**MAKE Article Outline**

* Format
  + Short (5 pages max)
  + Lot of pictures, cool formatting (don't need to have)
  + Drawings: use Fritzing
* Intro
  + Problem
  + Solution
* Project Description
  + Overall system, circuit connections
  + What the code is doing
  + How you came to your decisions
* Materials and Tools cutout
  + Hardware
  + Soldering irons, proto equip, etc
  + Where from, cost, P/N
* Steps
  + Descriptive, not bulleted lists
  + Tips and tricks
  + Links to refs on sites such as (Sparkfun)
  + Warnings/Cautions
  + Figures showing assembly, closeups
  + Visual Layout and Schematic Layout c/o Fritzing for following
  + “Load the code” step → just point them to it (Github)
    - Explain what it does
* How to use it / what it does
  + Displays, sounds, etc

MAKE Magazine “Yobot: Precision Fermentation”, Volume 25

* Parts
  + 2x Breadboard
  + Hookup wire
  + Soldering Iron
  + Solder
  + Wire cutters
  + Wire Strippers
  + Raspberry Pi
  + 2GB or larger SD card (or microSD with converter)
  + Self-powered 4-Port USB Hub
  + USB Wireless-N Adapter (<http://www.amazon.com/gp/product/B003X26PMO/ref=oh_details_o05_s00_i00?ie=UTF8&psc=1>)
  + 2x16 Character LCD (<https://www.adafruit.com/products/181>)
  + I2C/SPI LCD Backpack (<https://www.adafruit.com/products/292>)
  + LED Bargraph (<https://www.adafruit.com/products/459>)
  + 3x PNP Diodes (<https://www.sparkfun.com/products/522>)
  + Shift Register (<http://www.adafruit.com/products/450>)
  + Pi T-Cobbler (<https://www.adafruit.com/products/1105>)
    - Not a regular cobbler shown in diagram
  + USB Webcam (Used Logitech C100)
    - Make sure compatible with Pi (<http://elinux.org/RPi_VerifiedPeripherals#USB_Webcams>)
* Steps
  + Set up the hardware
    - Follow schematics/drawings
      * LCD set up as per Adafruit
      * Cobbler note again
  + Set up Pi
    - Follow (<http://www.raspberrypi.org/quick-start-guide>)
      * Connect
        + Also, connect USB hub with wireless card (in addition to ethernet)
      * Raspian
        + Raspi-config, be sure to enable SSH
    - WiFi
      * See rPi forums to properly configure your config files
      * Test
    - nodejs (Week 3 Notes)
      * New precompiled version:<http://www.raspberrypi.org/phpBB3/viewtopic.php?f=34&t=24130>
      * Recommend 0.8.16 to go with this version
    - git, npm, node-gyp (Week 4 Notes)
      * Take SPI off blacklist
    - OpenCV
      * Can use apt-get, libopencv-dev
    - Set up dynamic DNS client
      * Python script OR
      * no-ip.org (<http://www.stuffaboutcode.com/2012/06/raspberry-pi-access-from-internet-using.html>)
    - Forever
    - Add stuff to rc.local
      * Email Notification, Forever
    - Test out SSH from another computer
    - Shutdown (SAFE)
  + Connect Hardware to Pi
    - Can disconnect keyboard/mouse, ethernet, monitor at this point
    - Connect rPi to your breadboard via the ribbon cable from Pi Cobbler
    - Connect wireless adapter, webcam to USB hub
    - Connect USB hub to Pi (if not already)
    - Power USB Hub
    - Power Pi
  + Download/configure software
    - <https://github.com/stantheman286/scraptcha>
    - <https://github.com/stantheman286/minimal542project> (put in scraptcha folder)
    - Configure for your camera (if different or different Node version)
      * c/
      * node-gyp configure
      * Edit Makefile, add CFLAGS AND LDFLAGS for OpenCV
        + <http://opencv.willowgarage.com/wiki/CompileOpenCVUsingLinux>
      * node-gyp build
    - Configure SPI if different Node version
      * c/nodeSPI
      * node-gyp configure
      * node-gyp build
    - Run HW test (node/test.js)
      * Script to flash on LCD, LEDs
    - Configure the device for your network
      * scraptcha.js: manager server, port
  + 4. Take pictures of trash and play!
    - Show app screenshots
* Notes
  + Power issues for USB
  + Use small screwdriver to adjust LCD brightness