STIGMERGY FOR MULTI-ROBOT COVERAGE: DEMONSTRATION PRESENTATION

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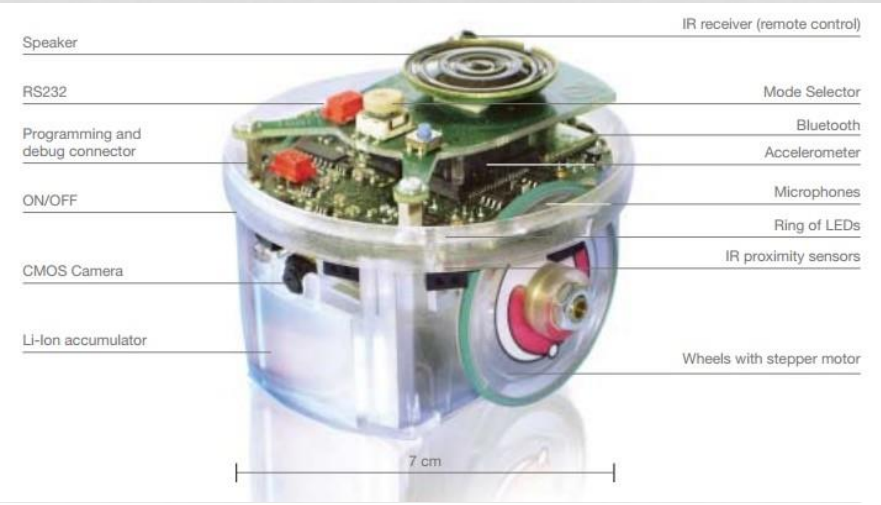
PROJECT AIMS

- Code a program to demonstrate the effectiveness of the Dark Room
  - Target System: e-Puck platform
  - Develop the ‘StiCo’ algorithm for the platform
  - Should interact with the glowing floor in some manner
- Construct a Dark Room
  - Small enough to fit on a table approximately one meter in diameter
  - Quick to set up; Quick to dismantle
  - Uses glow in the dark foil as flooring

PLATFORM: E-PUCK

- An open hardware platform
  - Designed mainly for educational purposes
- Multiple sensors
  - IR for kinetic, Camera for visual
- LEDs allow visual representation of information
- Project focuses use of:
  - Camera to detect light trail on the floor
  - LEDs to generate the light trail



ALGORITHM: STICO

- StiCo is designed to aid patrolling robots
  - Localised messages for indirect communication
  - Light trail suggests a recently visited area

- Circular movement pattern
  - When light is detected, swap direction

ARENA

- Boundaries are flexible to the user
  - Restricted only to the size of the table in use
  - Rope is tied between sturdy sections to provide arena limits
- Arena edges can secure flooring underneath them
  - Glow in the dark foil for this project

CODE OUTLINE

- Configure Camera

- Infinite Loop:
  - Start Camera
  - Turn on ‘South’ LEDs
  - Find lightest point in the current image
  - Move away from the light source

TEST CASES

- Can the arena hold the robot?
- Is the flooring secure enough?
- Can the camera pick up the trails?
- Robot-based tests:
  - Single robot interacting with activated flooring
  - Multiple robots interacting with each other's trails

HUMAN DATA / PARTICIPANTS

- No Human data has been used within this project currently
- No Human data will be used for the remainder of the project

THANK YOU FOR YOUR TIME

ANY QUESTIONS?