Temasek JC Presents:

Makey Makey Ideas

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What exactly is the Makey Makey?

Makey Makey was invented by two students at MIT Media Lab.
Turn anything into a keyboard for the computer!

Make use of whatever household items you can find!

Just ensure that you have electrical conductors, such as aluminium foil or pencil lead, so that current can flow through!
Makey Makey makes the use of a computer more engaging as the user can make use of physical objects to simulate softwares and games.
Makey Makey

It does not take much skill to actually construct a controller for Makey Makey. Think out of the box, let the creative juices flow and here we go!
Makey Makey

In order to run softwares using Makey Makey, normally what you can do is to search the internet for Scratch programs/flash games to play with. Scratch is an easy to program software for students to create games and interactive activities.
Makey Makey

It is a fun tool to use, but if you do not wish to create your own programs, go online and find those that students have submitted themselves!

**Drumset**
http://www.y8.com/games/z-drum_3003

**Piano**
http://scratch.mit.edu/projects/ericr/2543877

**Pacman**
http://www.thepacmanwebsite.com/media/pacman_flash/

**Car Racing**
Any game will do, but we recommend
Keys of a Makey Makey

- Up, down, left and right
- Spacebar & Mouse left-click
Keys of a Makey Makey (continued)

Extra functions to explore with Arduino

W, A, S, D, F, G, H and J keys

Mouse movements
A closed circuit has to be created between the earth and the corresponding signal input, for example the arrow keys.

This can be done by attaching one crocodile clip to the input and one to the earth. These two clips are separated, and will only be joined when a conductor is used to transfer the current through.
How it Works

A person can hold on to the wire connected to the earth. When he touches any of the crocodile clips connected to the appropriate input buttons, current flows through the person’s hand to the finger that is touching the corresponding input button.

Wire connected to earth

Connect this to a particular conductor, such as an aluminium can. When this can is touched, the current flows from the person’s hand to the can and this causes a closed circuit.

For more information, log on to http://www.youtube.com/watch?v=rfQqh7iCcOU
Makey Makey Ideas

How to construct different types of controllers
Here is a compiled list of ideas on how to construct controllers for Makey Makey. Note that these ideas are not the most perfect, you can always construct your controllers differently from these guided examples!
Idea 1 – Joystick

- Materials needed:
  - A plastic cup
  - A thick stick
  - Aluminium foil
  - Some plasticine
Idea 1 – Joystick

- Procedure:
  - Tape some aluminium foil to four sides of the cup. Make sure that the aluminium tapes do not touch each other.
  - Wrap the plasticine around one end of the stick. Wrap that end with aluminium foil and place a wire inside the foil, making sure that it extends out when placed inside the container.
  - Connect the four pieces of tape to the up, down, left and right holes in the Makey Makey.
  - Connect the wire attached to the stick to the earth holes in the Makey Makey.
  - Open a game of Pacman and try out the joystick.
Idea 2 – Game Controller

- Materials needed:
  - Some plasticine
  - Thick piece of wood/cardboard
  - Aluminium foil
Idea 2 – Game Controller

Procedure:

- Depending on the number of buttons needed, position the buttons to simulate a normal Xbox/PlayStation controller.
- Cover these buttons with aluminium foil. Attach wires and connect them to the up, down, left, right and any other keys in the Makey Makey. For a more complicated game, the use of the pins at the back of the Makey Makey are necessary.
- Cut out a long strip of aluminium foil and wrap it around any of your fingers like a ring. Connect this ring to the earth.
Idea 3 – Dance pad

- Materials needed:
  - Large sheet of cardboard/newspaper
  - Aluminium foil
Idea 3 – Dance Pad

- Procedure:
  - Place the cardboard onto the floor.
  - Stick aluminium foil onto the up, down, left and right positions of this cardboard.
  - Attach wires to the corresponding input buttons on the Makey Makey.
  - Wrap an aluminium ring around your finger. Connect that ring to the earth.
Idea 4 – Car Simulator

Materials needed:

- Lego pieces
- Aluminium foil
- Large sheet of cardboard/newspaper
Idea 4 – Car Simulator

- Procedure:
  - This simulator requires the making of a steering wheel and an accelerate/brake pad.
  - Using a concept of a steering wheel, construct one using Lego pieces. You may need to use a rod to provide the swivel effect. You may also incorporate other materials to make this steering wheel better.
  - Attach a rod wrapped in aluminium to the steering wheel and wrap contact points along the motion of the wheel with aluminium, ensuring that the rod is able to touch these contacts.
Idea 4 – Car Simulator

Procedure (continued):

- Connect the top contact point to the right input of the Makey Makey, and the base contact point to the left input of the Makey Makey. Connect the contact point at the rod to the earth.

- As for the accelerate/brake pedals, place the cardboard sheet onto the floor, and tape 2 pieces of aluminium on the left and right side of the cardboard. You may wish to prop these contacts up using more cardboard to simulate the pedals better.

- Wrap an aluminium ring around your finger, attaching this to the earth.
Idea 4 – Car Simulator

- Procedure (continued):
- The car simulator works by creating a steering wheel and an accelerate/brake pedal for the user to simulate driving. In the steering wheel, when the contact point on the rod meets with the contact point on the top or bottom of the wheel, a closed circuit is formed and this sends a signal to the computer. As for the pedals, current travels from the pedals to the aluminium ring and this closes the circuit as well. There isn’t really a specific set of procedure to make this, so it is up to your creativity and imagination!
For most of the ideas mentioned above, they require an aluminium ring to be attached to your finger to act as the earth. However, there is a more efficient way to close the circuit between the two contact points!

For example, we could place the earth next to the contact point, such that when both are touched, a current flows through the two contact points, sending a signal to the computer.
Checkpoint!

When both are touched, a closed circuit is created.

Input Key 1

Earth

Input Key 2
Idea 5 – Drum set

Materials needed:

- Aluminium foil
- 5 plastic containers
Idea 5 – Drum set

Procedure:
- Overturn the 5 plastic containers and stick two separate pieces of aluminium foil onto the sides of the base.
- Connect one of the sides to the earth, and the other to an appropriate key. Do this for the other containers.
- Touch both sides of the aluminium foil in order to create a closed circuit.
- Open up the scratch drum set and you can start to play this drum!
Idea 6 – Piano stairs

- Materials needed:
  - Staircase
  - Aluminium foil
Idea 6 – Piano Stairs

Procedure:

- Attach two sheets of aluminium foil to each step of the staircase until a maximum of 6 steps are reached.
- Connect the aluminium sheets on the right to the earth and the ones on the left to the appropriate keys on the Makey Makey.
- Open up the Scratch piano.

When walking up and down the stairs, step on both the earth and the corresponding key at the same time, and this causes a closed circuit and allows the piano music to be played.
Conclusion

There are so many inventions that you can make using household items and Makey Makey. The ideas provided in this book are just merely a guide for students to figure out more about how to use Makey Makey. Have fun!
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Special thanks to all who have uploaded the clip art images and photos which we have utilized in the making of this mini brochure.
The End
Have Fun!