

# Koolio

## A Traveling, Autonomous Refrigerator Robot

Developed By:

Brian Pietrodangelo and Kevin Phillipson

### Overview:

Koolio is a traveling autonomous refrigerator robot. Picture a cross between R2D2 and a vending machine. It is designed for use on the 3rd floor of Benton Hall at the University of Florida. This floor houses the Machine Intelligence Lab (MIL) as well professors' offices and class rooms. Around here professors are always working diligently in their office and sometimes can't even find the time to get up and get a drink. Now they don't have to worry. Let's say:

- Dr. Schwartz is in an important meeting with a future client and has a sudden urge for a Diet Coke.
- He logs on to Koolio through the network and tells him he needs a Diet Coke.
- Koolio receives this signal through its wireless card and determines the destination's room number. It leaves its docking station at the location in the MIL lab and proceeds to navigate through the hallways using a variety of instruments:
  - Sonar for accurate long distance coverage.
  - IR for close obstacle avoidance.
  - Web cameras for reading room numbers off the wall.
- It identifies room 326 and delivers Dr. Schwartz his Diet Coke.
- It leaves the room and navigates back to its docking station, where it will recharge and wait for the next call.

Although Koolio is initially designed for Benton Hall it could be adapted for any office, school, or even a home. Being completely autonomous and having a variety of sensors, it can accommodate even the trickiest environments. (Except large raised thresholds and stairs, of course.) Imagine watching a movie with some friends and you getting thirsty. You could pause the movie, and go to the kitchen, but that would inconvenience the other viewers. Or, you could run to the kitchen and hope you don't miss anything important. If Koolio if were there would be no problem. Or, say you are watching a football game or boxing match with your buddies and you need another beer. Instead of missing that one handed catch or that knock out punch -- Koolio serve up the beers all



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night long. You have this luxury 24 hours a day, 7 days a week, 365 days a year. Good luck finding a human to do that.

Seriously, though, down the road, Koolio can be adapted to help people who are sick, disabled or infirm.

## Technical Components

- Kontron Embedded PC/104+ Board
  - 266 MHz Pentium MMX, 128 MB DRAM
- Merlin AVR MAX
- Altera Max 3000, Atmel Mega 128
- Red Hat Linux Version 9.0
- Cisco Aironet 350 Wireless card
- Koolmate40
  - 12VDC, Cools to 44-46°F below inside temperature, Holds 52 cans
- Sharp GP2D12 IR Distance Measuring Sensor
  - Accurately determines range b/t 10cm & 80cm
- Devantech SRF08 Ultrasonic Range Finder
  - Accurately determines range b/t 3cm & 6m
- Creative Video Blaster II Web Cam
- CMPS03 Magnetic Compass

