Ferrofluid Music Visualizer

Group 5

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About Us

Project Vision

- Ferrofluid consists iron filings suspended in a liquid. It reacts to magnetic fields.
- Make an audio visualizer using this stuff
- Use FFT data and electromagnets to make it *dance*.
- Can be applied to any signal generating input (Cool ideas welcome!)

Competitive Analysis

- No comparable commercially available product.

- A group of students at Purdue had a similar project
    - Insufficient magnet strength, poor set up.

- Another group from the University of Southern Denmark also did a similar project.

- We will have much better packaging and more degrees of freedom for movement than either product.
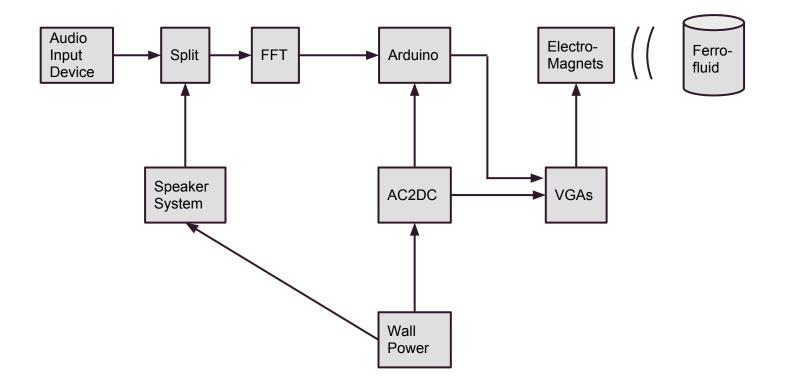
- Ferrofluid Demo

Requirements

1. Ferrofluid responds to music.

2. Visually appealing display.

3. Compact packaging (small hardware footprint).

4. Works out of the box. Plug into wall.

Technical Specifications

- Processor (Arduino)
- Ferrofluid
- Magnets (metal pieces of desired shape)
- Plastic casing
- Copper wire
- Fourier Transform Module
- Digital Variable Gain Amplifiers
- AC-to-DC converter (from wall outlet)
- Two-way audio jack and splitter

Architecture

Anticipated Risks

- Suspension fluid and ferrofluid interacting in unexpected ways.
- Packaging is going to be biggest challenge.
- Optimal positioning of the magnets on the packaging. (ex. not obstructing display)
- Kids drinking the fluid.