

E-TEXTILES

Wearable Technology- Sparking the Fashion Design & Merchandising Classroom

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Stellar Evolution www.stellarevo.com

E-TEXTILES

- Also known as Smart Textiles
- Trans-disciplinary field, bringing together concepts and expertise from a variety of disciplines ranging from materials science, through computer engineering to textile design (Smith, 2007).



E-TEXTILES

- Smart clothing is capable of sensing and communicating with the environment.
- The wearer's conditions and stimuli pursues the integration of clothing and electronic devices expanding from a function-oriented system to a system that focuses on the function and affective states of the wearer, and needs to satisfy the users in emotion as much as in function (Lázároiu, 2012).



E-TEXTILES



- Nike Air Mag- *Back to the Future II*
- Molded latex body suit with LED lighting strips and the identity disc- *Tron & Tron Legacy*
- Life Suits that will turn color in various situations (Black for danger and multi-colored is normal state). The suits had GPS tracking, video playback and could detect body regulation systems.

CURRENT E-TEXTILES

AESTHETIC

- Senses such as sight, touch, and smell will be affected by these textiles.
- Items in this category have the ability to light up, change color, give off smell or prevent odors.
- The beauty industry has taken advantage of the aesthetic textiles market by providing consumers with clothing items that contain moisturizers, anti-aging properties and drug releasing textiles (Tucker, 2007).

PERFORMANCE

- Performance enhancing garments focus primarily on athletic and military uses.
- Researchers are developing fabrics that regulate body temperature, record and report vitals, and incorporate electronic safety measures.
- US Military is harvesting kinetic energy generated by the soldiers' movements to power devices (Dalsgaard & Sterrett, 2014).

CURRENTLY AVAILABLE

- miCoch Shirt from Adidas
- Owlet Baby Monitor Sock
- Edema Socks by Ohmatex
- Polo Tech Shirt by Ralph Lauren



INTRODUCING ARDUINO TECHNOLOGY

Making Your World Come Alive



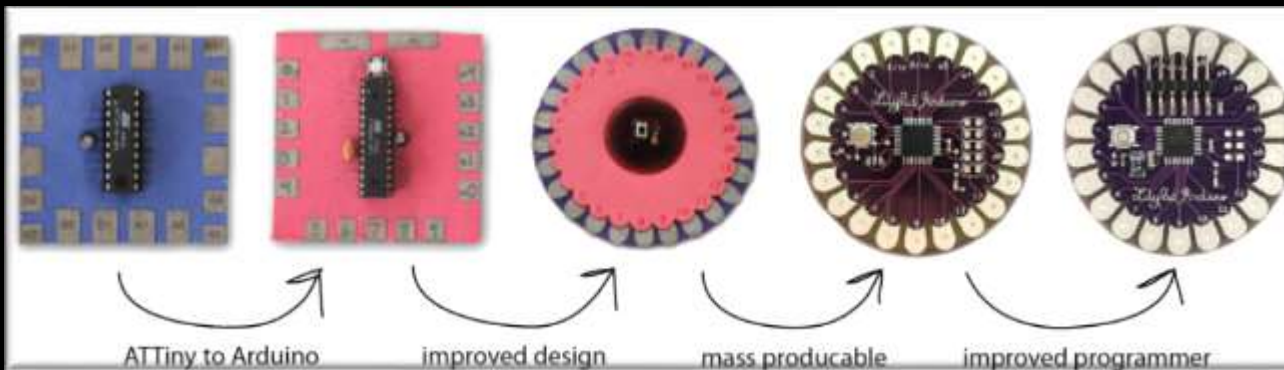
ARDUINO

- In 2005, engineering partners David Cuartielles, Gianluca Martino, Tom Igoe, David Mellis, and Massimo Banzi introduced the world to the Arduino (Kushner, 2011).
- Open-source electronics prototyping platform based on flexible, easy-to-use hardware and software (Arduino, 2014).
- It is a low-cost microcontroller board that allows even a novice to do really amazing things.
- The microcontroller can read sensors, perform actions based on inputs from buttons, control motors and lights (SparkFun Buying Guide, 2014).



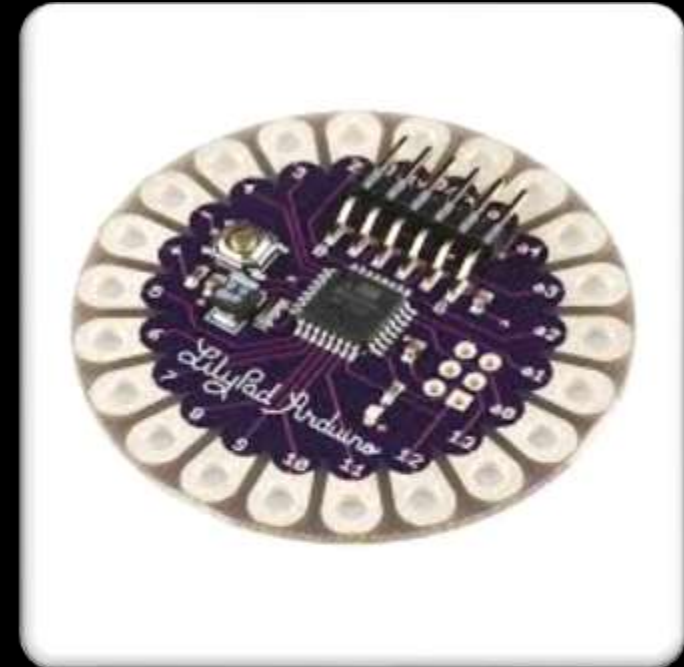
LIMITATIONS OF THE ARDUINO

- Though many would argue that there are few limitations to the Arduino, flexibility of the product is one of them.
- As a Ph. D student at CU Boulder, Leah Buechley, designed a microcontroller board for wearables and smart textiles in 2007.
- Original designs were similar to the Arduino hosting a square layout and right-angled connectors (Buechley et al., 2013).
- Striving to blend the aesthetic and functional affordance of a fabric circuits, Buechley created a round microcontroller board which allowed her to use smaller electronic components.



LILYPAD ARDUINO

- As Buechley perfected her design, she partnered with SparkFun a Boulder-based electronics company that produces the current boards.
- The new boards can be sewn to fabric, mounted to power supplies, sensors and actuators with conductive thread (LilyPad Arduino, 2014).



WHY INTRODUCE E-TEXTILES TO YOUR STUDENTS?

Give your classroom some SPARK!



SPARKING CREATIVITY

- Incorporating a sewable electronics unit into the classroom will demonstrate that working with the LilyPad Arduino involves the multiple disciplines of computer science, engineering and the arts.
- As stated by Leah Buechley, working with e-textiles (smart textiles) allows the engagement of digital and physical media.
- Designers will engage in crafting, coding, and circuitry.

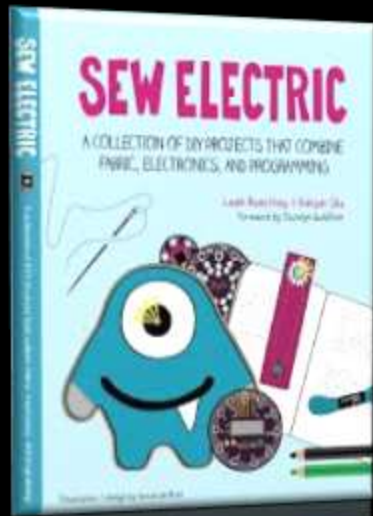


RESOURCES AND PROJECTS

Sifting through the information.

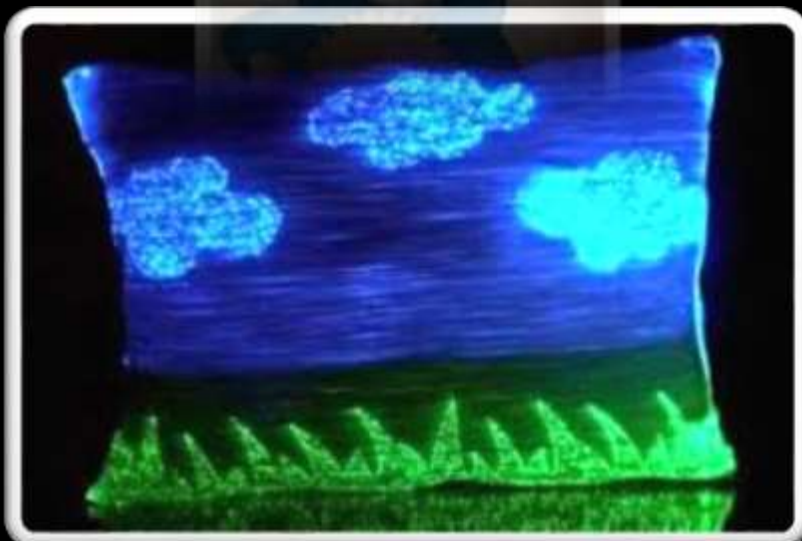


RESOURCES



- Textbooks
 - Sew Electric
 - Textile Messages
- SparkFun
 - Located in Boulder
 - www.sparkfun.com
- YouTube Videos
 - Make (Makeizine.com)
 - LilyPad Arduino 101
http://youtu.be/Yj639_ez6TM

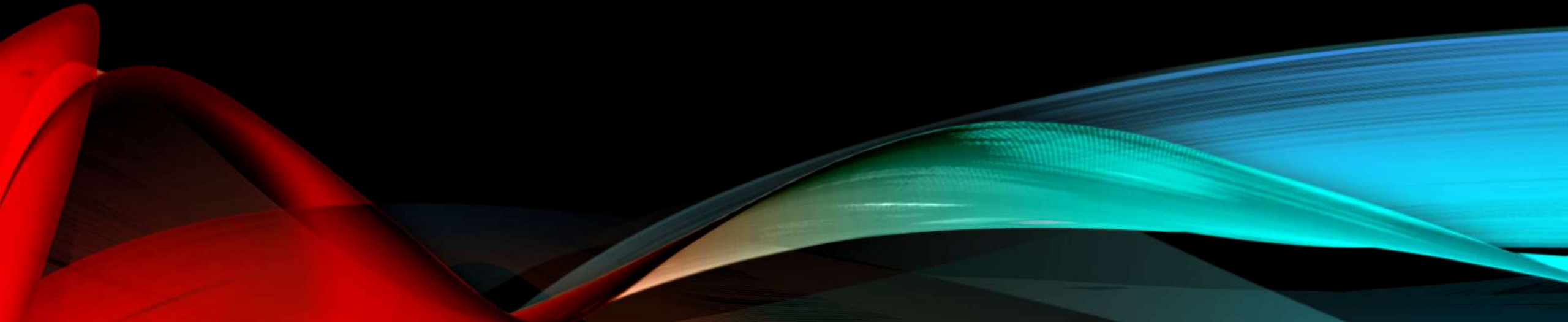
PROJECTS



PROJECTS



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