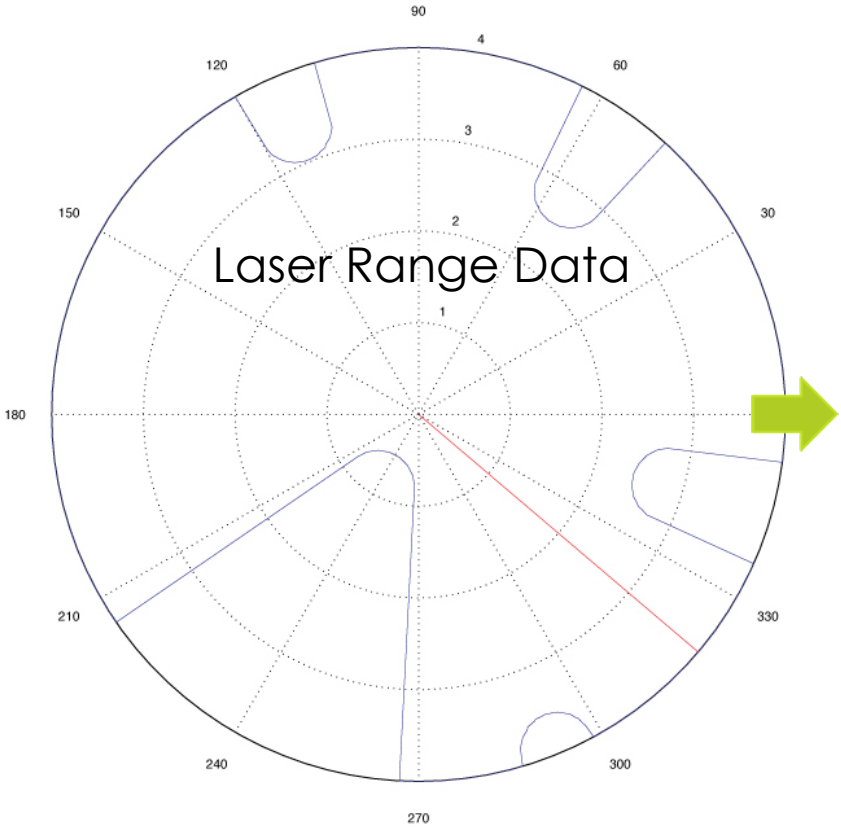

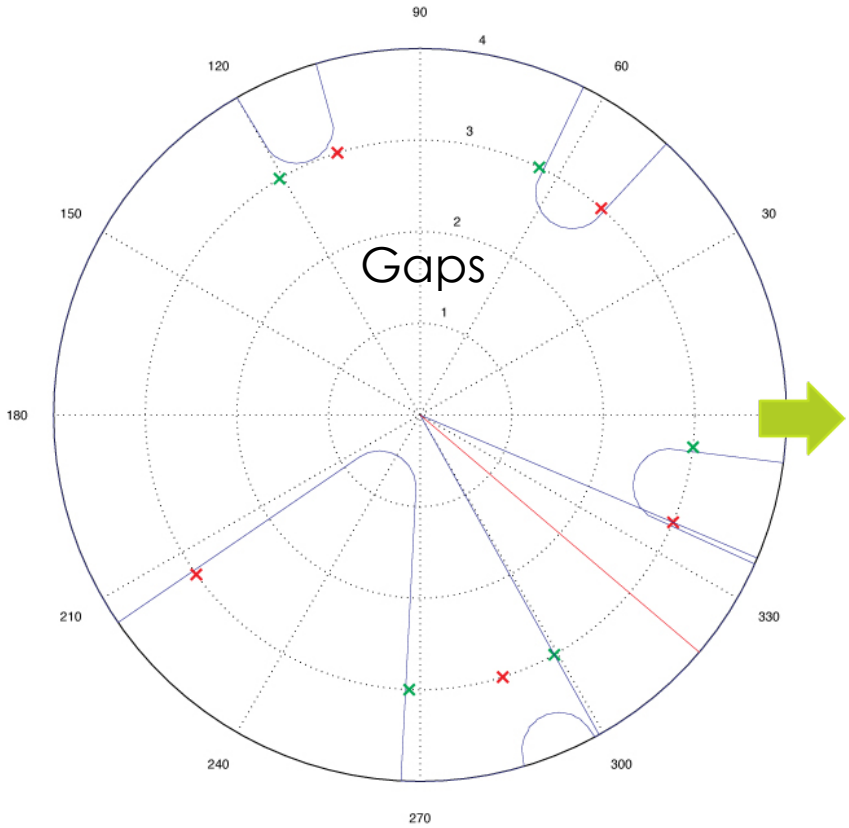

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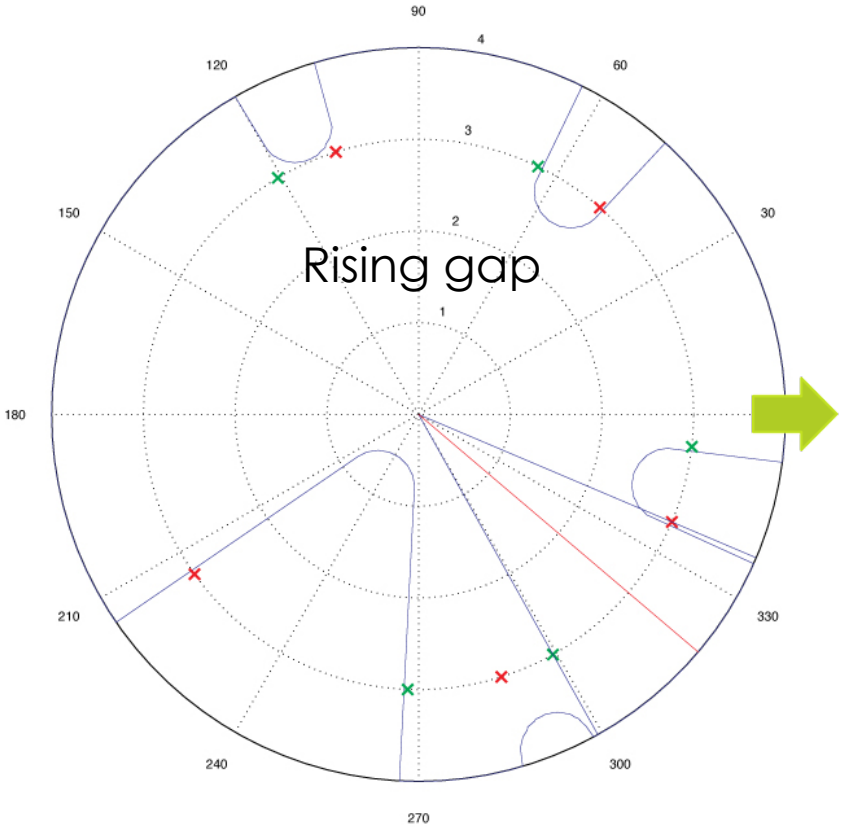

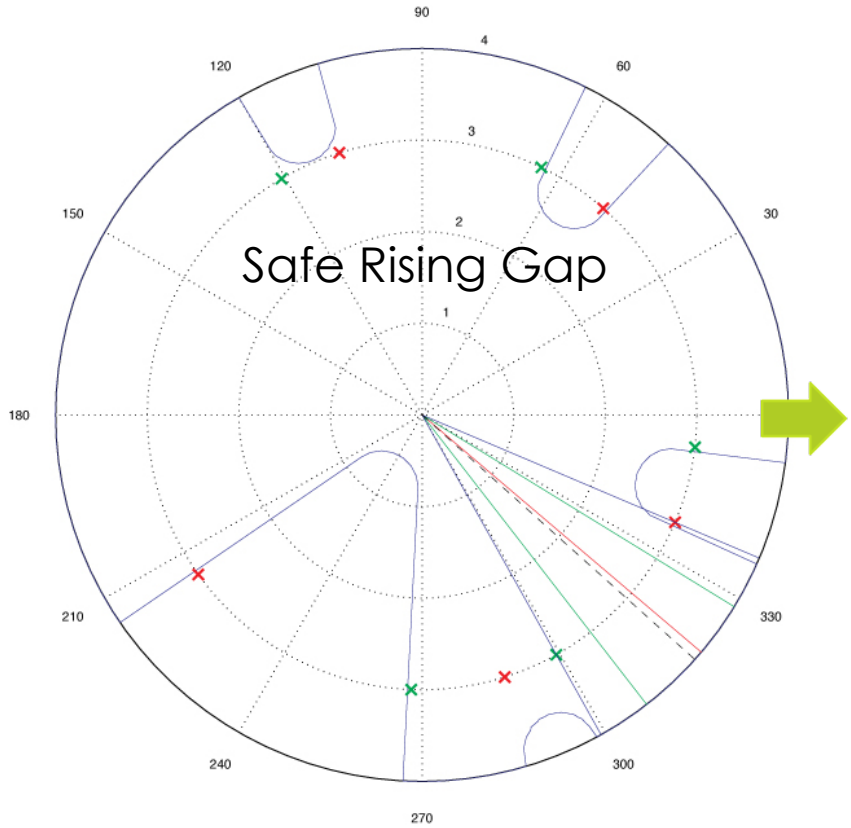

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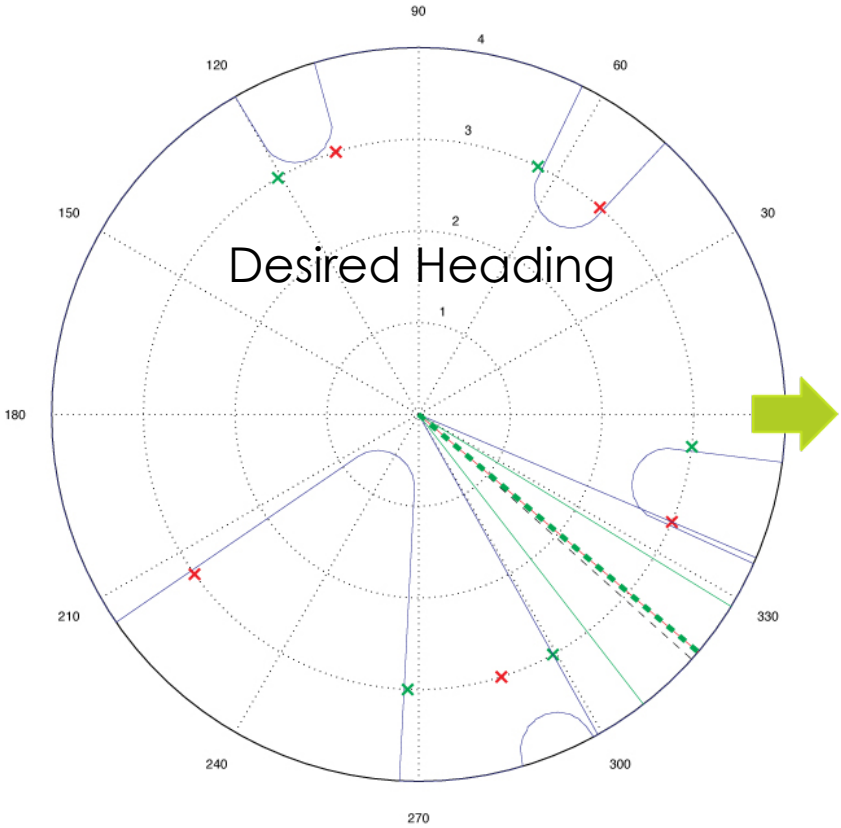

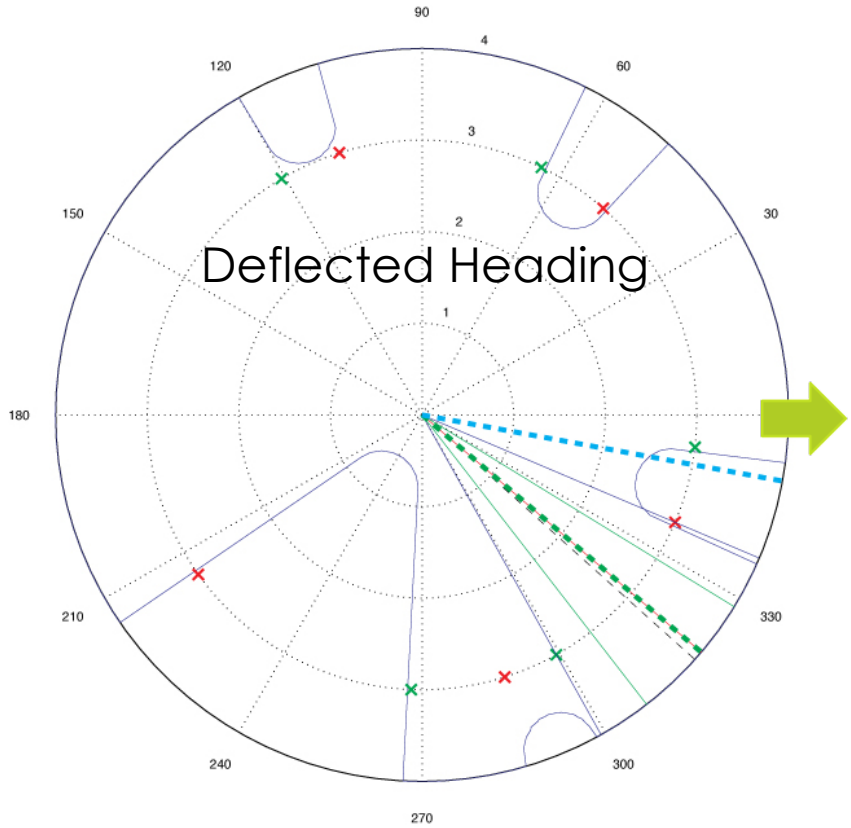

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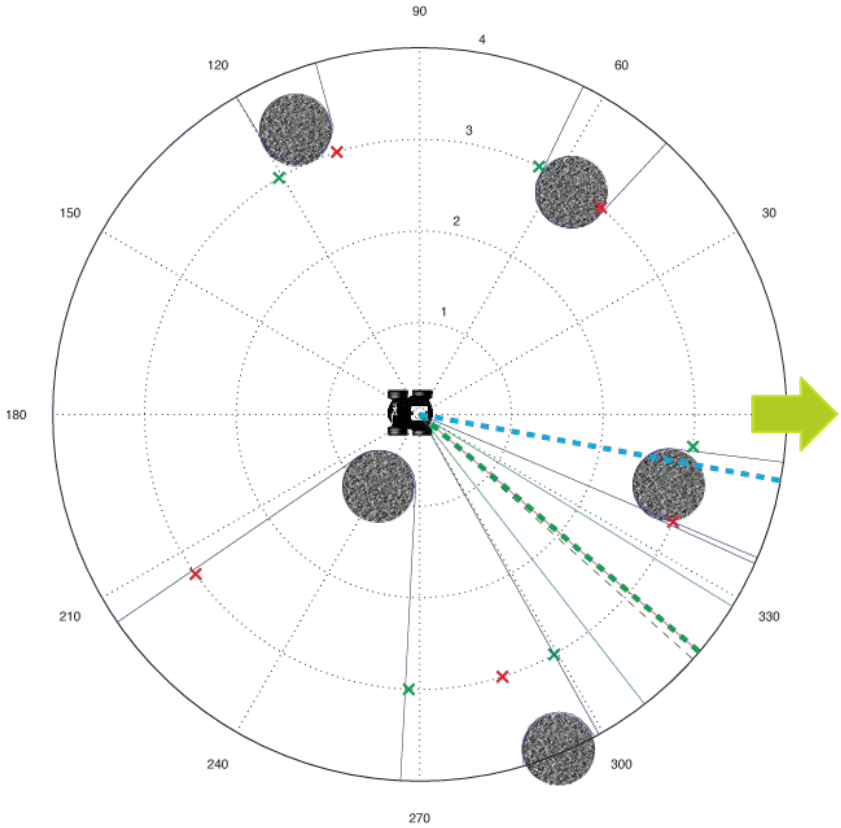

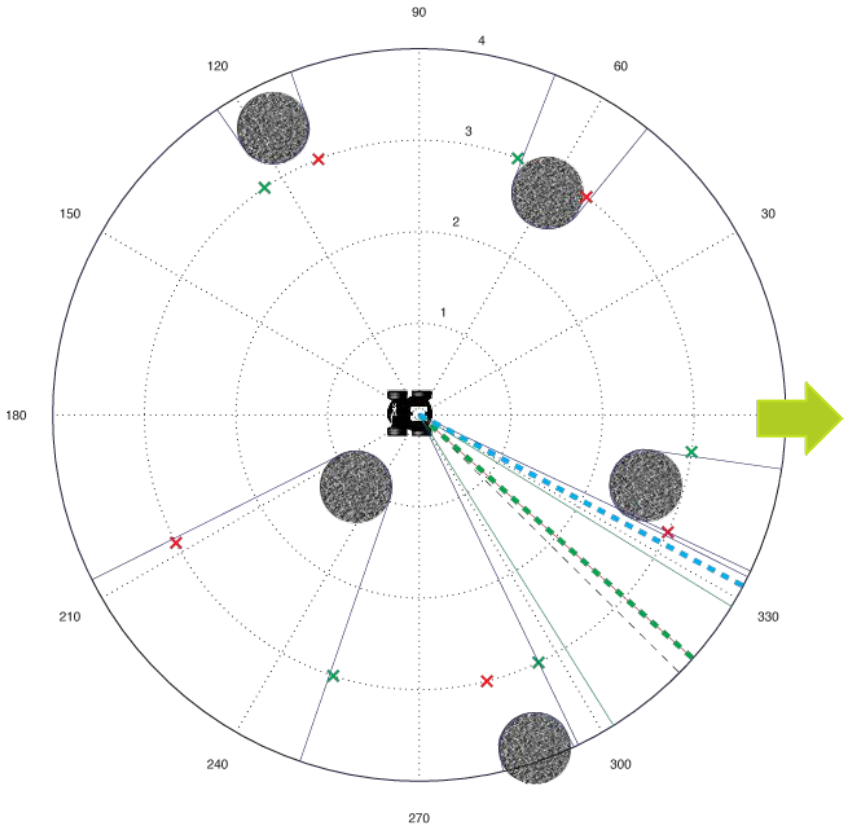

Schedule

- Week 1 - *Completed*
  - SND simulation
  - SyRoTek Online Courses
  - ROS communication with SyRoTek established
- Week 2
  - Adapt SND code for ROS/SyRoTek [3/26 - 27]
  - Testing and Tuning [3/27 - 30]
- Week 3
  - Presentation – Status Update [4/02 – 05]
  - Document SyRoTek structure and work done [4/02 – 05]
- Final Presentation [4/5]