Team Ordering for Presentations

1. Sharon Rabinovich - John Barritt - Chandrahas Ramalad
2. Hemant Ramachandran - Khant Zaw - Vegeta Zeleke
3. Lon Blauvelt - Jessica Alipio - Felipe Contreras
4. Patrick Lee - Tanvir Heer - Serena Mak
5. Juliana Hernandez - Jessica Herrera - Isabel Stumfall
6. Zidong Tan - Hung Huynh - Paloma Fautley
7. Pavlo Vlastos - Harry Jackson - Roberto Chavez
8. Karthik Mohan Kumar - Michael Gonzales - Sergio Lopez
9. Vijay Muthukumaran - Ryan Dickerhoff - Trieste Devlin
10. Kyle Lo - Gary Barrett - Francisco Alvarado
11. Josh Gutterman - Ian Zentner - Victor Ardulov
12. Austin Liddicoat - Luis Langarcia - Zach Levenberg
13. Ian Bloise - Isabel Azcona - Kevin Johnson
14. Aaron Maloney - Jacob Lee - Luis Gonzalez - Edmond Lee
15. Justin Ewing - Daniel Ruatta - Daniel Lavell
16. Amy Huang - Veronica Paez - Steven Santiago
17. Justin Bates - Tristan Bodmer - Viktor Jankov
18. Richard Pham - Ryan Winters - Joe Parsons
19. Alexy Munishkin - Nick Elsmore - Pierre Baudin
20. Marta Paulsson - Jose Maravilla - Aaron Lee
21. Bruce Gordon - Devin Cody Kyle - Cordes
22. Tyler Nepote - Carlo Figueroa - Daniel Bazor
23. Scott Rad - Ahren Roth - Randal Robinson
24. Gilberto Barrios - Mariette Souppe - Danny Eliahu
25. Marcus Gronberg - Aaron Storrs - Sierra Catelani
26. Michael Garcia - Michael Powell - Michael Suinn
27. Vikrant More - Arun Suresh - Jordan Liss
Layer 3 top

2 kHz beacon

Layer 3 under

beacon detectors (2x)
Dark Current
When state machine determines it's time to shoot, Pac-Man starts spinning. Each rotation bumps one ping pong ball to the end of the tube. Rotation speed should be about 1 RPS. Fitting mechanism will be at the end of the tube.
Method
"Gravity & Solenoid"

Ball Holder

PVC pipe

Bearing Detent

Base Rotates 360° (340°)

(stiker)
Side

Square Design

Diagram with annotated measurements and dimensions.
Team Name: Night Fall
Scatter Shot

Notes:
- Expandable vent to catch PBs?
- Rack hits anna despador

Rack & Phaia?
Typical DC motor (12V) 3.1 x 4.5 in

Notes:
- Diameter of the motor should limit the height so this layer will attach to the MDF.
- May be about 6 in for sawdust room.
- So 3.19 in.

Assumptions:
- Battery size: 8 x 2.5 in (seems reasonable).
- Tape sensor proto boards will be 3 x 3.5 in.
The electronics layer includes sensors for the beacon, an H-Bridge, DC motor for punching, sensors for motor wiring, and an Uno board. The H-Bridge will sit as high as 3.5 inches limited by the Uno board. There will be a hole for the Uno board, and a space for a keypad. The dimensions are approximately 6.69 inches.
Firing Angle

Possible Boom for Sensors

Pitch for Pin

Ball
DagoBot 4

Plunger:

Servo

Rod held in place of minimal friction, allowed to slide horizontally

Ball launcher:

Tape detectors:

Front of bot

2 in

0.5 in

6 in

6 in

6 in

Left

Back

Electronics:

Uno board

DS motor Driver board

Stepper driver board (?) Servo motor (plunger)

DC x2 (wheels)

Servo or Stepper (whichever)

Solenoid (ball dropper)

Beacon detector perf board

LEDs: state indication, battery level, ?

Age sensors

180 degrees (to 0)
Pump air into Chamber with a Bike Pump in between Bounds.
The 4th Order Band-Pass Megabe Chewyshev Filters
(The Chewyshevs)
Same dimensions as base.
Level 1

Diagram:
- Battery
- Front Right Bumper
- Left Front Bumper
- Underneath
- Back Left Bumper
- Back Right Bumper
Wheel Mount

Motor Mounts

Team Up Champs

X 2

Air Support
Level 1

- 8 pieces for bumper
- 4 mechanical switches

Level mounts - O
Caster wheel mount - O
Inductor - △

Hollow on inside
Plate for support

Screws to hold bumper

Must be greater than 45°/40° thickness
Robot Design

Requirements

- Must fit in 11"x11"x11" cube

Note:
- Location of wheels is
- Will be completely under robot

( ) - top sensor
Top

Fan

Side

Solvent

Backdrop: P2011 Hairclips
Design #1: Tape Sensors

- "Wiggle" along the tape
- 3 Tape Sensors in a Triangle
Design 2: Obstacle Detection

1. Back up
2. Wide right turn

If bumped:

- Follows the wall like a cockroach
- 4 Bump sensors
Launcher
- Matches the rotation of the ball
- Rotates using a servo

Design #1: Beacon Detection
Design #1: Ball Launching/Loading

- Ball Loader
- The back of the bot activates the small piece of MDF attached to they are ready to launch
- Uses a servo to hold balls until collection
- Basket for 360 degree ball
- Tennis Ball Launcher
Design #2: Locomotion

- Distance travelled
- Magnetic encoders to track
- DC motors
- Skids
- Two rear omnidirectional caster wheels
- Two front wheels
Design #1: Overview

1. Locomotion
2. Ball Launching/Loading
3. Obstacle detection
4. Beacon sensing
5. Other Sensors
6. Structure
Design Review #1
Brushless DC-3POS: R2-BJT2 and the
Materials:
2 wheels
Swivel ball caster
2 Servo
2 DC Motor
2 touch wire sensor
5 Black tape sensor
Moving level 2nd level

Top view

- Motor driver
- Wire hole
- Ball loader
- Funnel
- Ball 11" diameter
- Basket

3rd level

- Beacon detector

4th level

- Beacon

Plunger view

- Side view
- Motor
- Lefc
- Spring
- Pivot
- Mnt
- Louncher

≈ 11" diameter.

or the length from Max's finger tip to his big knuckle.
Moving level 2nd level

Top view

- motor driver
- wire hole
- funnel
- ball loader
- plunger
- servo
- plunger
- ball launcher
- spring
- funnel
- laundry

Side view

- mant. pivot
- plunger
- rotate 90°

3rd level

topview.

- funnel hole
- wire hole
- ball
- basket

4th level

- beacon

≈ 11" diameter.

or the length from Max’s finger tip to his big knuckle.
Darsh Butterworth

Victor Jianov
Tristan Bodace
Judee Bates
Parts:
- Sensors
  - Tape sensor
  - Track mark detector
  - Beacon detector
  - Beacon IR
  - Wire whiskers
- Motors:
  - 2 brushless DC for wheels
  - 1 Solenoid for gyro power
  - 1-4 brushless DC for ball launcher
- Other:
  - PVC pipe - 3 in
  - 2 rubber wheels
  - 1 oriculable wheel
  - 4-4/16 in thick rubber wheel
Team: Our Team Name?

Bottom View:

Top View:

Tower

Solenoid

Beacon

moat with wheel in tube

Joseph
Ryan
Richard
Pham

2 in

2 in

1/2 in

2 in

6 in

4 in

3 1/2 in

0.2 in (4 track thickness)
Gonk Droid
Bottom View (Base)

9"
4.244

Stepper motors (gearhead)

80mm^2

9"
all circuits in this level
add mor supports

Bruce Gordon
Kryl Codes
Pemis City

not to scale
The Darth Invader: Lauder, top view

- Solenoid
- Puncher
- Ball
- DC Motor
- DC Motor
- Launch
- Barrel

Devan Cady
Kyle Carter
Briar Gordon
The Darth Invader: Front View

Launch Platform

Electrical Level

Gear Box

Motor
Banthra - Side

- Beacon
- Beacon
- $\frac{1}{2}$" Threaded Rod
- Ball Hopper
- Launch Tube
- Bump Sensor
- Tape Sensor
- Trackwire Detector
Team: Tucker Raiders

Bolt he bottom

☐: Tape sensor
☐: Skid

Trackwire detector
Team: Tucson Raiders

Bottle: 4.13" L x 0.78" W x 1.18" H

Cov.: 4.13"

ULN2003: 1.75" W
2.25" L

Bump sensors: 0.8" x 0.4"

Base Top

Motor

ULN2003

Motor

Filler

5" ULN2003 stock

2"

3"

9"
Booth 2nd level - top

Battery Housing

5" UNO XR Stack

2"
Bootha - 3rd level - top

Ball launcher tube

6" 1.578"

0.5" 5"
Bon1 ho - 4th level - top

Beacon

Beacon platform

Beacon driver (bottom)

Bull louver hopper
Ball Launcher

- Raised track wire sensors
- Numerous tape detectors
- Front Pressure switches
- Beacon scope
- Ring sensor range detection

- 2x powerful drive motors with low gearing
- High friction air-filled tires on glued wheels
- Front dozer blade with hinged shelf
- Rotating turret 360°
- Extending ball discharge and collection bucket
- Rotating IR sensor array
- Low friction rear skid or coaster wheel
- Double targeted ball launcher (Automatic)

This design uses power to reduce the effect of asteroid and enemy drones. The rotating turret and extending ball dispenser provide flexible orientation capabilities and ammo stations and fast, precise and accurate ball launching capabilities. The air-filled high friction tires provide trade in advance structures, 360° rotating sensor array keeps your eyes on the targeted.

Scott, Randall,Ahren
If one is good why not three?!?!
FAN FORCE FIELD

With One Fan Force Field
SHOOTING & LOADING
MECHANISM
ROBOT UNDERBELLY FOOTPRINT