Ferrofluid Music Visualizer

Group 5

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Updates

- Parts
  - Ethanol arrived (suspension fluid)
  - Power cord for Arduino arrived
  - Two-way audio jack arrived
  - Power supply ordered
  - Magnet wire ordered

Testing Magnets

- Vary current through the magnets to check:
  - Heat (cannot be more than X degrees Fahrenheit)
  - Strength (make sure the magnet is strong enough to move the fluid).
- Size
  - Make sure the magnets aren't too big for the packaging, so as to obstruct a view of the liquid.

Testing Packaging

- The Material
  - Make sure ferrofluid doesn't stain.
  - Has to be transparent
- The Shape
  - Find the ideal shape of packaging that provides the best visual effects.
  - Find shape that allows for non-obstructing placement of the magnets.
  - Volume and dimensions of the shape also have to be determined.

Testing Code

- Make sure that the FFT code is working properly (MATLAB comparison).
- Make sure the buffers are properly being populated with audio input values.
- Test the code using LED's to ensure that the code is producing outputs based on the frequency of the audio inputs.

Testing Power

- Securely attach wall power to AC2DC input
- Confirm output current is 15A
- Confirm output current is at least 10A with attached circuits.
- Wall power to Arduino adapter.

Testing Suspension Fluid

- The key to this is ensuring that the ferrofluid and the suspension fluid do not mix.
- Currently we have done research and have found that ethanol will be a suitable suspension fluid.
- We are currently in the process of testing this.

Response time

- Overall response time
  - (time signal changes) - (time fluid responds)
- Aim for dt < 0.5 seconds
  - Subject to change if *very* user perceivable
- Split into two steps
  - Input signals -> output controls asserted
  - Output controls -> fluid response

Future

- Finalize container design
- Finish ordering/assembling VGAs
- Connect all components to test container
- Tweak FFT outputs