The Automated Gardener

- Jacques Princivil, Christopher Clinton, Ankur Nagpal, Kevin Krupnov
- Professor Vikram Kapila
- Mentor: Joseph Wagh
Overview

- What is Mechatronics?
- Our Goal: A robot Planter
- The Schematics
- Featured Part: Skid steering
- Power and Mobility
- Obstacle avoidance
- Results
- Conclusion
- Future Goals
- Acknowledgements
What is Mechatronics?

Mechatronics is the synthetic integration of:

- Mechanical Engineering
- The Control Theory
- Computer Science
- Electrical Engineering

www.Schools.burnnet.net/mem/
Our Goal: A Robot Planter

- Create a robot that will drill a whole, deposit seeds and water the soil
- Less time consuming
- Can be used by commercial growers as well as individuals in their home gardens

www.people.fas.harvard.edu/.../farming.jpeg
The Schematics

All Designs Created on Discret’s Autodesk Inventor
Featured Part: Skid steering

- Allows an easier turning radius
- Traction
- Power
Power and Mobility

- DC motors cannot be directly controlled from a Basic Stamp.
- Solution: H-Bridge: controls and limits the directional force of the motor as well as its speed.

Designed on Circuit Maker
Power and Mobility (Con’d)

- Simple avoidance Method
- Line path following
- Moding System
Obstacle Avoidance

- Centered around 3 IR (Infrared) sensors
- Avoids obstacles while maintaining a line-following path

I.R wiring Diagram

I.R with built in receiver

Results
Conclusion

- Robot follows Line Path
- Self-controlled form of Skid steering creates favorable turning conditions in tight spaces
- Efficiently completes the planting process - drill, seed and water.
Future Goals

Our future goal is to have a sensor able to determine the pH level of the soil in order to allow the robot to determine if the plant will be able to flourish.
Acknowledgements

We would like to thank

- Professor Vikram Kapila
- Our Mentor Joseph Wagh
- Our Counselor Assistants (Thelma and Omar)
- The Machinist: Alessandro Betti
- All the Personal Yes Center