Stalaglight

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Design Brief

Design a floor lamp that is at least 60 inches tall that stands on its own, both physically and as an aesthetically complete piece of furniture, using automated manufacturing techniques.

Mood Board

Product Survey

Leaf Lamp
by Peter Schumacher

The contemporary design of the Leaf Lamp barrows the organic aesthetic of a tree with leaves. When the light is switched on, each leaf acts as a shade and a reflector in a similar way to how real tree leaves block and scatter sunlight. A small wooden rod mimics the trunk of a tree which is supported by an asymmetric tripod. The Leaf Lamp is activated using a floor switch that can be stepped on to turn it on or off.

Undulus
by Scott Jarvie

The cloud-like shape of Undulus "provide a vertical directional light with a diffuse horizontal glow." Florescent tube bulbs are used to illuminate the Undulus lamp, which provides long lasting, energy efficient, low cost, and bright light to the surronding areas.

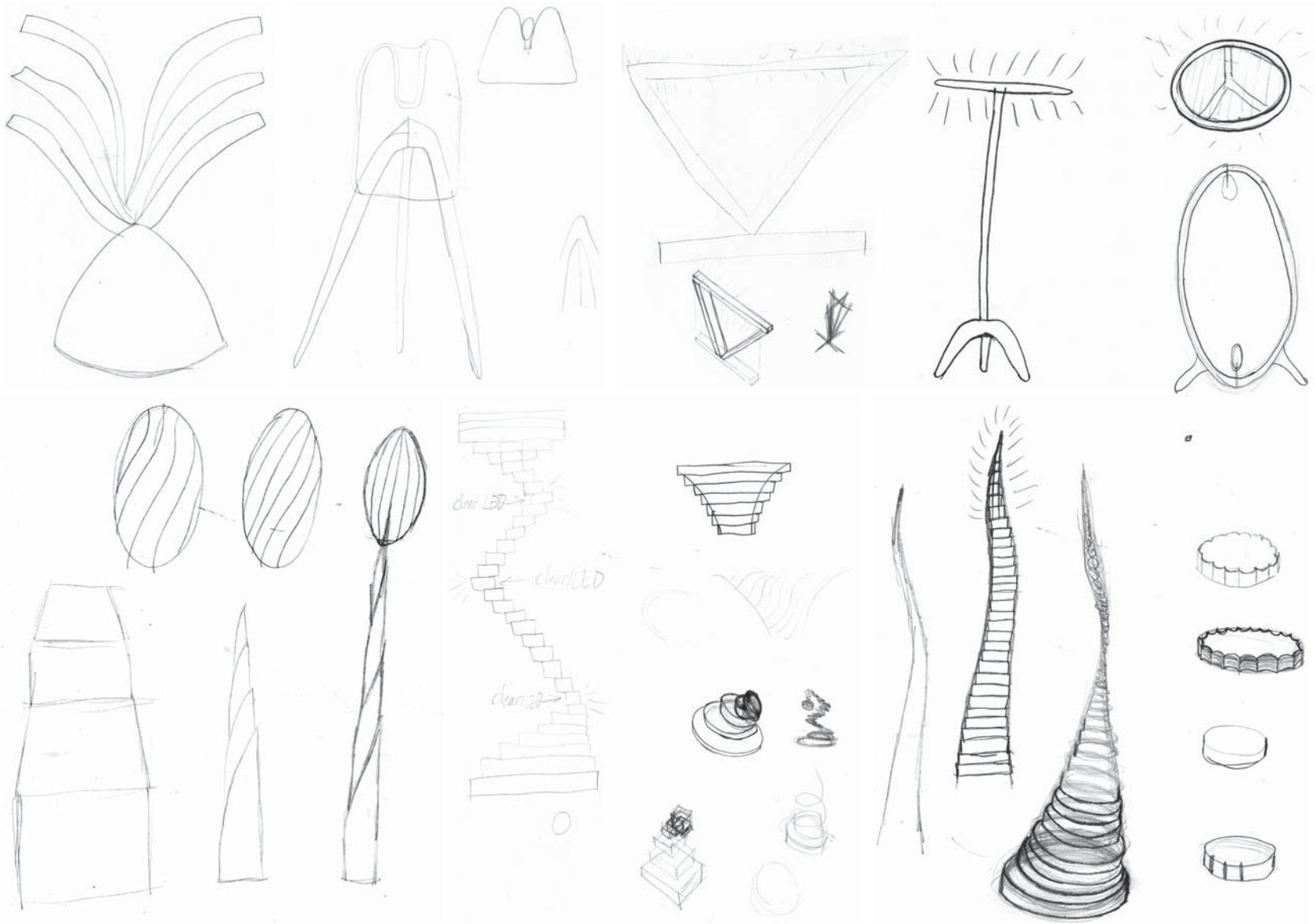
Illiria
by Ernesto Gismondi

Illiria is an elegent yet simplistic floor lamp that uses LEDs to illuminate an area. There are two different LED s built into the Illiria which are independantly controlled using the dual on-cord switch. The entire lamp is "one-piece of injection molded polyurethane" which has been textured and painted white.

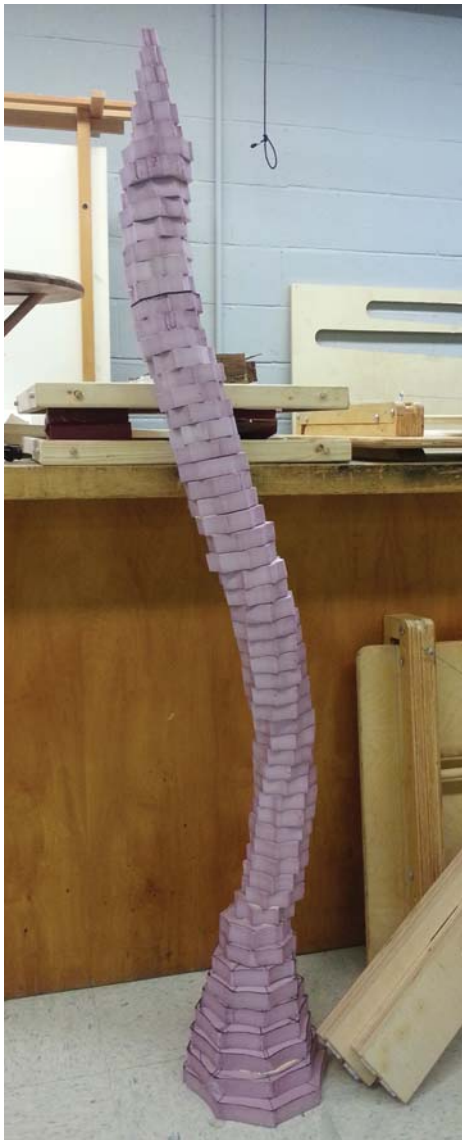
Mushroom Lamp
by Laurel Lamps

The Mushroom Lamp by Laurel Lamps is a simple and sleek design that consists of a stem piece and a shade piece. The white frosted glass globe allows the light to be evenly dispursed from the inside out. Various stem colors and sizes of the Mushroom Lamp were made, with table size and floor lamp sizes.

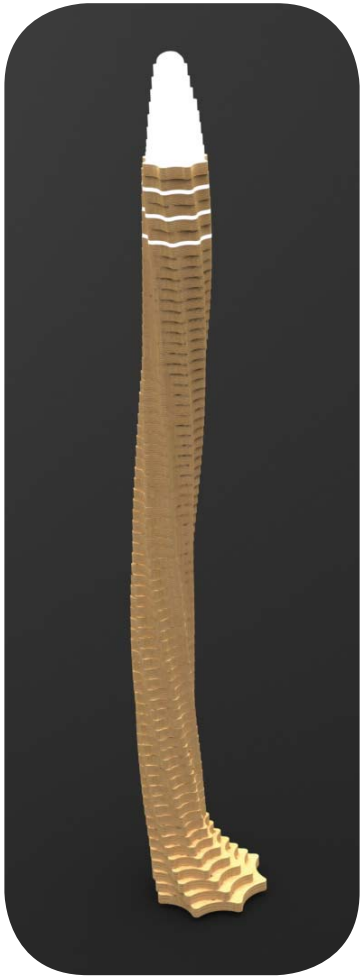
Thumbnail Sketches

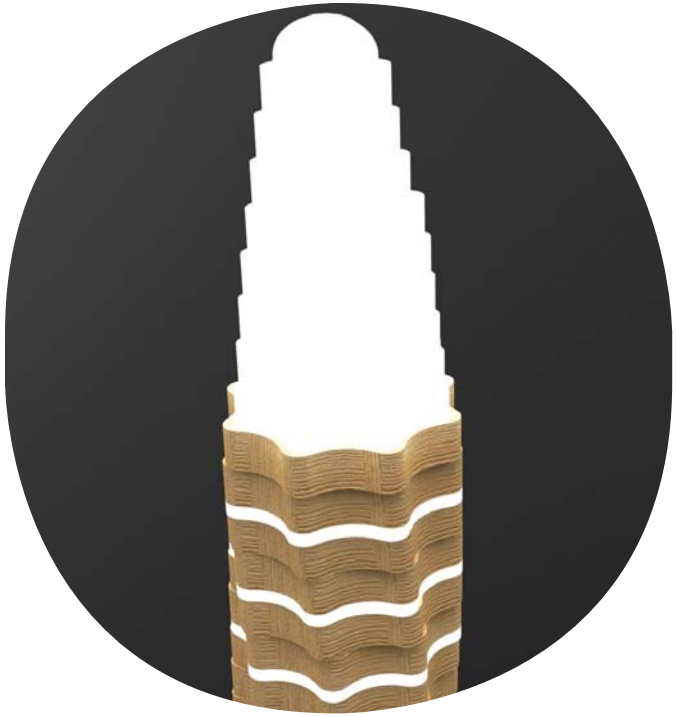


Full Scale Model



CAD Render

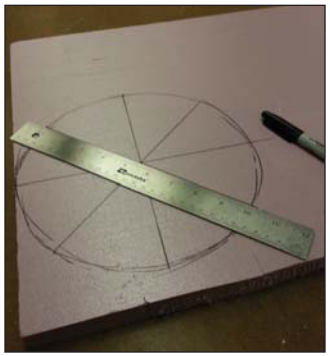
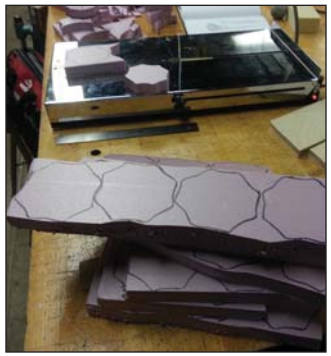
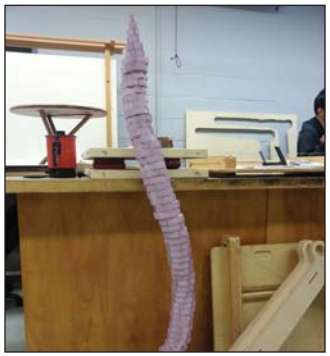
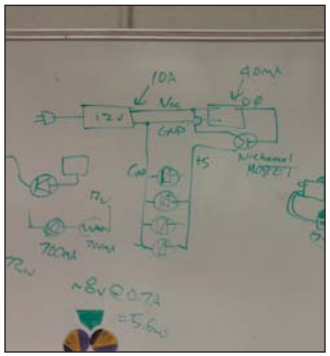


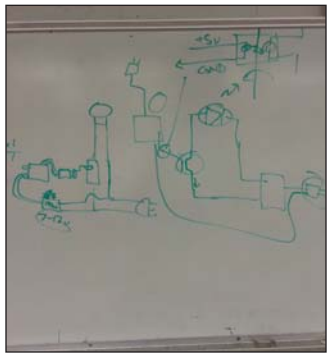


Materials List

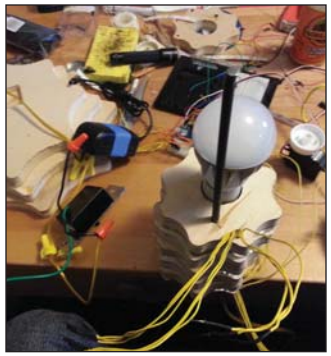
3/4” birch plywood
1/4” clear acrylic
Natural colored PLA 3D printer filament
1/4” rod steel
16 x 1/8” by 1/16” neodymium rare earth super magnets
Rotary dimmer
Servo motor
Arduino Micro
12v power supply
3 x Hall effect sensors
3 x N-Channel Mosfets
6 x 10k Ohm Resistors
3 x 330 Ohm Resistors
White LED strips
Standard sized white LED bulb
Standard sized light bulb socket
Electrical cable with wall socket
Solder
Wire
Nails
2.5 pound weight
1/4” steel sheet (Added for extra stability while on display)

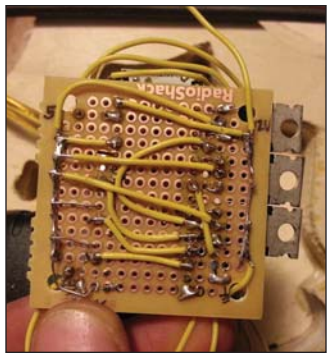
Modeling Process

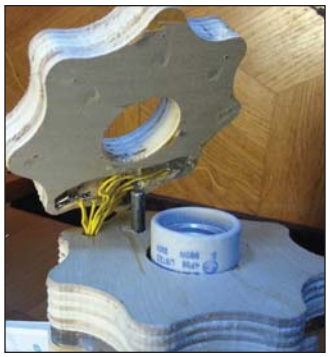







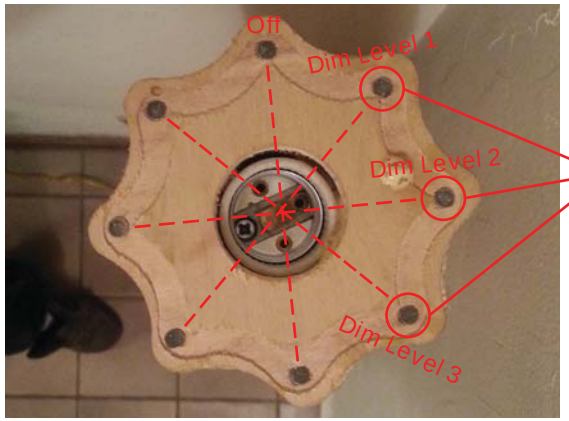






How Stalaglight Works

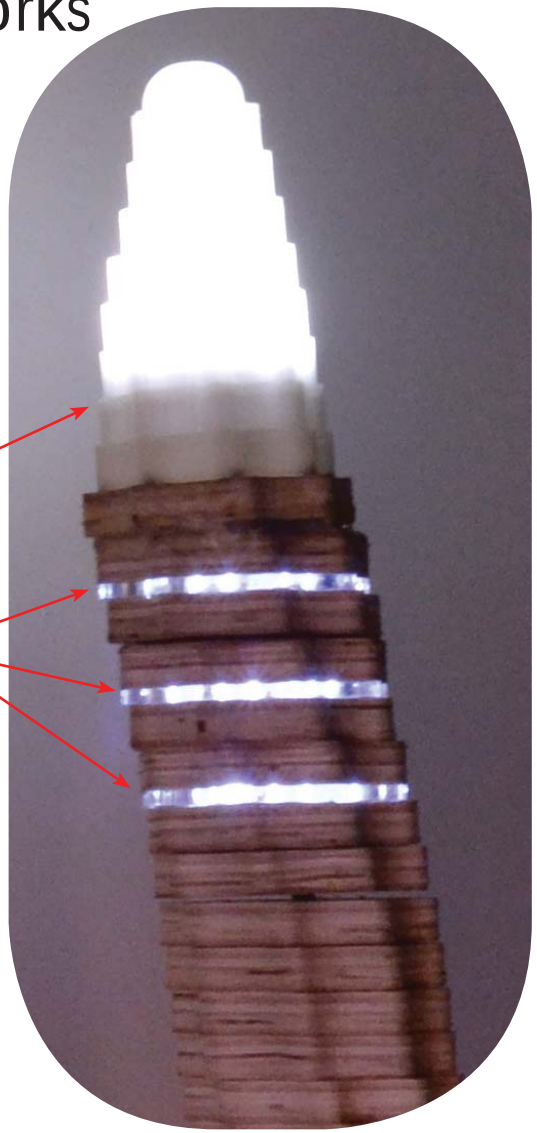


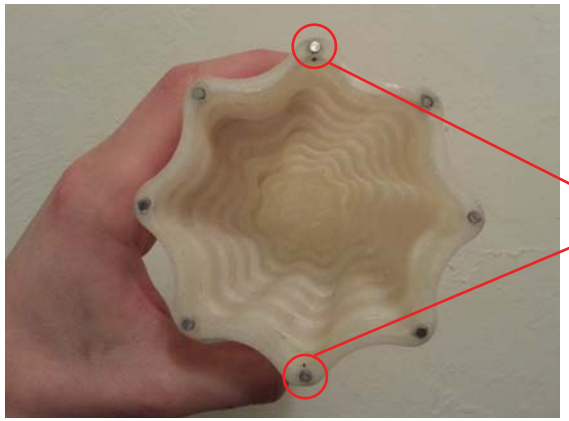
3 strategically placed hall effect sensors (magnet detectors) are attached to 3 of the 8 nails in the top tile.

Magnet detecting nails turn on main lamp light and set dimmer level when triggered.

LED strips illuminate in sequence from bottom to top until the main bulb turns on

The number of active LED strips indicates current dimmer level.

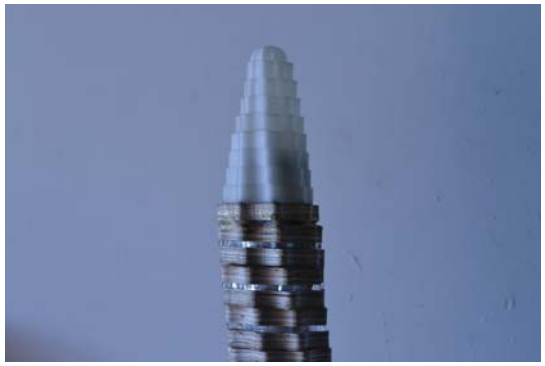




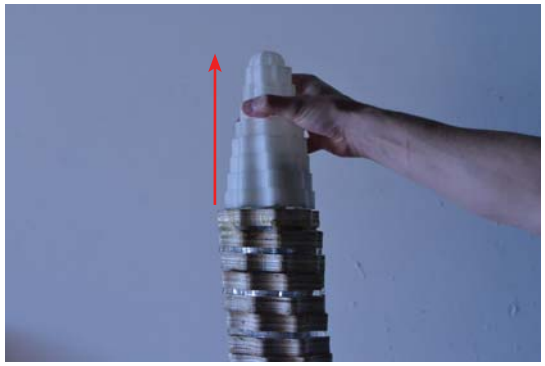
Trigger magnets

2 sets (each hole contains 2 magnets) of magnets out of the 8 sets in the lamp shade are strategically oriented to trigger the hall effect sensors while the others will not.

How To Operate Stalaglight

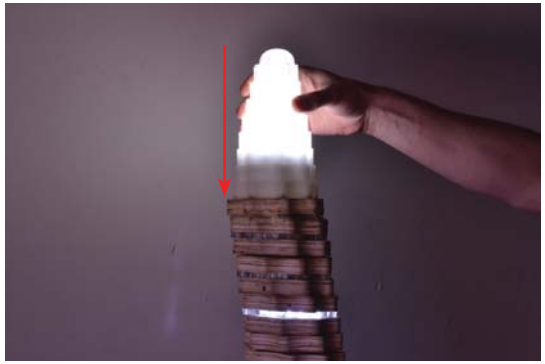


Beginning with Stalaglight in the "Off" position.



Grasp and lift Stalaglight's lampshade up slightly.

Turn the lampshade 90° clockwise and allow the lampshade's magnets to pull the lampshade into position.



After properly situating Stalaglight's lampshade into position 1, the first row of LEDs should fade on, and the main bulb should turn on to the first brightness level.

Rotating Stalaglights lampshade 90° clockwise again should make the first two rows of LEDs fade on in sequence, and the main bulb should turn on to the second brightness level.

Rotating Stlaglights lampshade again will fade on all three rows of LEDs in sequence and finally turn the main bulb on to the highest brightness level. Another rotation will turn Stalaglight off.

Final Prototype