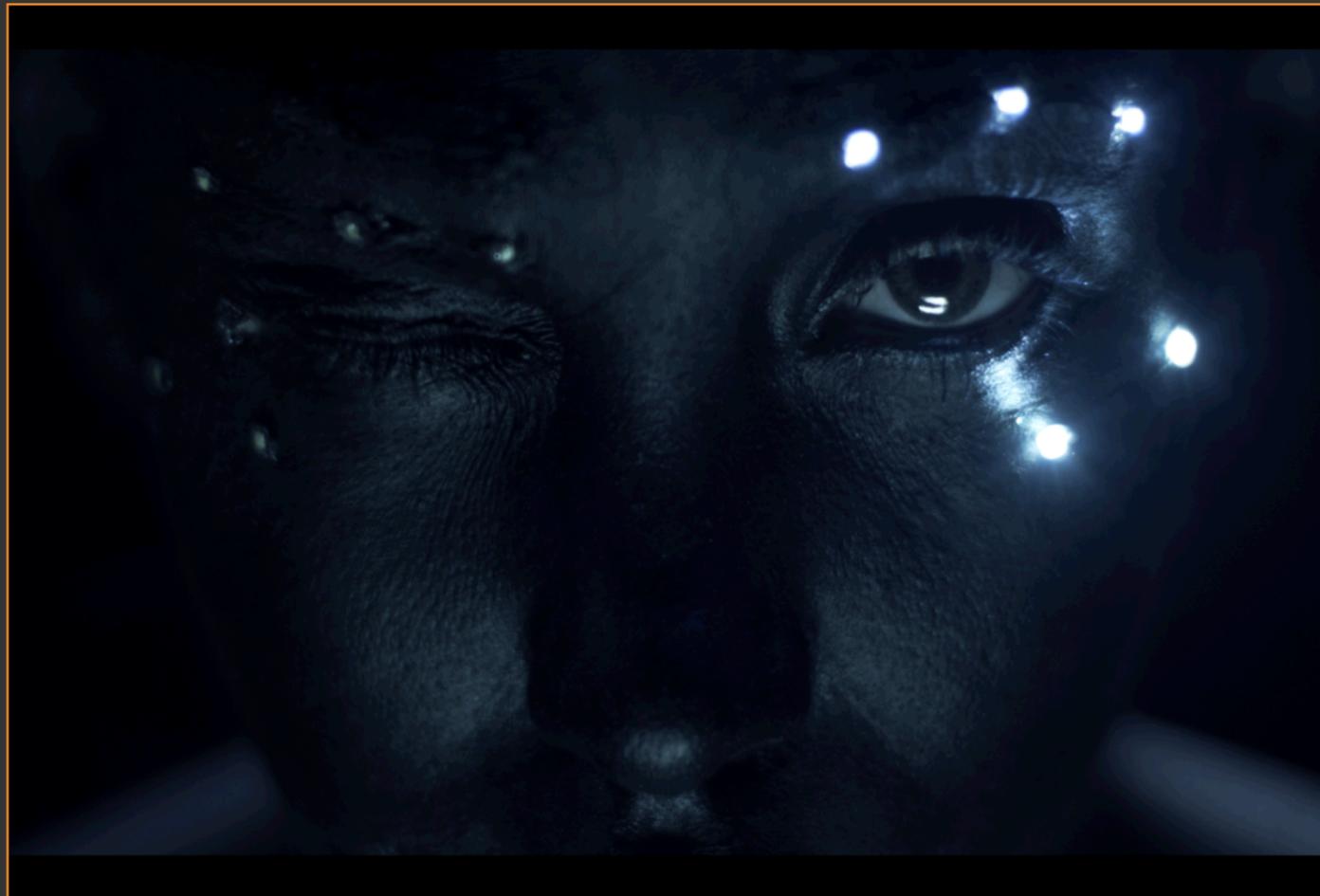




KATIA VEGA

Reinventing the future of cosmetics



Lab-on-Skin

Skin Interfaces Workshop

✉ Email
katia@katiavega.com

☎ Contact
+1 530 537 6107

📍 Website
<http://katiavega.com>

Prepared by:
PhD. Katia Vega

Prepared for:
FabriAcademy

Issued on:
19-Nov-17

TABLE OF CONTENTS

02	About Me
03	Concepts
04	Proof of Concepts
05	Possibilities by Sectors ^s
06	Workshop Intro
07	Materials
08	
09	



Beauty Technology

katiavega.com

ABOUT ME

Inspired by fashion, technology and magic, I create unconventional devices around the body: Beauty Technology. I am a faculty at the Department of Design at UC Davis (USA). I was a Postdoc Associate at MIT Media Lab (USA). I got my PhD and Master Degree in Computer Science at PUC-Rio (Brazil). I was a researcher in at the Department at HKBU (Hong Kong). My undergraduate studies were done in Computer Science at UNMSM (Peru). I was also the co-founder of Soluciones Racionales (IBM - Peru). I have led teams and collaborated with different researchers, artists and engineers in order to publish at top-tier computer science conferences and journals including CHI, TEI, IUI and IEEE Computer. In addition, my projects are exhibited at several galleries and festivals such as Barbican of London, Tekniska Museet in Stockholm, Ars Electronica, Music Tech Festival in Berlin and Bellagio in Las Vegas. My work has been featured by New Scientist, Wired, Discovery, CNN and awarded by Ars Electronica, TEI, Ubimedia Competition, among others. Recently, Springer has published our book: "Beauty Technology: Designing Seamless Interfaces for Wearable Computing".

Beauty Technology

I created Beauty Technology in 2012. Now it is a whole new research area in Wearable Computing that presents an exploration between the body surface, beauty products and digital technology. The concept stemmed from an anti-disciplinary perspective; computing, chemistry, biotech, body anatomy, human behavior, electronics and design. Conductive Makeup, Tech Nails, Hairware and FX e-makeup are Beauty Technologies. Within this realm, imagine that with a blink of your eye, you could turn on lights, move your fingernails to open a door, and touch your hair to record a conversation.

I envision futuristic cosmetics by creating devices that are seemingly indistinguishable from the human body, extend the horizon of expectation of human-device fusions and blur the lines between skin, aesthetics and interactive technology.

Beauty Technology CONCEPTS

Extending the functionality of cosmetics

//01

SKIN INTERFACES

In the same way that the wearables industry is integrating fashion practices in their development, we envision new partnerships between the biotech/tech companies and skin professionals such as makeup artists, prosthesis experts and tattooists in order to embrace the idea of human-device symbiosis.

FX e-makeup made use of special effects makeup for hiding electronic components that sense facial muscle movements, acting as a second skin.



//02

NAIL INTERFACES

The major challenge that wearable input devices are facing today is to ensure that they are unobtrusive. Batteries, wires and circuits are exposed and, therefore, they are not accepted as everyday objects.

Beauty Tech Nails are fake nails that hide technology like RFID tags, small magnets and conductive polish enabling the wearer to interact with objects in the environment.

//03

HAIR INTERFACES

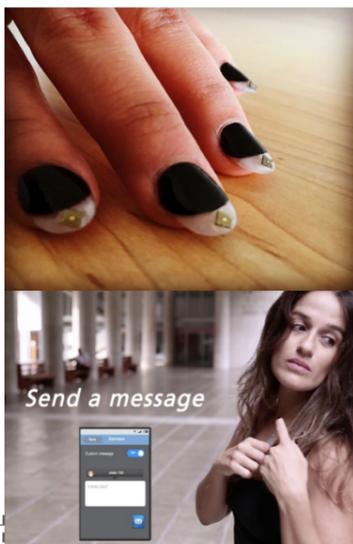
For centuries, hair has taken a protection role on the human body, a decorative accessory, and tool used in unconscious behaviors such as when someone is nervous, flirting, or over thinking.

These hair interfaces used different materials and processes to transform fake eyelashes and hair extensions into conductive materials. When connected to a microcontroller, your hair can be used as both, input and



PROOF OF CONCEPTS

From a concept to reality



// Lifestyle

Beauty Technologies will be available to interact with other devices in order to do things like making appointments, doing interactive performances, accessing data/media and sharing experiences. Hairware could send a message by the touch on the hair and Tech Nails could open doors and pay the metro.

Presented at:

- Hairware: The Conscious Use of Unconscious Auto-contact Behaviors. IUI 2015 (Atlanta, 2015).
- Beauty tech nails: interactive technology at your fingertips. TEI 2014. (Munich, 2014).
- Twinkle Nails. UIST'13 (Scotland, 2013).



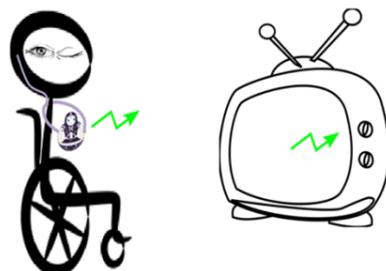
// Fashion Shows

The Glamor sector includes applications aimed to highlight the body appearance and using makeup for making a fashion statement. This includes decorative display, light embellishment, interactive performance and emotional response on cosmetics such as art works that show the feasibility of these technologies.

Blinklifier: Artwork in collaboration with artist Tricia Flanagan (Hong Kong).

Presented at:

- Make Fashion (Canada, 2014).
- Women 2.0. Fashion Show (USA, 2013).
- Sydney VIVID festival (Australia, 2013).
- Asian Premiere of Multimedia Art. (Hong Kong, 2013).
- JMGA 15th Biennial Conference Participation + Exchange. Participate Exhibition. (Australia, 2012).



// Health

The Wellness sector includes applications that are related to general wellbeing such as physiological monitoring, energy monitoring, emotion monitoring, eye care, posture correction and sleep monitoring.

Winkymote is an infrared remote controller for people with quadriplegic disabilities. Felipe, a 33-year-old student, inspired Winkymote. He hurt himself playing jujitsu and has had quadriplegic disability for 14 years. By using Winkymote, he blinks with his left or right or both eyes turns the television on, off or changes the channels up and down.

Special Awards:

- Ars Electronica Prix 2015 – Vienna Honorable Mention. [the next idea] voestalpine Art & Technology Grant.
- NUMA 2014 – Finland First Prize. 8th International Ubimedia Comp.

// Performances

AquaDjing is a DJ music controller device that is operated through water using fingernails with RFIDs.

Superhero uses Conductive Makeup to communicate the wearer's blinking, changing the environment in ways such as shifting displayed images and levitating an object (making a drone to fly).

Fluxa is a second skin that changes its lighting patterns when the user activates them with her RFID fingernails.

Selected presentations:

AquaDjing: DJ Maribel Tafur at Telefónica (Lima), Opera singer Elen Nas at Mostra PUC under the project Sentido Aware (Rio de Janeiro), DJ Congo Sanchez from Thievery Corporation at the Women 2.0 (Las Vegas), DJ Sankha at Wear +D (D.F. Mexico) and DJ Kirin at Make it Wearables Intel (San Francisco).

Superhero: TEI 2013 (Barcelona), Maker Faire 2013 (San Mateo), Mostra PUC-Rio 2014 (Rio de Janeiro), Cirque du Soleil 2016 (Montreal).

Fluxa: Music Tech Festival 2016 (Berlin) performed by Viktoria Modesta.



// Video Concepts

Different video concepts were created in order to answer the question: Could your skin become an interface?

Kinisi triggers different light patterns on the actress's hair and face when she smiles, raises her eyebrow, blinks and closes her lips.

Carnival Masks is an interactive face painting. During the Media Lab Halloween event, we combine face painting and electronics embedded into FX makeup to create 300 masks with LEDs that react to music beats accordingly.

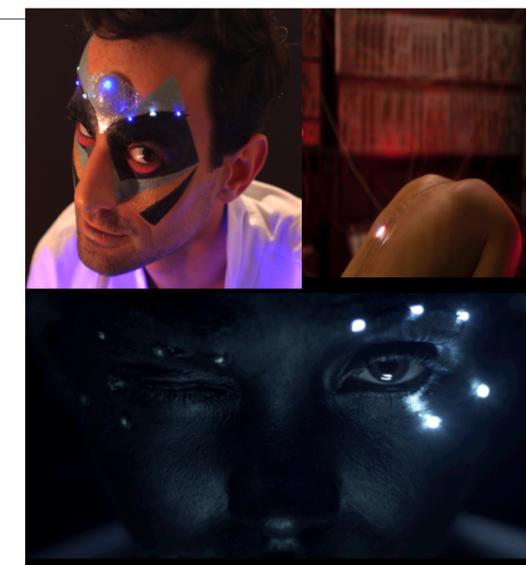
Skrin is an intimance dialogue between human and living electric organisms in a sensorial spine exposes fashion tech beyond clothing and under the epidermis.

Released at:

Kinisi: Ars Electronica (Vienna 2015), Digital Futures at Barbican of London (UK 2014), Tekniska (Stockholm, 2014).

Carnival Masks: Museum of Fine Arts (Boston, 2016), Augmented Human (Geneva 2016).

Skrin: A Shaded View on Fashion Film Festival (Paris, 2016).



SKIN INTERFACES WORKSHOP

LAB ON SKIN

Towards new possibilities for Wearable Computing

WORKSHOP GOAL

Given today's wearables revolution, the body surface is becoming a new design standpoint. One next step in the evolution of wearable computing is the use of the body's roughly two square meters of skin as a canvas for developing new materials, applying sensors and attaching other computing devices in ways that enhance the human experience. This workshop is an invitation to discuss and envision the future possibilities of merging technology and the body surface. The focus of this workshop is to explore on-skin technologies, i.e. technologies located directly on the body surface based on the taxonomy of Figure 1.

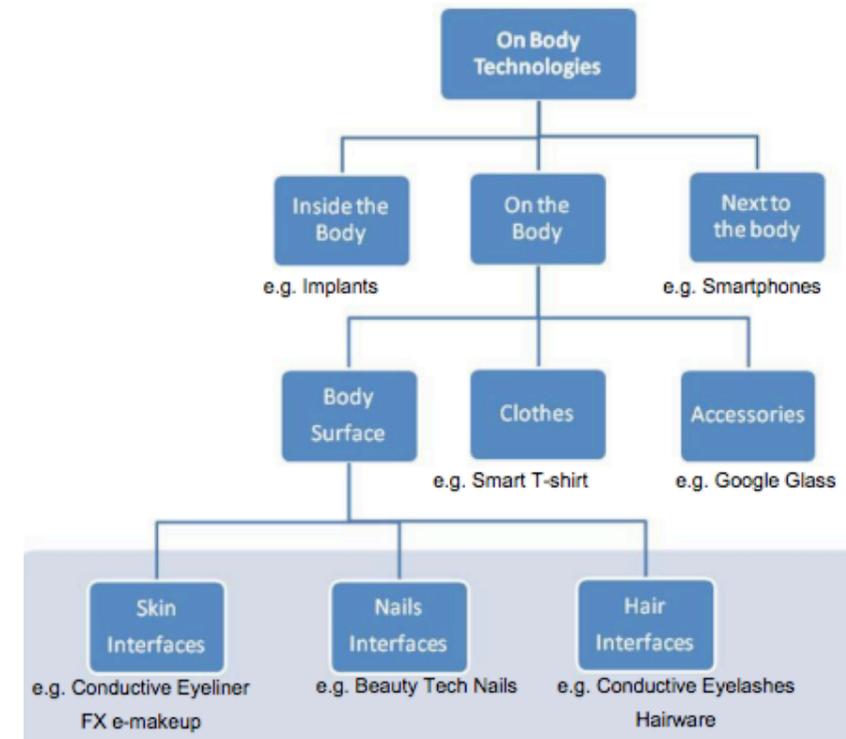


FIG. 1. On Body Technologies Taxonomy. From: "Beauty Technology: Designing seamless interfaces for Wearable Computing". K. Vega, H. Fuks.

SKIN INTERFACES WORKSHOP

LAB ON SKIN

Agenda and Project proposed

WORKSHOP AGENDA

Beyond wearables

Beauty Technology: from invisible to visible on-body interfaces

Skin, hair and nails interfaces

Skin as a display

On-skin rapid prototyping: Skin Masquerade Party and RFID Nails.

Brainstorming session

Final Presentations

WORKSHOP ASSIGNMENT

During the workshops, participants will learn these 2 projects and decide which of them they will like to develop.

Skin Masquerade Party: Inspired by the Venice Masquerade Parties, these interactive masks are painted and glued to the face as a second skin and create different blinking patterns. Participants are also encouraged to add other sensors and blinking patterns.

Twinkle Nails: Using the RFID's proximity feature, the fingernail does not need to touch the smart object to identify it. Whenever the finger is closer than 2 cm from the reader, its unique ID is recognized. Twinkle Nails is a musical combo comprising a Beauty Tech Nail and a box hiding a RFID reader that translates each ID tag into a different note



Liu, X., Vega, K., Maes, P., & Paradiso, J. A. (2016, February). Wearability factors for skin interfaces. In *Proceedings of the 7th Augmented Human International Conference 2016* (p. 21). ACM.



Twinkle Nails. Katia Vega 2013.
<https://www.youtube.com/watch?v=J-nTveVvM9U>

SKIN INTERFACES WORKSHOP

LAB ON SKIN

Materials

WORKSHOP MATERIALS

Option 1: Skin Masquerade Party

1 Adafruit GEMMA board
<https://www.adafruit.com/product/3501>
 4 Adafruit FLORA NeoPixels
<https://www.adafruit.com/product/1260>
 1 Coincell battery holder
<https://www.adafruit.com/product/783>
 2 CR2032 batteries
 Glitter
 Thin Wires (insulated copper thin wire or silicone insulated wire
<https://www.adafruit.com/product/1446>)
 Wire strippers, flush snips, and tweezers
 Soldering iron and solder
 E6000 craft glue
 Plastic mask (as a mold)
 Vaseline or release (<https://www.smooth-on.com/products/ease-release-200/>)
 Liquid latex or FX silicone
<https://www.smooth-on.com/products/dragon-skin-fx-pro/>
 Sponge applicators
 Multimeter

Option 2: Twinkle Nails

1 Arduino Uno
<https://www.adafruit.com/product/50>
 5 RFIDs
<https://www.adafruit.com/product/2800>
 1 RFID Reader and shield
<https://learn.adafruit.com/adafruit-pn532-rfid-nfc>
 Brushes
 Fake nails
 Acrylic Nail liquid, glue and powder
 Wire
 Wire strippers, flush snips, and tweezers
 Soldering iron and solder
 Multimeter

WORKSHOP EVALUATION CRITERIA

- Creativity and uniqueness (25%)
- Algorithm and circuit complexity (25%)
- Quality (20%)
- Functionality (20%)
- Individual performance (10%)