Overview

• 30mins: intro
• 60mins:
  – Assignment: make own Arduino-compatible PCB
  – 3 groups rotate to visit Etcheverry and see the PCB Mill in action.
Perfboard / “Permaproto”
Going Small

• Can buy other boards like Teensy
• Probably want custom board for final implementation

$16
From Prototype to PCB
Process

- Select parts
- Draw schematic (ERC)
- Layout PCB (DRC)
- Generate CAM files
- Send to manufacturing house, wait
- Order parts, wait
- “Stuff” the board
Strategies

Design complete board from scratch: maximum flexibility, maximum amount of work
Strategies

- Design complete board from scratch: rapid, but increased thickness/space use
Manufacturing Boards

- Commerical manufacturers:
  4pcb.com - $33 each student special
- Batch services: oshpark.com
LPKF Circuit Board Mill
min. spacing 100 micron
Packages

Through Hole

- DIP
- Dual Inline Package

Surface-Mount

- TQFP
- Thin Quad Flat Package
Packages

Through Hole

Surface-Mount
Hello World PCB: Blink an LED
Assignment

• Learn how to create an Arduino-compatible PCB:
  – Atmega chip
  – Reset button
  – Power supply
  – 16MHz Crystal circuit
  – Think about adding a connector