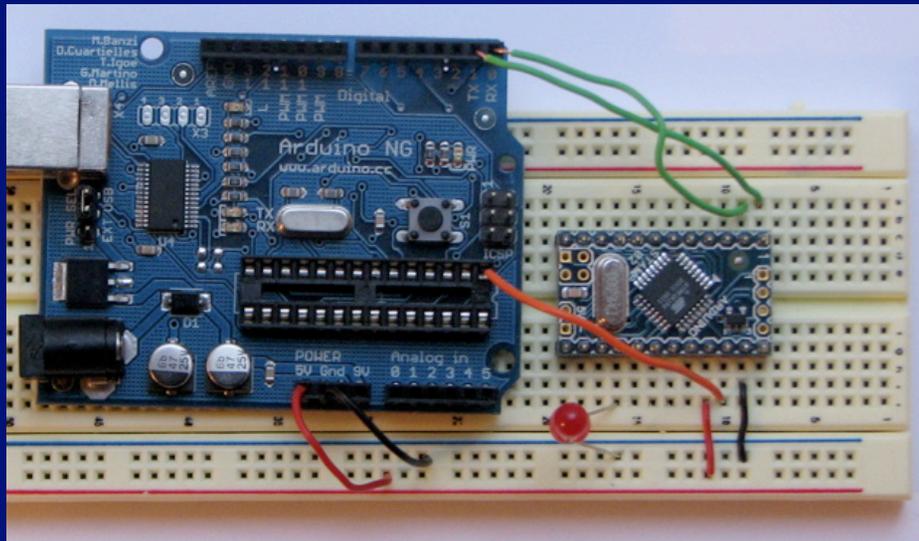


# Explorers Post 631

## Computer Technology



# Explorers Post 631 Computer Technology

Who?

What?

When?

Where?

Why?



# Why

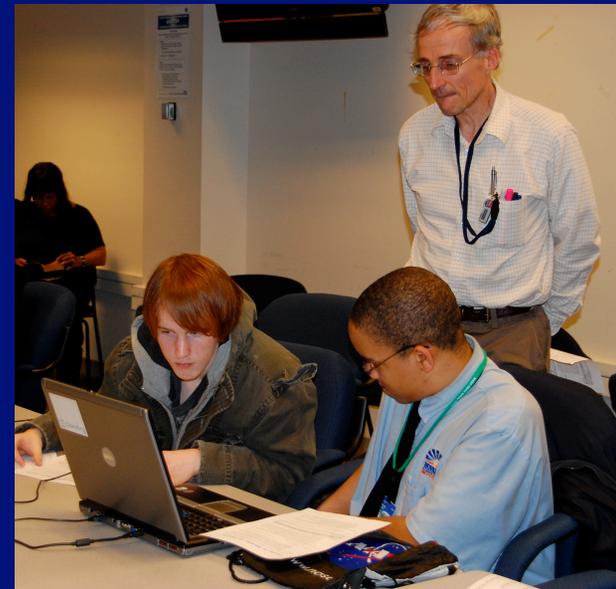
- Awareness of what computers can do
- Career exploration
- Learn how to create with a computer
- Leadership development
- Social opportunities
- Importance of computers in today's world



# Post Advisors



Marivell Baez  
Don Braun  
Josh Glemza  
Herb Schilling  
Mary Vickerman



# New Explorers and Parents

- Requirements:
  - Basic computer skills
  - Desire to learn
  - Willingness to share and participate in the Post



- Parents
  - Help with transportation on field trips
  - Sit in on meetings
  - Feedback



# Types of Activities



Learning



Guest Speakers

Post 631



Tours



Volunteering

Fun

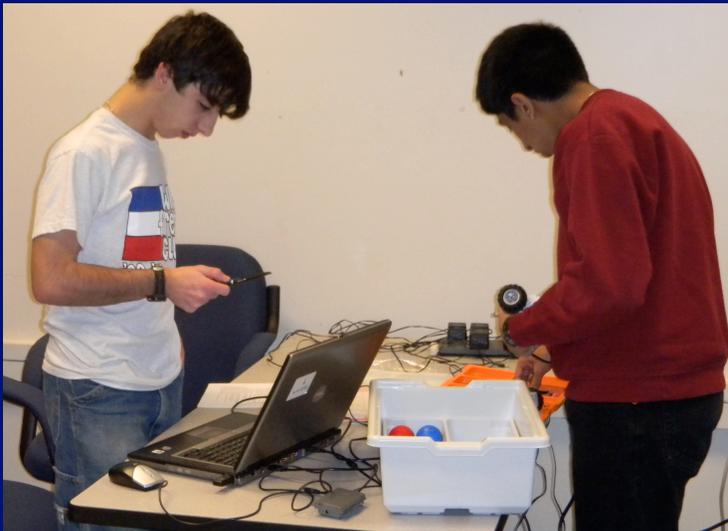


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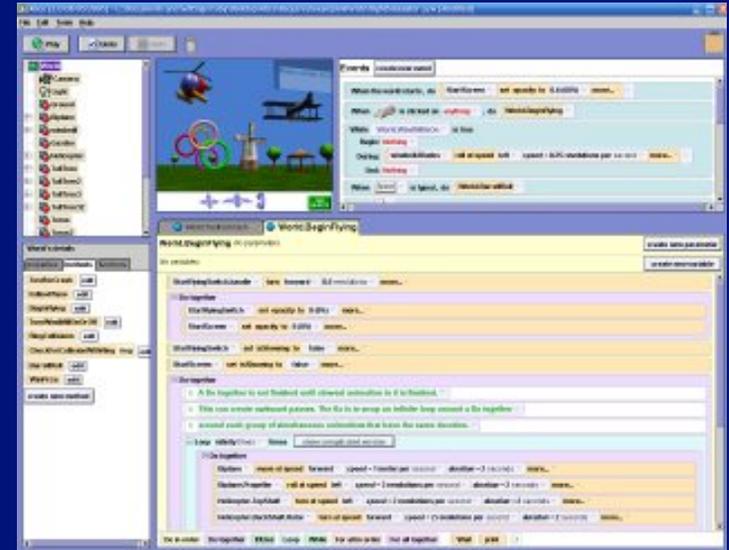
# Main Lessons

Computer fundamentals  
Hands-on computer technology  
Why computers are important  
Develop computer skills  
Explore career options



# Using Computers to Create!

```
File Edit Language Mode
1 z_1 = 5
2 z_2 = "Happy"
3 z_3 = [z_1, z_2]
4 z_4 = {z_1:z_2}
5 z_4[7] = "Birthday"
6 def z_func(an_arg):
7     print an_arg + 2
Language mode: Python
```



**Backgrounds & Rules**

|                    |   |
|--------------------|---|
| Label:             | <input type="text"/>  |
| Longer Label:      | Select Value  |
| Even Longer Label: | <input type="text"/>  |
| One More Label:    | <input checked="" type="radio"/> Value 1<br><input type="radio"/> Value 2 |

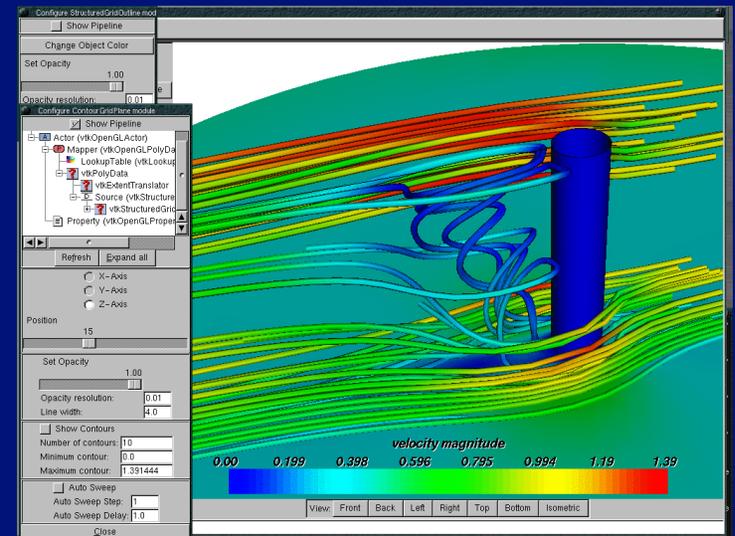
**Additional Visual Elements**

|                      |  |    |
|----------------------|--|----|
| 1 Label:             | <input type="text"/>                     | 9  |
| 2 Longer Label:      | Select Value                             | 10 |
| 3 Even Longer Label: | <input type="text"/>                     | 12 |
| 4 One More Label:    | <input checked="" type="radio"/> Value 1 | 13 |
| 5                    | <input type="radio"/> Value 2            | 14 |
| 6                    |  | 15 |
| 7                    |  |    |

8

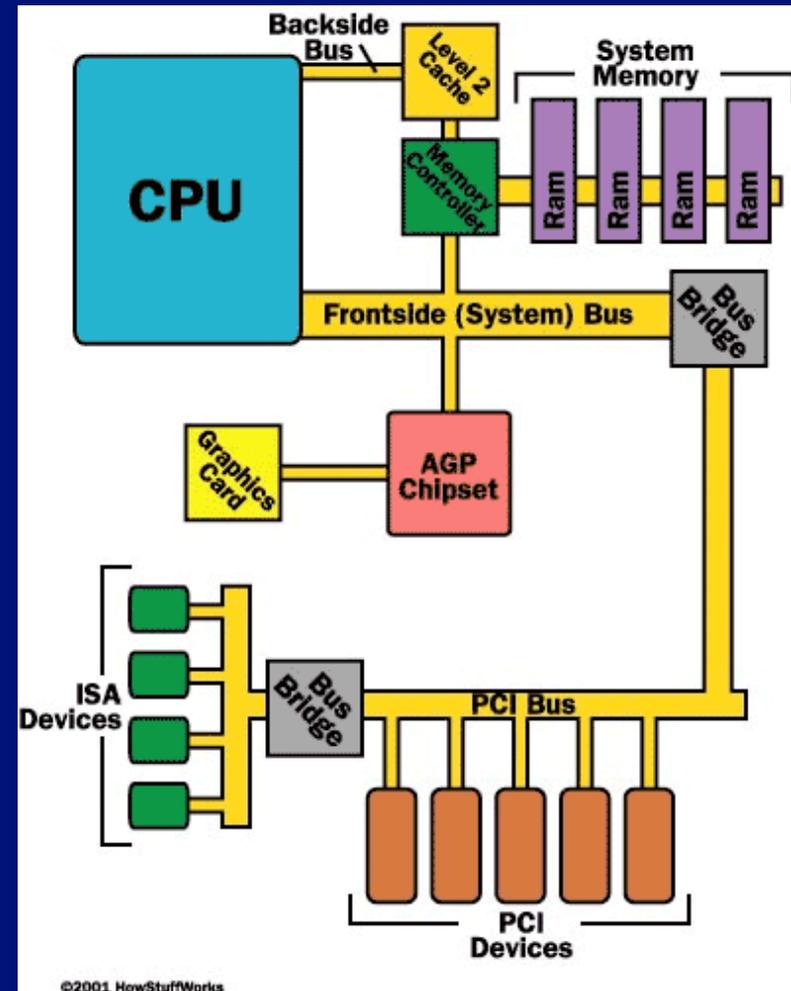
**Impaired Scanning**

|                    |   |
|--------------------|---|
| Label:             | <input type="text"/>  |
| Longer Label:      | Select Value  |
| Even Longer Label: | <input type="text"/>  |
| One More Label:    | <input checked="" type="radio"/> Value 1<br><input type="radio"/> Value 2 |

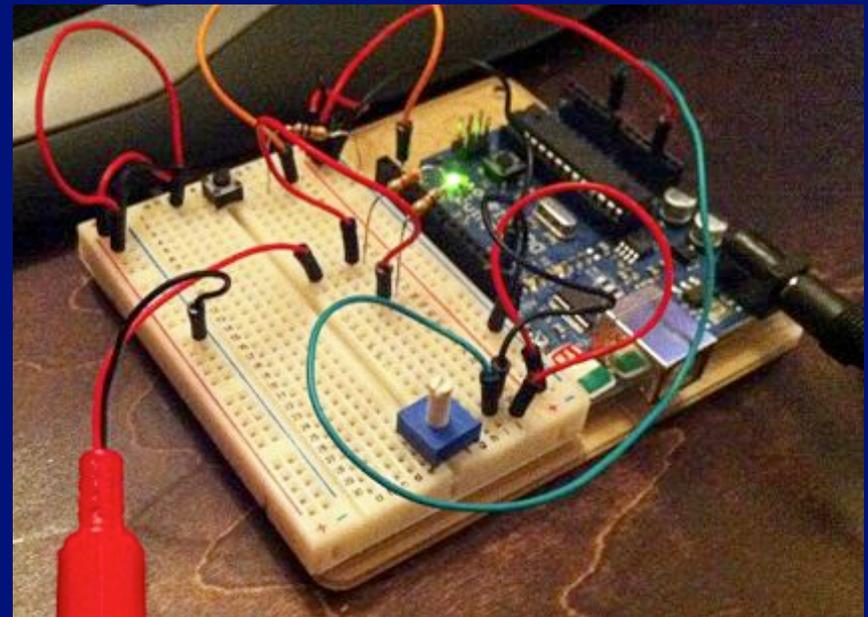
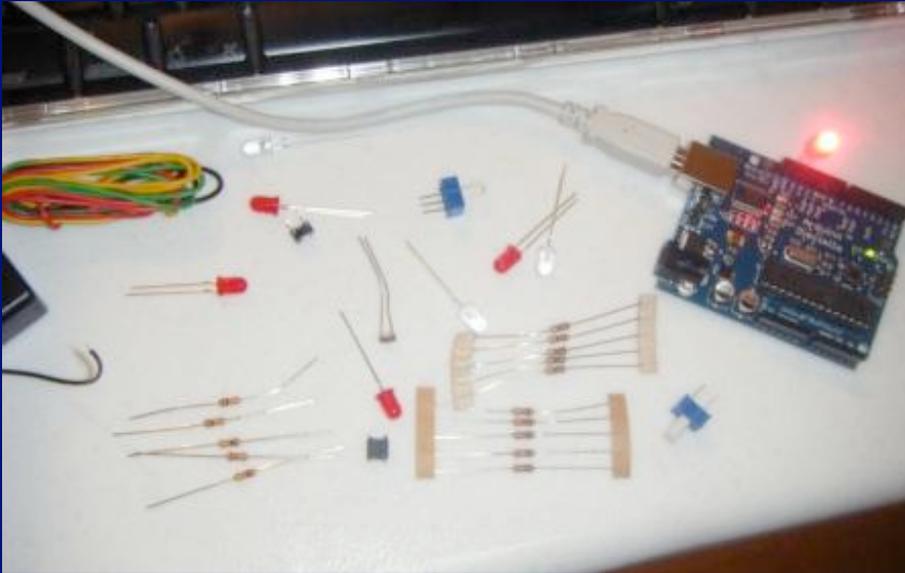


# Computer Fundamentals

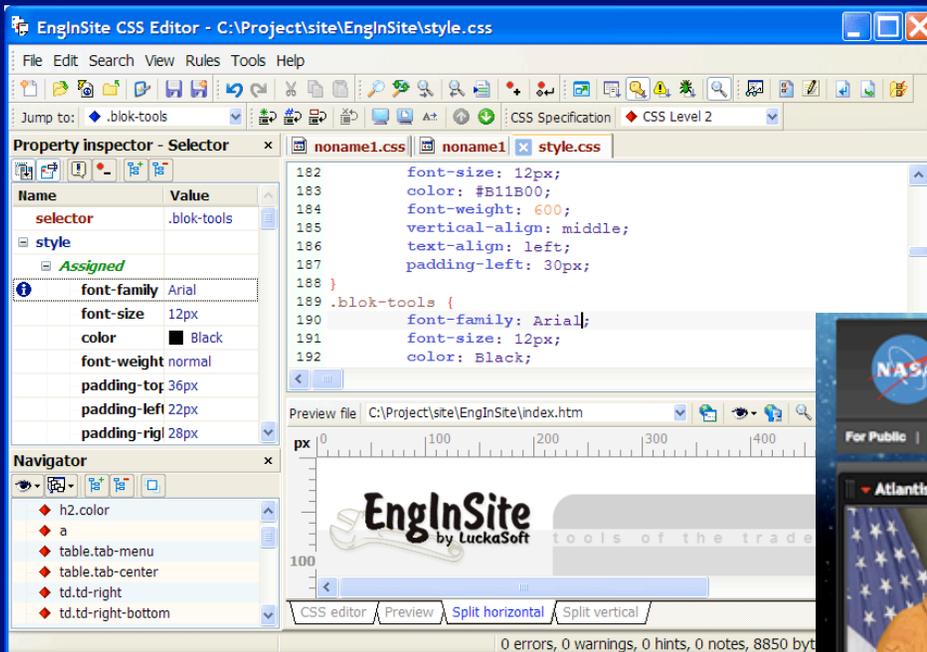
|                         |     |     |      |    |    |     |    |     |
|-------------------------|-----|-----|------|----|----|-----|----|-----|
| Binary:                 | 0   | 1   | 1    | 0  | 0  | 1   | 0  | 1   |
| Decimal:                | 128 | 64  | 32   | 16 | 8  | 4   | 2  | 1   |
|                         | No  | Yes | Yes  | No | No | Yes | No | Yes |
|                         |     | 64  | + 32 |    | +  | 4   |    | + 1 |
| ↓                       |     |     |      |    |    |     |    |     |
| Decimal Equivalent: 101 |     |     |      |    |    |     |    |     |



# Computers and Electronics



# Web Page Design



# Squeak Programming

**Lunar Lander Game**

**ship gravity** ! normal

- ship's ySpeed increase by -2
- ship's y increase by ship's ySpeed

**ship motor** ! paused

- ship's ySpeed increase by joystick's upDown

**flame showit** ! normal

- Test joystick's up down > 0
- flame's x + ship's x
- Yes flame's y + ship's y
- flame show
- No flame hide

**ship land** ! normal

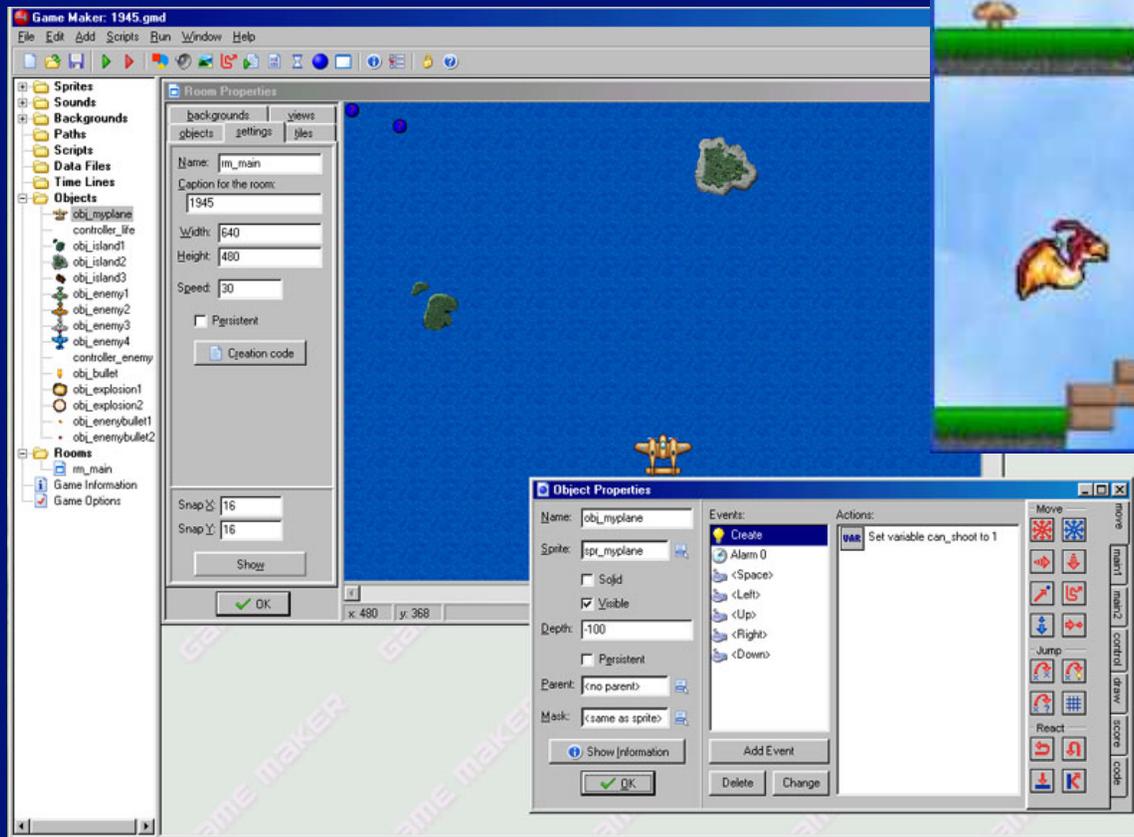
- Test ship's color sees color
- Test ship's ySpeed > -16
- Yes flame hide
- ship hide
- No ship make sound splash
- crash show
- ship stop script all processes
- No

Control the motor of the ship with this joystick.

ship startGame ship resetGame



# GameMaker

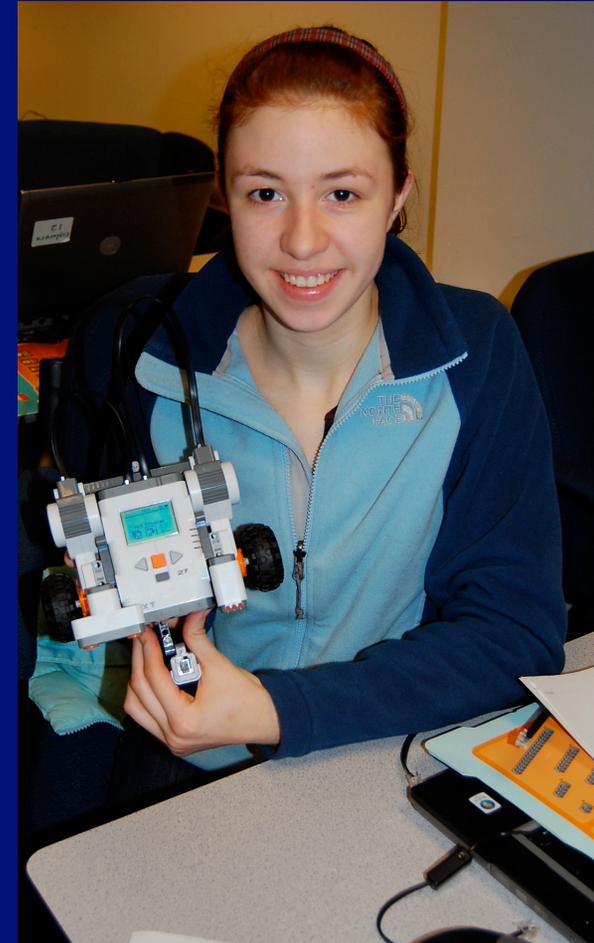


# Programming and Animation- Alice

The screenshot displays the Alice 2.0.7 application window. The title bar reads "Alice (2.0.7) - /Applications/Alice.app/Contents/Required/exampleWorlds/snowLove.a2w". The interface includes a menu bar (File, Edit, Tools, Help), a toolbar with Play, Undo, and Redo buttons, and a trash icon. On the left, a "World" panel lists objects: Camera, sunLight, island, Snowwoman, and Snowman. The central 3D view shows two snowmen on a yellow hill under a blue sky with a palm tree. Below the view are navigation arrows and an "ADD OBJECTS" button. On the right, the "Events" panel contains two event triggers: "When [mouse] is clicked on anything, do World.movie" and "When the world starts, do Camera.Screen set isShowing to true duration = 0 seconds". Below the events is the "World.movie" details panel, which shows "No parameters" and "No variables". The main script area contains a sequence of actions: "World.fadeOut", "Camera.Screen set isShowing to false more...", "World.fadeIn", "Wait 0.5 seconds", "Snowman.Head point at Snowwoman.Head more...", and "Wait 0.3 seconds". At the bottom, there are control buttons for "Do in order", "Do together", "If/Else", "Loop", "While", "For all in order", "For all together", "Wait", and "print".



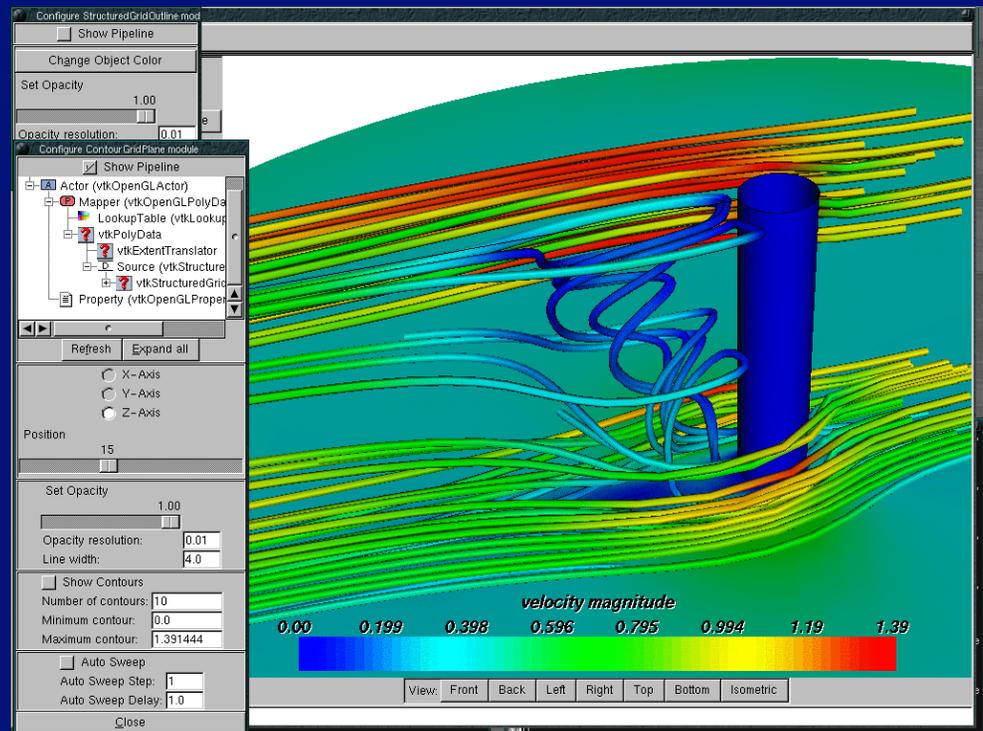
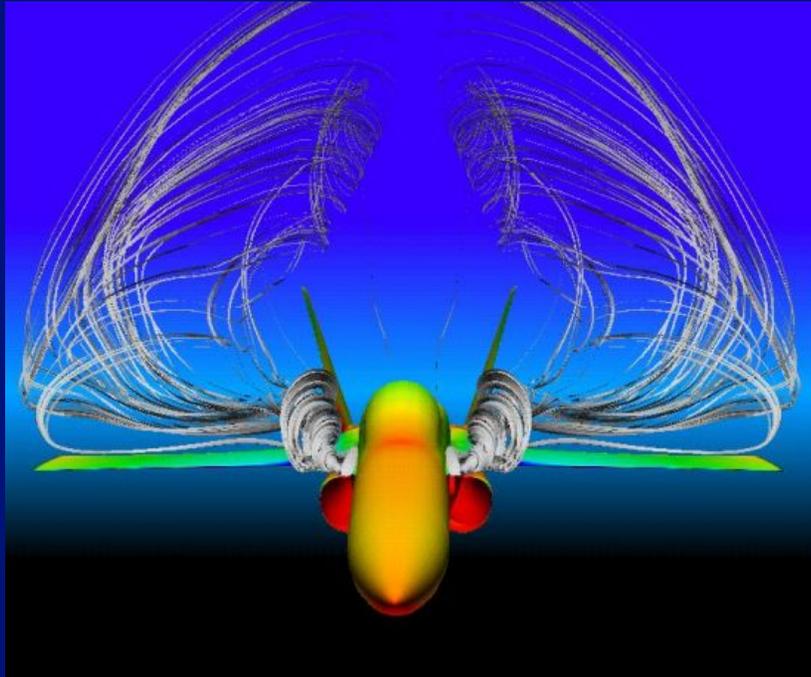
# Robotics Lego Mindstorms NXT



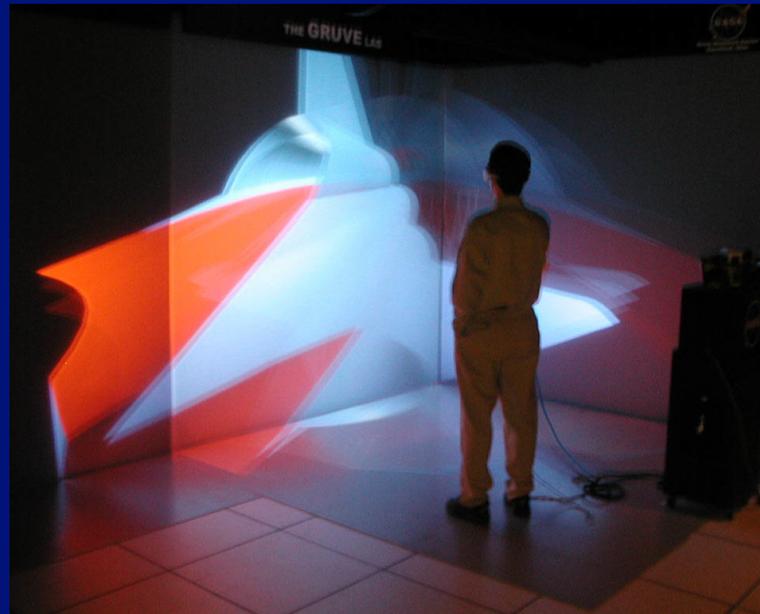
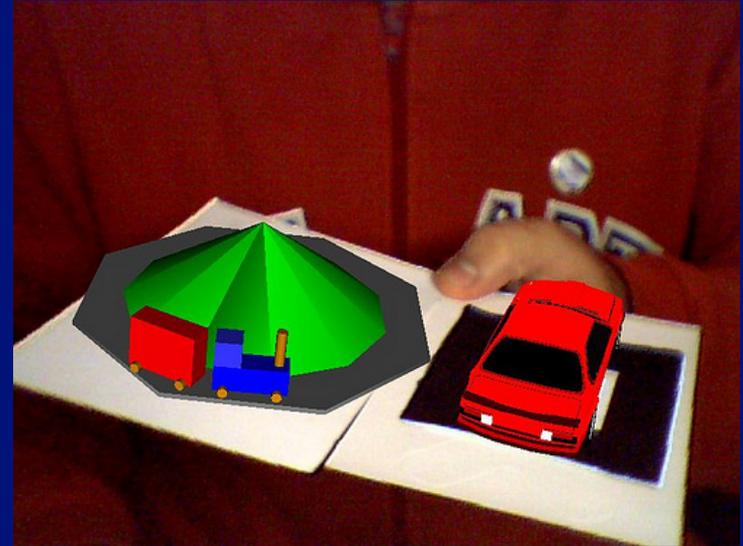
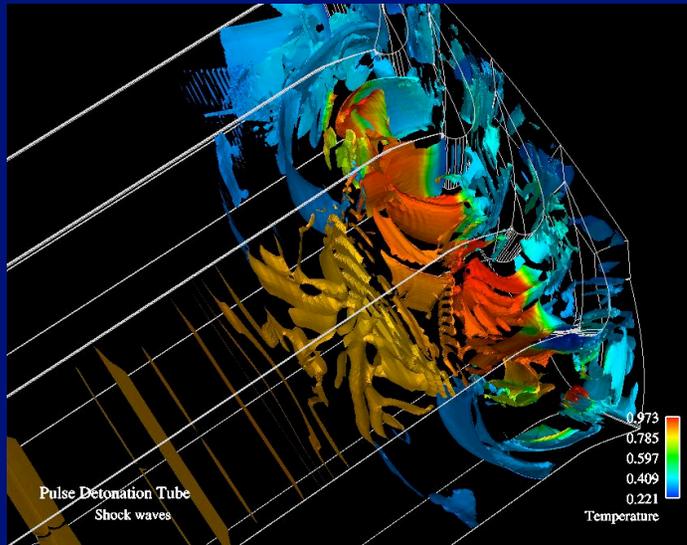
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# Data Visualization



# Virtual Reality



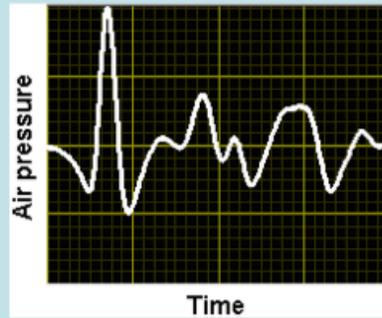
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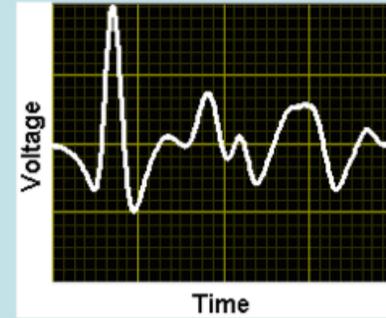
# Signal Processing

## How do computers record and play back sound?

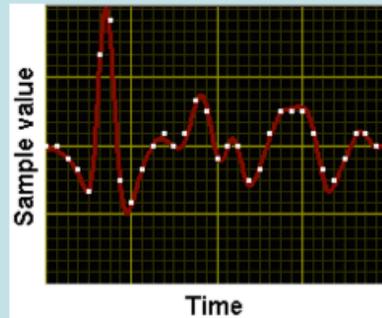
Sound source (e.g., music or speech)



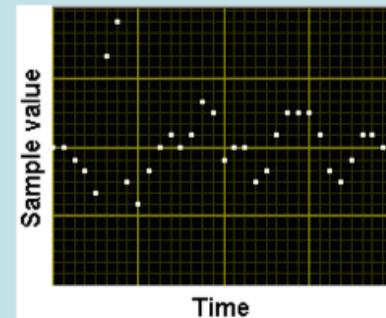
Microphone



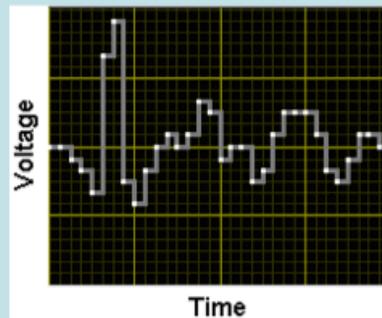
Analog to Digital Converter (ADC)



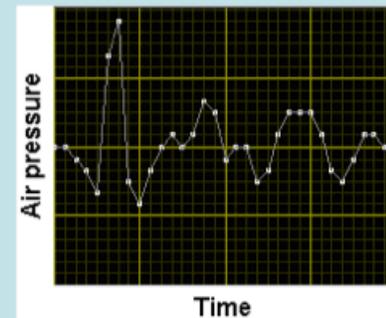
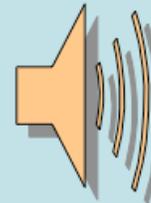
Store digitized numbers on a computer disk



Digital to Analog Converter (DAC)

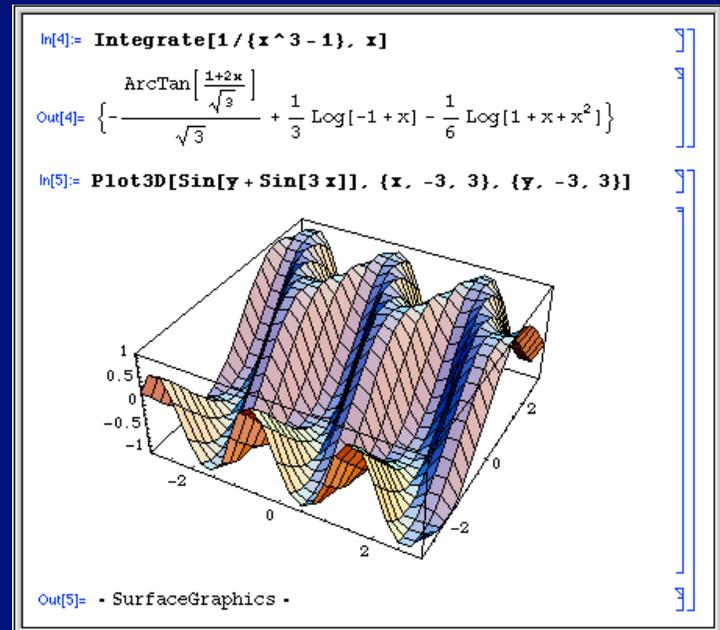


Speaker or earphone



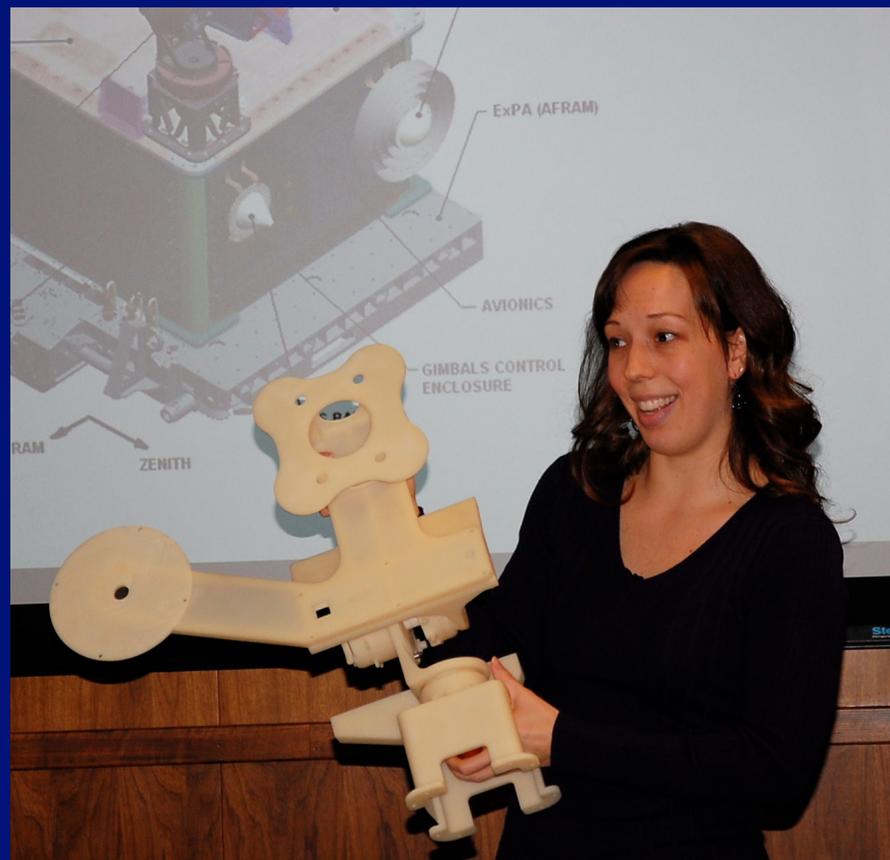
# Mini-Lessons

- What the Advisors do at work
- Computer security
- Web 2.0
- Careers
- Intro to NASA
- Searching the Web
- Space exploration
- Algorithms
- Talks by former Explorers
- Computers and math

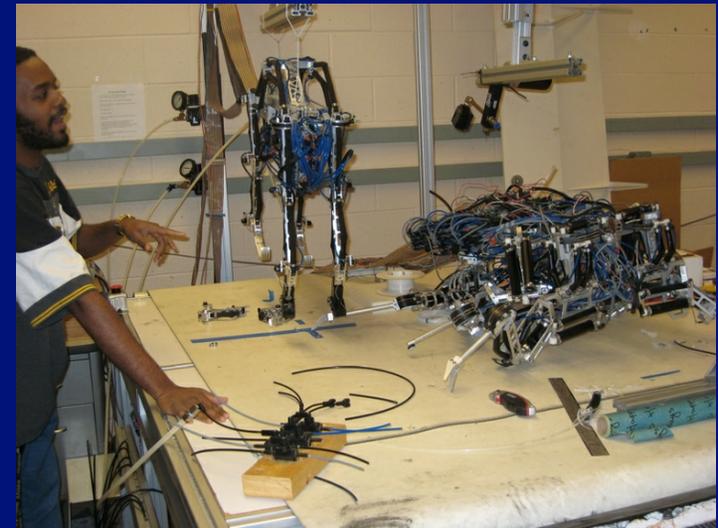
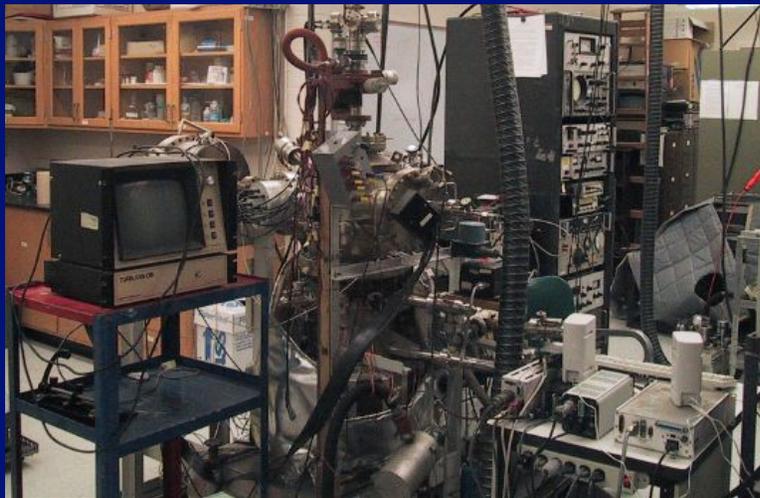


880

# Guest Speakers



# Tour of Case Western Reserve University Labs



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# Tours of NASA



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# Social Events



# Community Activities

## Cleveland Foodbank



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# When

Every Thursday, except holidays

5:15 to 7:15 PM

Oct 7 through May



# What Explorers Say About Post 631

- This program was well put together and well organized. I wish more people could get into a program like this.
- It was fantastic...I enjoyed everything.
- This program was fun and enjoyable and I learned a lot.
- I learned new things, how to interact better with other people...This program made me feel more confident.
- I learned a lot about how technology is used in all kinds of different careers.



# Explorers Computer Technology Post 631

## Questions?

