1. **Team Members:**
    a. Michelle Luo, michelleluo@college.harvard.edu
    b. Karen Xiao, karenxiao@college.harvard.edu
    c. Kenny Yu, kennyyu@college.harvard.edu

2. **Project Information:**
    a. Title of Project: Robo Bartender
    b. A brief discussion of the project, including why it interests you.
    For our project, we would like to construct a machine that will take user voice input and make the desired drink.

    We were inspired by previous projects that made automated drink mixers and were interested in recreating something similar but with the added component of voice recognition as input, since it would would involve some amount of dealing with wiring up hardware as well as programming that would allow us to use new skills acquired in ES50 as well as our backgrounds in Computer Science.

    c. What is the goal of your project?
    The goal of the project is to allow people to tell our Robo Bartender what drink they want and get their desired drink made automatically. Through the project, we hope to learn more about the interface between the hardware of the drink dispenser and the software that will do the voice recognition and make the desired drink.

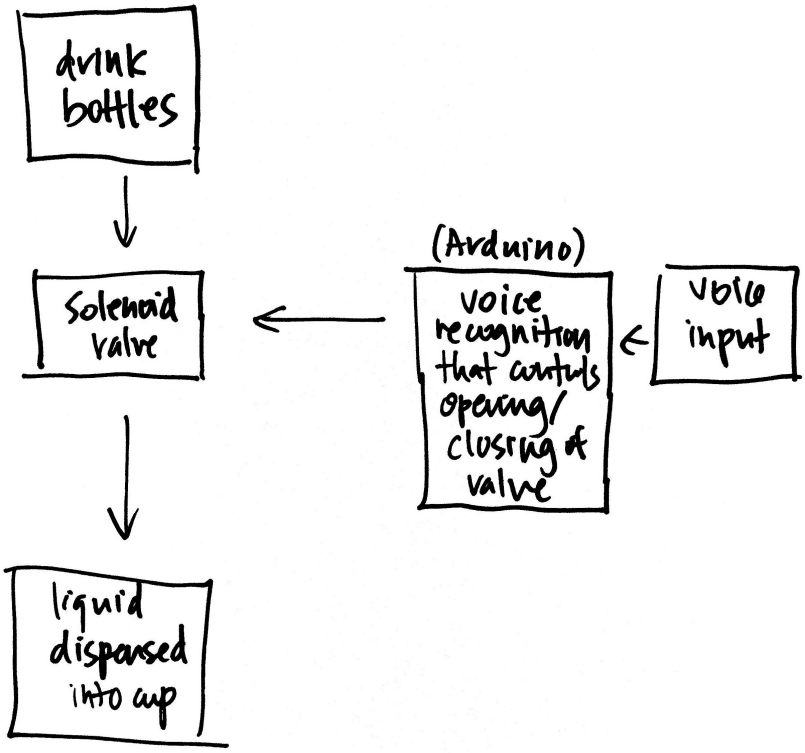
3. **Resources**
    a. Drink dispenser projects:
        i. https://www.youtube.com/watch?v=nZtfW2e2Cp0
        ii. https://www.youtube.com/watch?v=FKc6ZXWNmpk
    b. Fish tank dosing pump project
    c. Controlling Water Pumps and Solenoids with Arduino
    d. Speech recognition library for arduino: http://www.bitsophia.com/BitVoicer.aspx
    e. MATLAB speech recognition library:
    http://www.ee.ic.ac.uk/hp/staff/dmb/voicebox/voicebox.html
    f. How to get the average color of an image using MATLAB
        i. http://www.mathworks.com/matlabcentral/answers/3592-averaging-an-image
        ii. http://www.mathworks.com/matlabcentral/newsreader/view_thread/241443

4. **Projected Schedule**
    a. Week 1 (4/7 - 4/13)
        i. As soon as proposal is approved, order parts

ii. Start putting together software that reads in sounds and runs voice recognition software

b. Week 2 (4/14 - 4/20)
   i. Start building the actual setup
   ii. Hook up solenoids such that we can control how much is dispensed
c. Week 3 (4/21 - 4/27)
   i. Connect the voice recognition and physical setups of the project
   ii. Complete a fully functional version of the project
d. Week 4 (4/28 - 5/4)
   i. Debug as needed, finalize project

5. Block Diagram



6. Team Management

a. Physical components: designing the circuit, wiring it correctly, putting parts in place
b. Reading voice and determining the correct color value to output
c. Activating the solenoids appropriately to dispense drink valves

7. **Knowledge Needed**

We have probably covered enough in labs to be able to put together the wiring and programming components of the project, but we foresee that our biggest blocker will

probably be dealing with putting the physical parts of the project together, especially if we end up building a nice casing or something for the finished project.

Also, another challenge we will have is to recognize speech from recorded sound.

8. **Part List**
    a. Arduino Uno
    b. Solderless breadboard
    c. Battery pack
    d. Solenoid valve
    e. Arduino Microphone
    f. Wireless shield?

9. **Budget**

Part	**Quantity**	**Source**	**Price**
Solenoids	5	https://www.sparkfun.com/products/11015	$4.95 x 5
Pipettes	1	http://www.amazon.com/Plastic-Transfer-Pipettes-Gradulated-Pack/dp/B005IQTSE0/ref=sr_1_35?s=industrial&ie=UTF8&qid=1396535108&sr=1-35&keywords=syringe	$4.59
Plexiglass?			
Rotation servo	1	https://www.sparkfun.com/products/9347	$13.95
Arduino Microphone	1	https://www.sparkfun.com/products/9964	$7.95
Arduino Uno	1	in ES50 lab	N/A
Solderless breadboard	1	in ES50 lab	N/A
Battery pack	1	in ES50 lab	N/A
		Total	**$50.88**