Introduction
Smart Clothing, also called e-textiles, wearable tech or fashion tech, is a combination of technology and textile that can make the function of clothing/textiles no longer be limited to traditional features, but able to change according to your situations, location or lifestyle, i.e., changing color of the clothing when weather is changed.

In our Final Year Project, EL wire systems that can be attached to any clothing and controlled by a smartphone are designed. With the functions of smartphone and the Velcro tapes on EL wires, users can design their own lighting patterns on the clothing according to their own needs.

Aims and Objectives
The aims of the FYP are the following:
1. To develop an EL wires system that can be attached to any clothing.
2. To develop an Android app that can control and communicate with the EL wires system.
3. To learn working as a team with industry researchers and developers.

The objectives of the FYP are the following:
1. To apply creativity in the usage and development of smart clothing
2. To improve the flexibility and wear ability of smart clothing compared to the existing products
3. To provide users with more options in light patterns on clothing.

Methodology
Basically, the EL wire system consists of two parts: hardware and software.

Hardware
EL wire system

The signals sent out from the smartphone are used to control the on/off state of each EL wire. After the on/off signals are received by Bluetooth, they are sent to the processor and the processor will turn on/off the EL wires for patterning.

Software

There are four parts in the app: EL wire, pattern, routine and accelerometer.

EL wire: To turn on/off a specific wire
Pattern: To choose a specific pattern
Accelerometer: To light up the EL wires by shaking the smartphone
Routine: To set the EL wires light up for a sequence of time when users press the start or stop button.

Results

EL wires

Power

EL wire system

Bluetooth

Processor

Signal

Process
1) Lithium Battery supply power to the EL inverter and EL controller
2) Data is sent out through smartphone app and received by Bluetooth Bee
3) Received data is sent out from Bluetooth Bee and received by the EL controller
4) EL wires are turned on/off or patterned according to the received signals
5) Data is sent out again through smartphone app and received by Bluetooth Bee

Velcro tapes are stuck onto the clothing and EL wires are placed onto the Velcro tapes afterward. The EL wires outlined the shape of the clothing and some are stuck to create patterns. They are then glowing elegantly when turned on.

Apps Screen

Above shows the template of the app. From the left to right are entering page, routine, accelerometer, pattern and EL wires respectively. Each of the page has a specific function mentioned before.