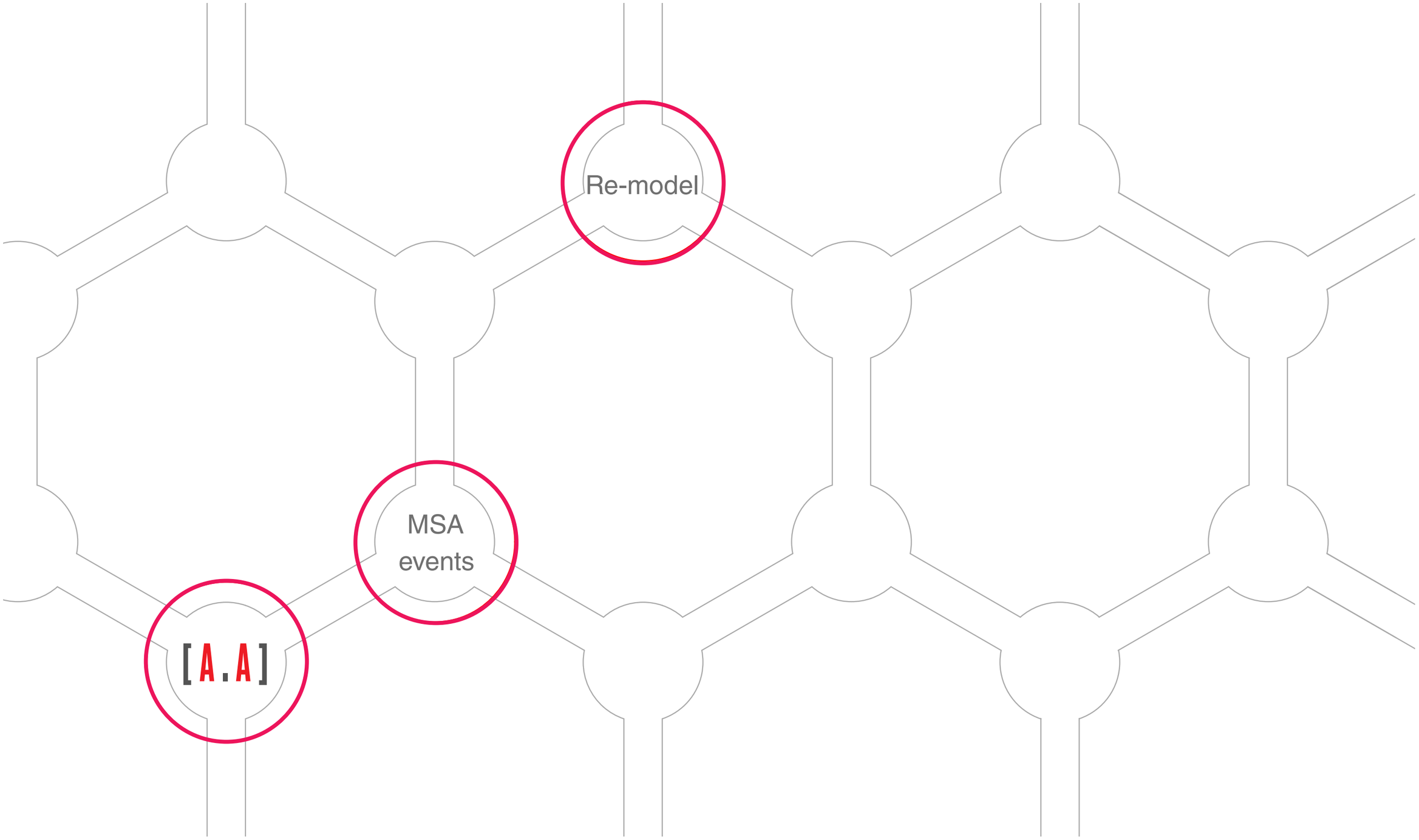
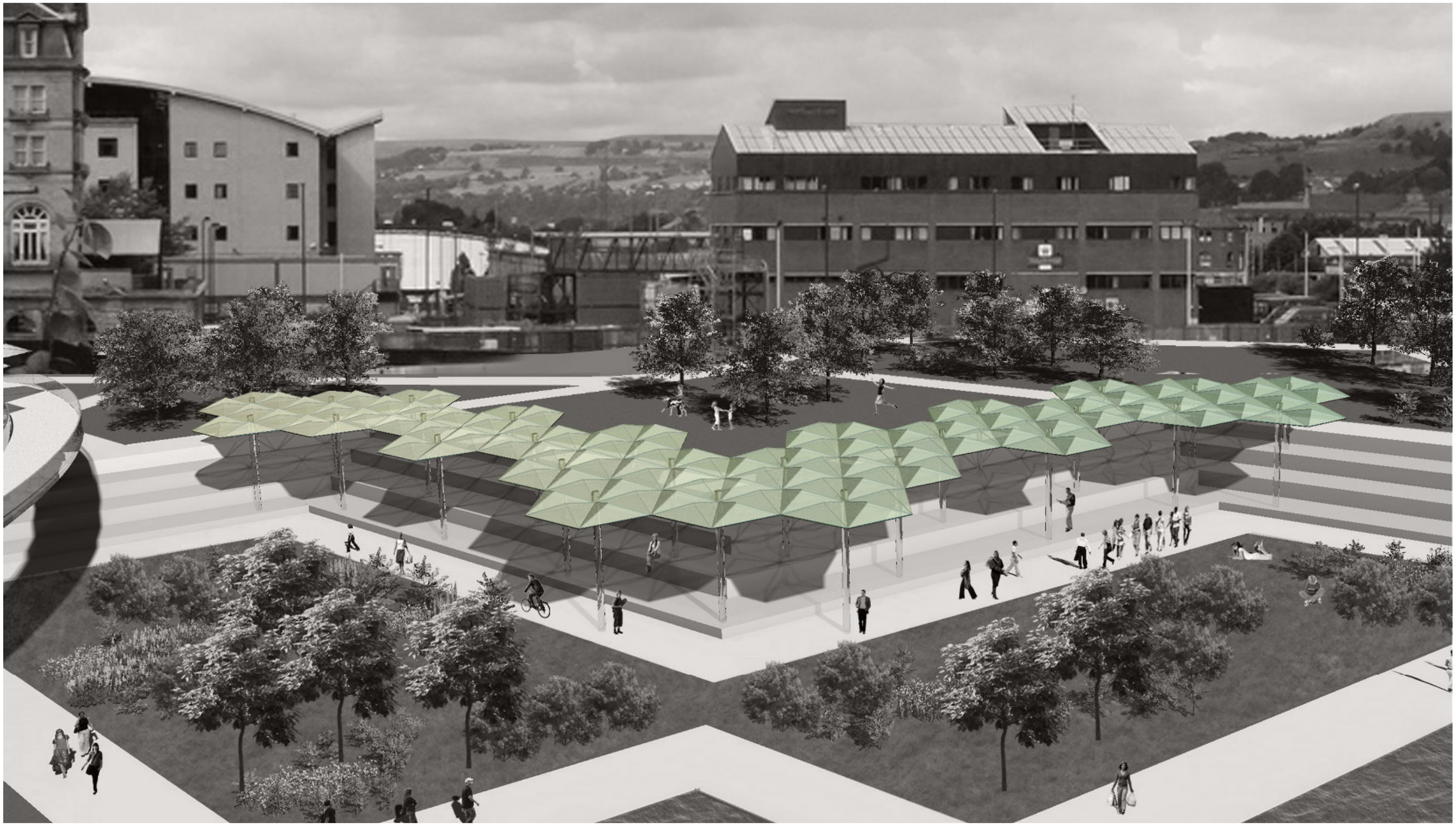


ALBENA ATANASSOVA

MMU ID:12019128 / Re-Map / Studio 4.3 / MSA



RE-MAP [A.A]

ALBENA ATANASSOVA

RE-MODEL

As the next part of this project I specifically focused on the “creature”. The idea was to create a model that moves in an actuated and responsive or interactive way. Under the Graphene hub project I chose to focus on the interactive graphene canopy element and explore how the individual triangels could move based on a live data stream of the weather conditions for Bradford’s location in order for the canopy to provide natural ventilation and shade (when temperatures are above 15 degrees and during summer to prevent direct sunlight te triangel would fold one into another at certain points) as well as protection from the environment (in particular when it rains the canopy would be fully closed).












RE-MAP [A.A]

ALBENA ATANASSOVA

SIMULATION OF MOVEMENT

In order to set the schene for a further exploration on generating moevement for part of the canopy I looked at creating a 3D model that could show how the overall canopy would move along with a detailed view of how a segment of the canopy can be manipulated. This led to the decision that for the prototype a set of 2 triangles would be used as a means of providing the weather responsive canopy to be manipulated digitally through rotation along 2 axis.












RE-MAP [A.A]

ALBENA ATANASSOVA

SIMULATION OF MOVEMENT

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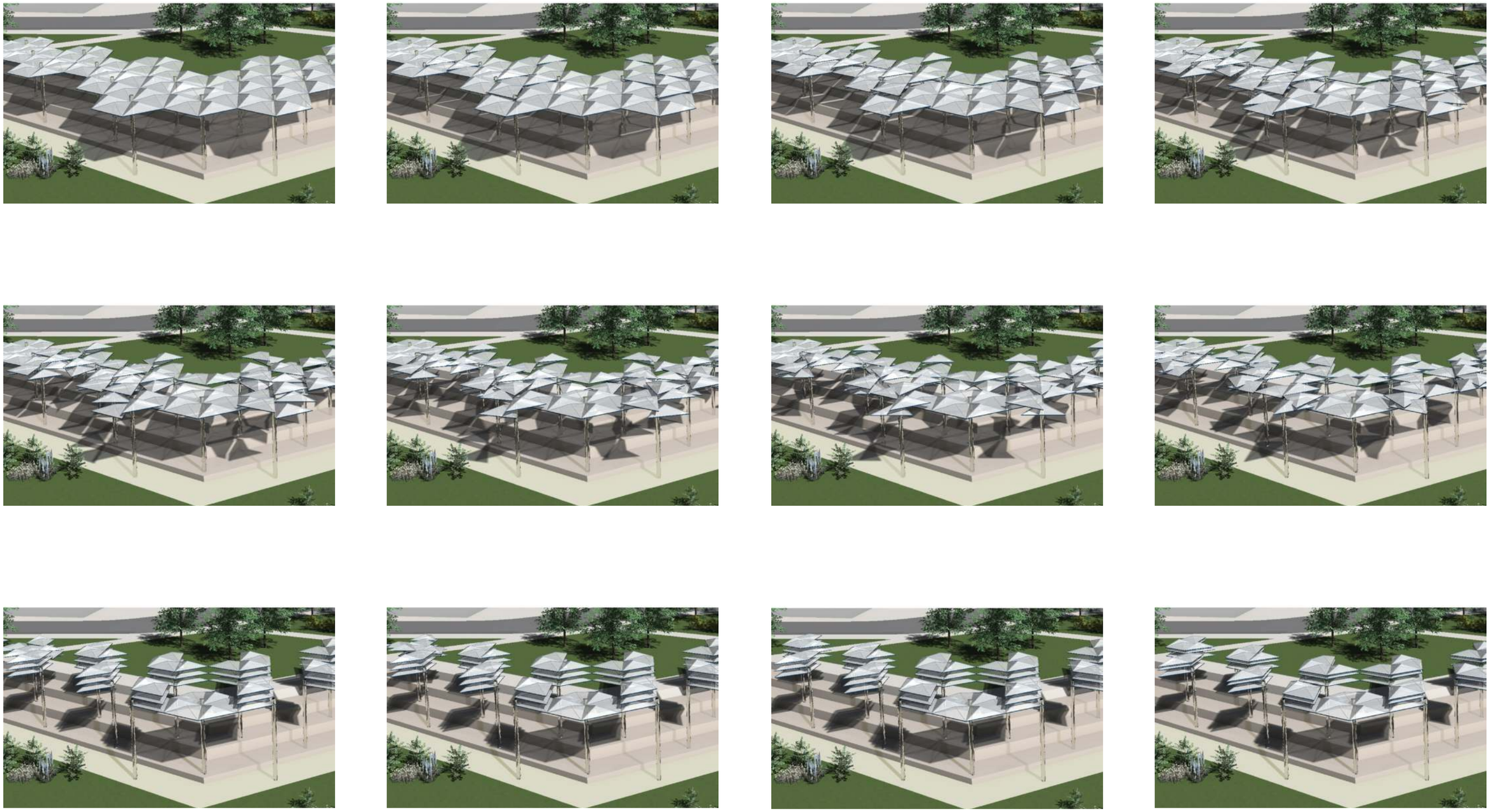

RE-MAP
[A.A]

ALBENA ATANASSOVA

SIMULATION OF MOVEMENT

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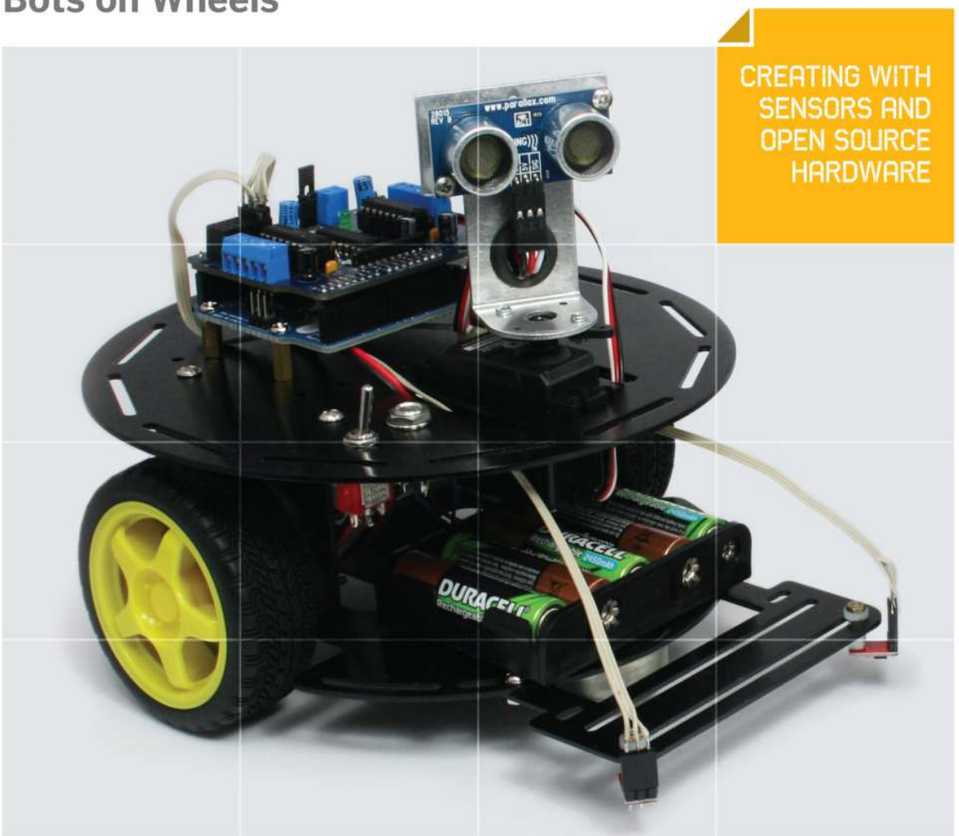
Michael Margolis

Make an Arduino-Controlled Robot

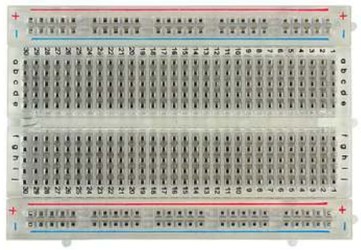
Learn by Discovery

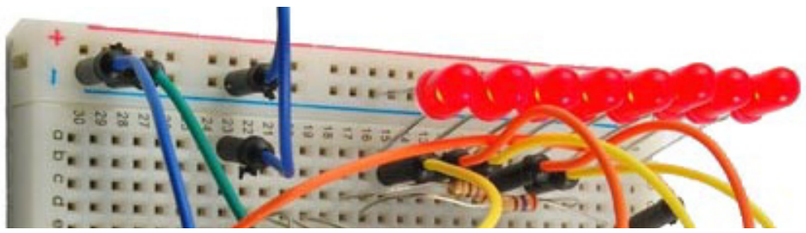
Autonomous and Remote-Controlled Bots on Wheels



O'REILLY

Make: makezine.com





Arduino Duemilanove

Breadboard 400 spaces - 1 piece

Resistor 220 Ω - set of 5

Resistor 2.2K Ω - set of 5

Conductor/cable - 1 piece

Jumpers set of 140 connectors

Servo - GWS S35 STD continuous rotation servo - 1 piece

Servo - HD-3001HB with 180º angle of rotation - 1 piece

LED lights - red, yellow, blue 10,000 mcd

4 batteries AA

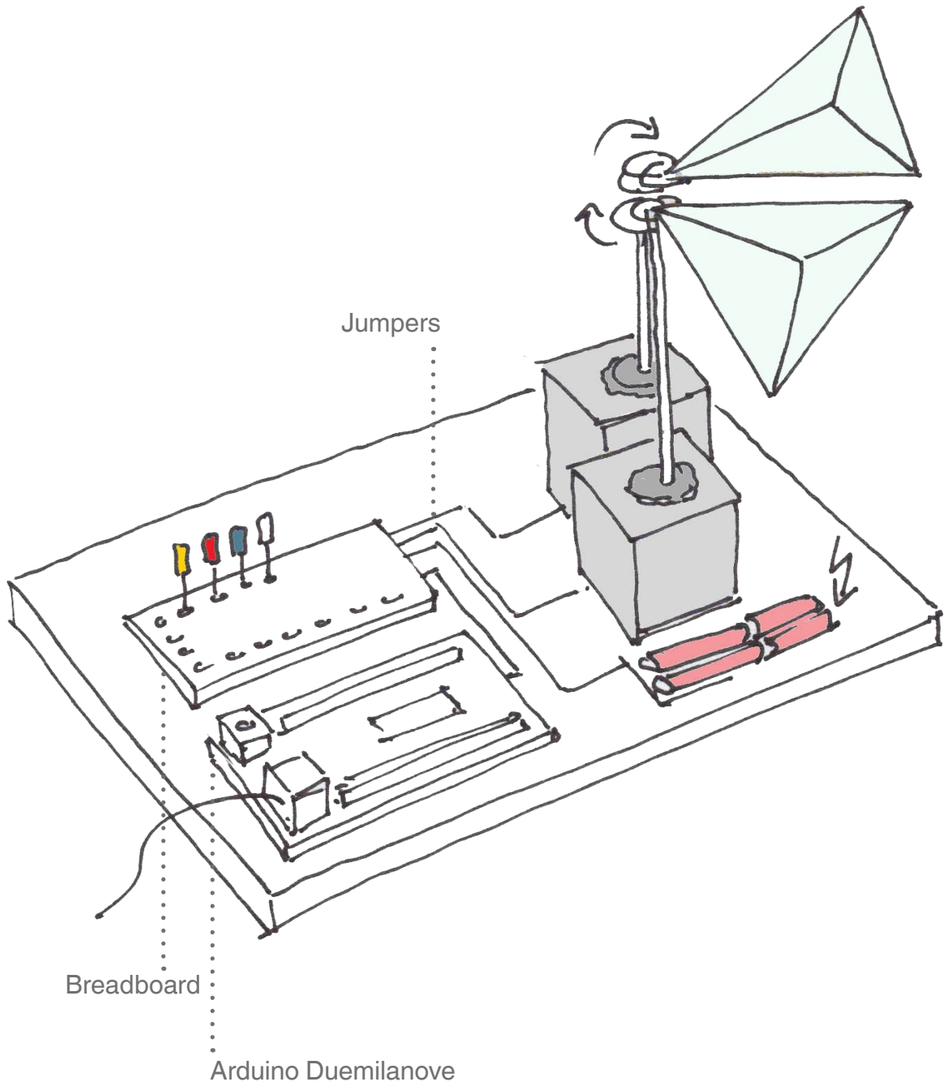
Connection elements, A4 base and silicon glue

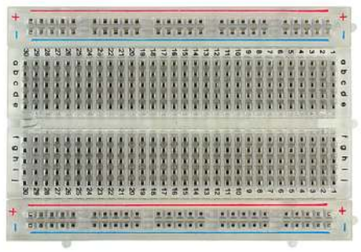
RE-MAP [A.A]

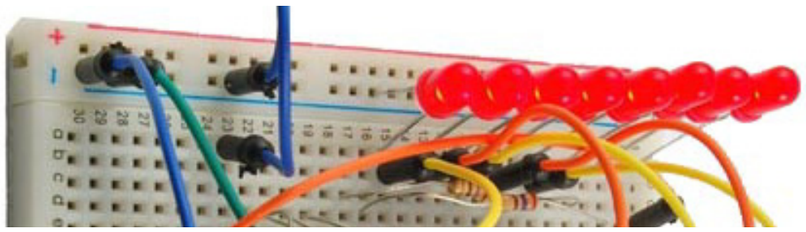
ALBENA ATANASSOVA

MAKING THINGS MOVE RESEARCH

The next step was to look at how to make each of the triangular elements to move via an arduino, connected to the laptop. For this to be possible I looked at various literature on the topic and made a list of all the required components I would need for my project.







In this case each of the triangles is connected to a separate servo, which then connects to the electrical circuit. The movement is thus in one horizontal axis for both of the triangles. Furthermore in this case each triangle needs to be connected to a column - type of element that would then connect to the servo.

In terms of regulating the rotation the LED lights would demonstrate the live data stream of the weather conditions for Bradford, Westfield site. If the light is yellow it would signify lower temperatures and rotation of both triangles so that they have only a slight gap inbetween. If the light is red then the higher temperature would relate to a bigger gap inbetween the 2 components. Finally, if the light is blue then it would allarm for a higher humidity and rain which would result in the triangles being fully attached to one another forming a metaphorical umbrella to protect the visitors underneath the overall canopy.

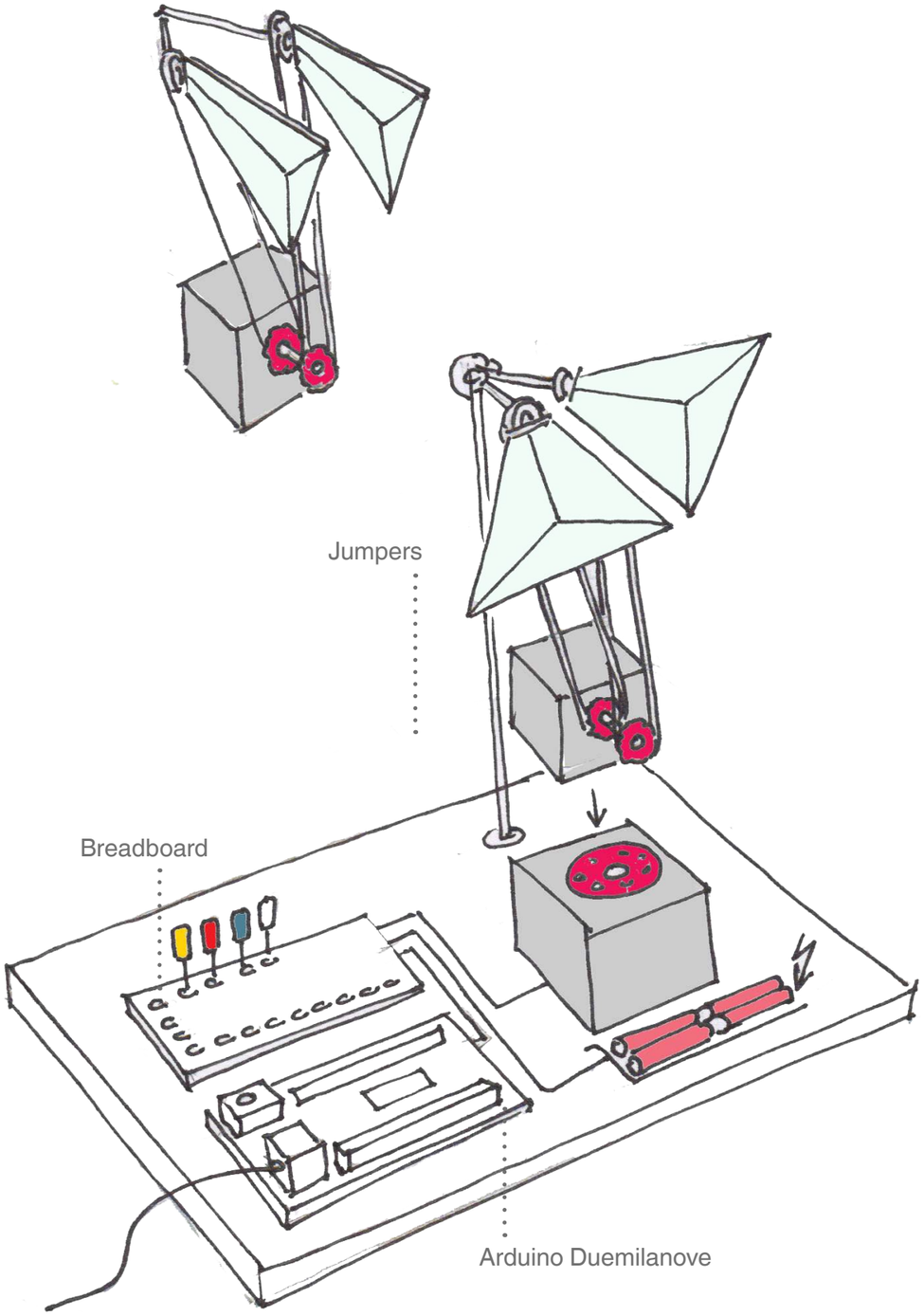
- Triangle part of canopy
- Servo with 180 degrees rotation
- Duracel batteries AA
- LED yellow - low T
- LED red - high T
- LED blue - rain

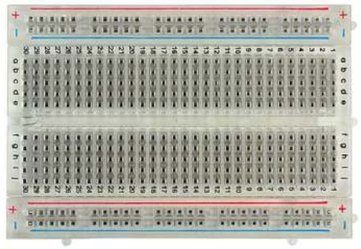
RE-MAP
[A.A]

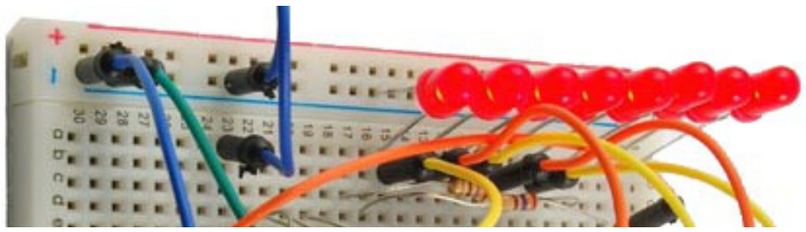
ALBENA ATANASSOVA

MAKING THINGS MOVE RESEARCH

When I started off looking into rotation of the triangular elements I used this as a direct reference to what the initial video treated.







In this case each of the triangles is connected to one common servo, with the aim to rotate in 2 axis - a horizontal and a vertical one. This is achieved through the application of a series of gears. In this case though the chain elements and gears are unstable. It is hard to regulate motion from the base servo up to the second servo positioned on top of it while maintaining the movement for both triangles.

The LED lights would demonstrate the live data stream of the weather conditions for Bradford, Westfield site. If the light is yellow it would signify lower temperatures and rotation of both triangles so that they have only a slight gap inbetween. If the light is red then the higher temperature would relate to a bigger gap inbetween the 2 components. Finally, if the light is blue then it would allarm for a higher humidity and rain which would result in the triangles being fully attached to one another forming a metaphorical umbrella to protect the visitors underneath the overall canopy.

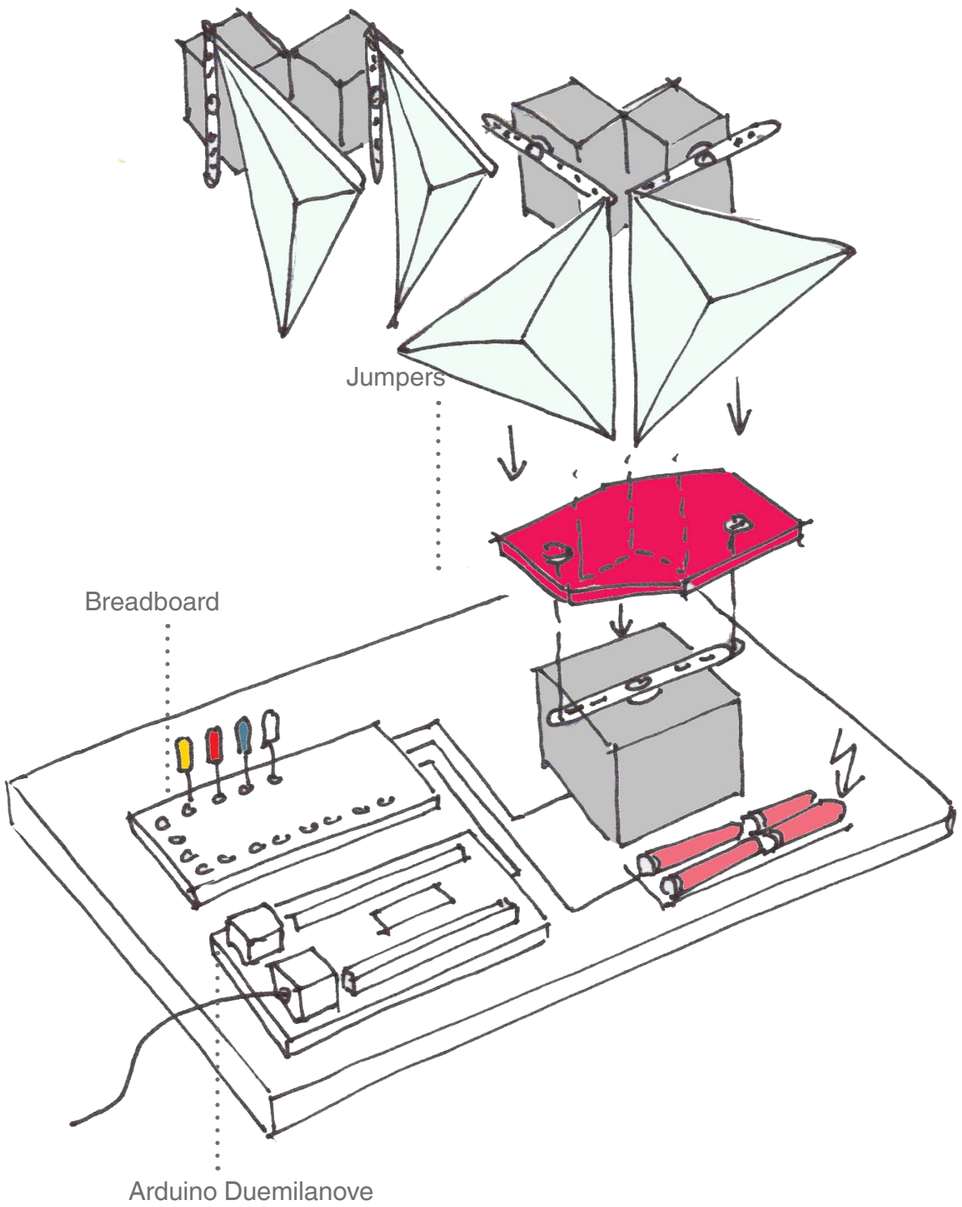
- Triangle part of canopy
- Servo with 180 degrees rotation
- Duracel batteries AA
- LED yellow - low T
- LED red - high T
- LED blue - rain
- Gears

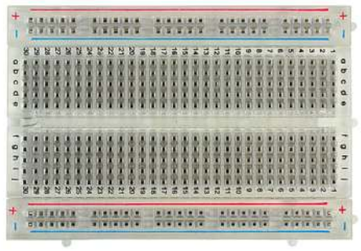
RE-MAP [A.A]

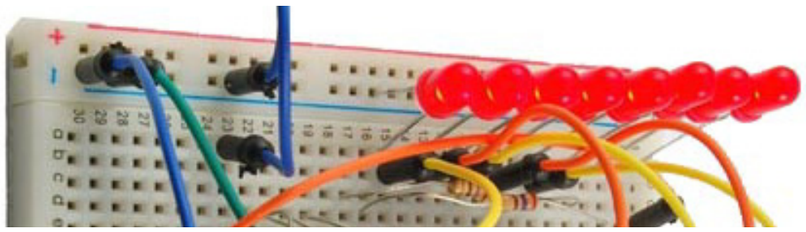
ALBENA ATANASSOVA

MAKING THINGS MOVE RESEARCH

When I started off looking into rotation of the triangular elements I used this as a direct reference to what the initial video treated.







Finally it was resolved that each triangle should be rotated via a separate servo to secure movement around a horizontal axis, while both these servos would sit on a common base that is attached to a third servo, securing movement in a vertical axis. In this case each of the triangles could move in 2 axis which means that a more accurate representation of the responsive canopy could be made via the prototype.

The LED lights would demonstrate the live data stream of the weather conditions for Bradford, Westfield site. If the light is yellow it would signify lower temperatures and rotation of both triangles so that they have only a slight gap inbetween. If the light is red then the higher temperature would relate to a bigger gap inbetween the 2 components. Finally, if the light is blue then it would allarm for a higher humidity and rain which would result in the triangles being fully attached to one another forming a metaphorical umbrella to protect the visitors underneath the overall canopy.

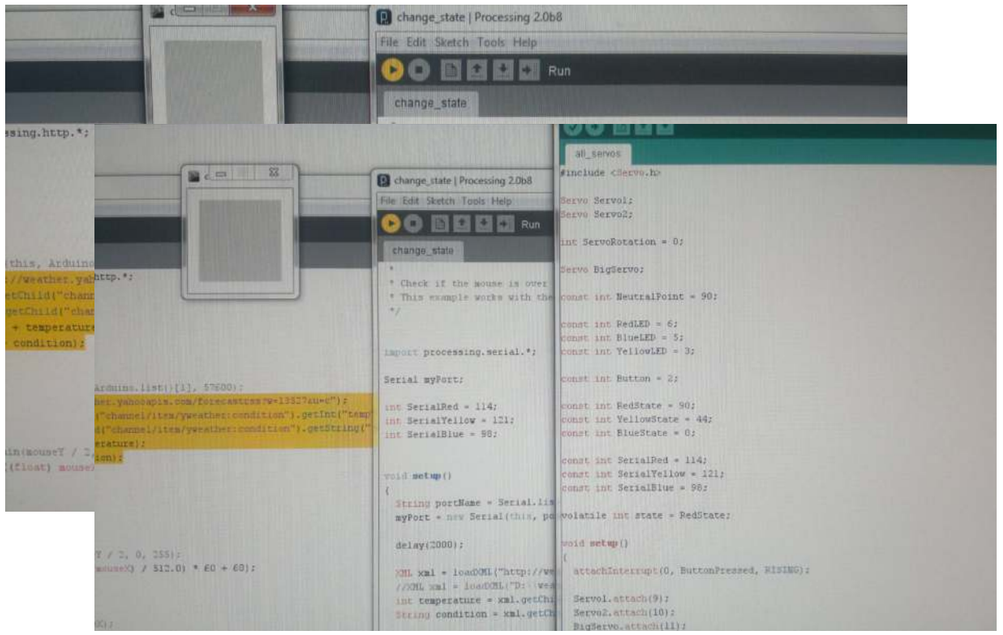
- Triangle part of canopy
- Servo with 180 degrees rotation
- Duracel batteries AA
- LED yellow - low T
- LED red - high T
- LED blue - rain
- Common base

RE-MAP
[A.A]

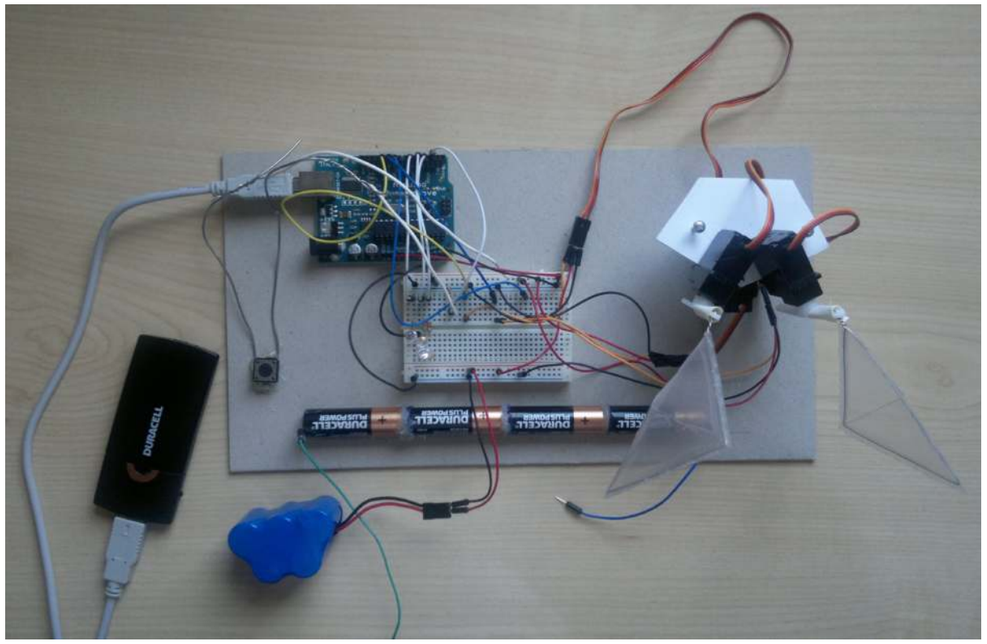
ALBENA ATANASSOVA

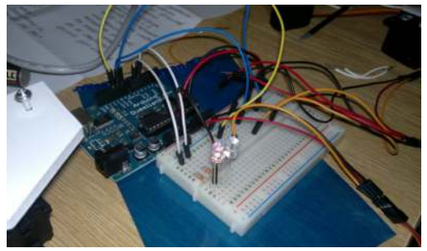
MAKING THINGS MOVE RESEARCH

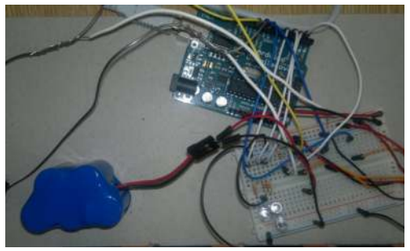
When I started off looking into rotation of the triangular elements I used this as a direct reference to what the initial video treated.

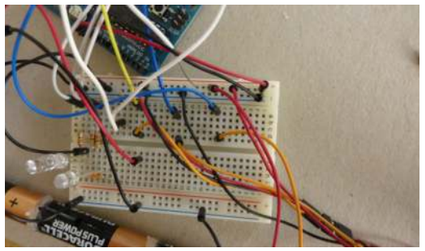


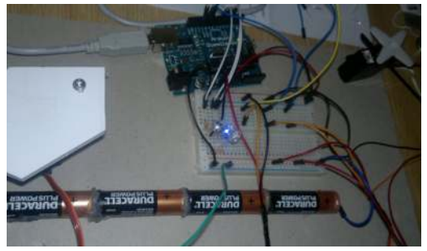
Scripting with Processing and Arduino software

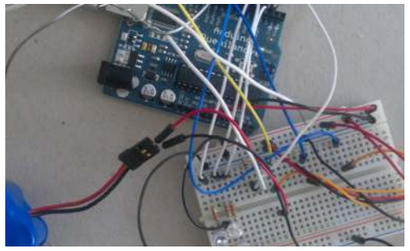


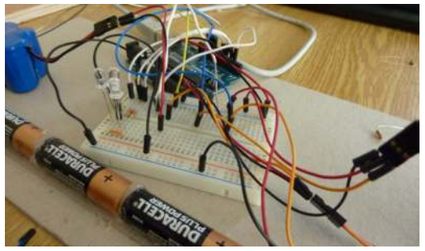


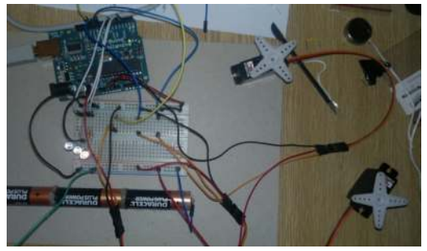








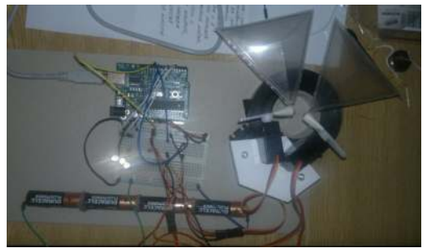


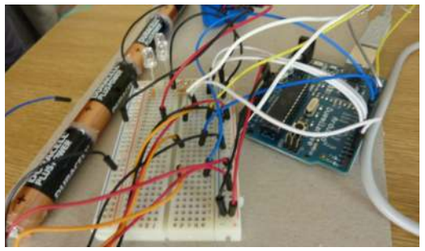


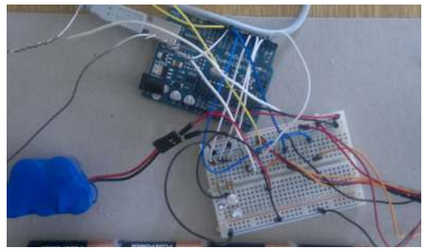
https://vimeo.com/64639047

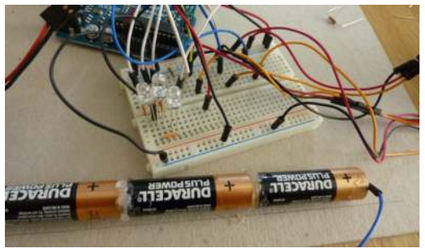
Positioning and pin location

https://vimeo.com/64946872









RE-MAP
[A.A]

ALBENA ATANASSOVA

PROTOTYPE

This page demonstrates the final outcome along with the construction process for the prototype.