Technology, Media & Design Services

BA Industrial Design, Universidad Autónoma Metropolitana Xochimilco, Mexico DF
MA Interaction Design, Zurich University of the Arts
MA Contemporary Arts Practice, Bern University of the Arts

WORK PORTFOLIO

I co-authored the proposal for a KTI Project. Under the supervision of K. Franinovic, I led the R&D Team in developing strategies for **interactive sonification**, **sensoric**, and graphical and auditory interfaces, towards validation of **Neuro-Motor Rehabilitation**, enhanced through **computer-generated auditory feedback**. Our work was holistic and consisted of the exploration of best-practices for **Gait Pattern Sensing** embeddable in an existing **Gait Training Robot**, as well as the exploration of diverse **Responsive Sonification Scenarios** for Neuro-Motor Training. While observing the needs of stroke survivors and physiotherapists, we delivered custom-made **Wireless Sensor Foot-Plates** as well as a **Graphical Research Interactive System** for testing diverse Therapy-Scenarios and delivering Clean Data for **Clinical Trials** and Medical Validation.

https://youtu.be/CNxCN5ucq0s https://youtu.be/BHrxAeKfaRk https://youtu.be/b4iiSaHK32A

Partner Institutions

Interaction Design R&D ZHdK, Ability GmbH (Habtronics), KTI (Innosuisse), ZHAW, NTB Buchs, Zurzach RehaClinic

Team

Prof. Dr. Karmen Franinovic, Andrés Villa Torres, Moritz Kemper, Simon Pfaff

Technologies

C#, Digital Fabrication, Java, Arduino, MQTT, Supercollider, Max MSP

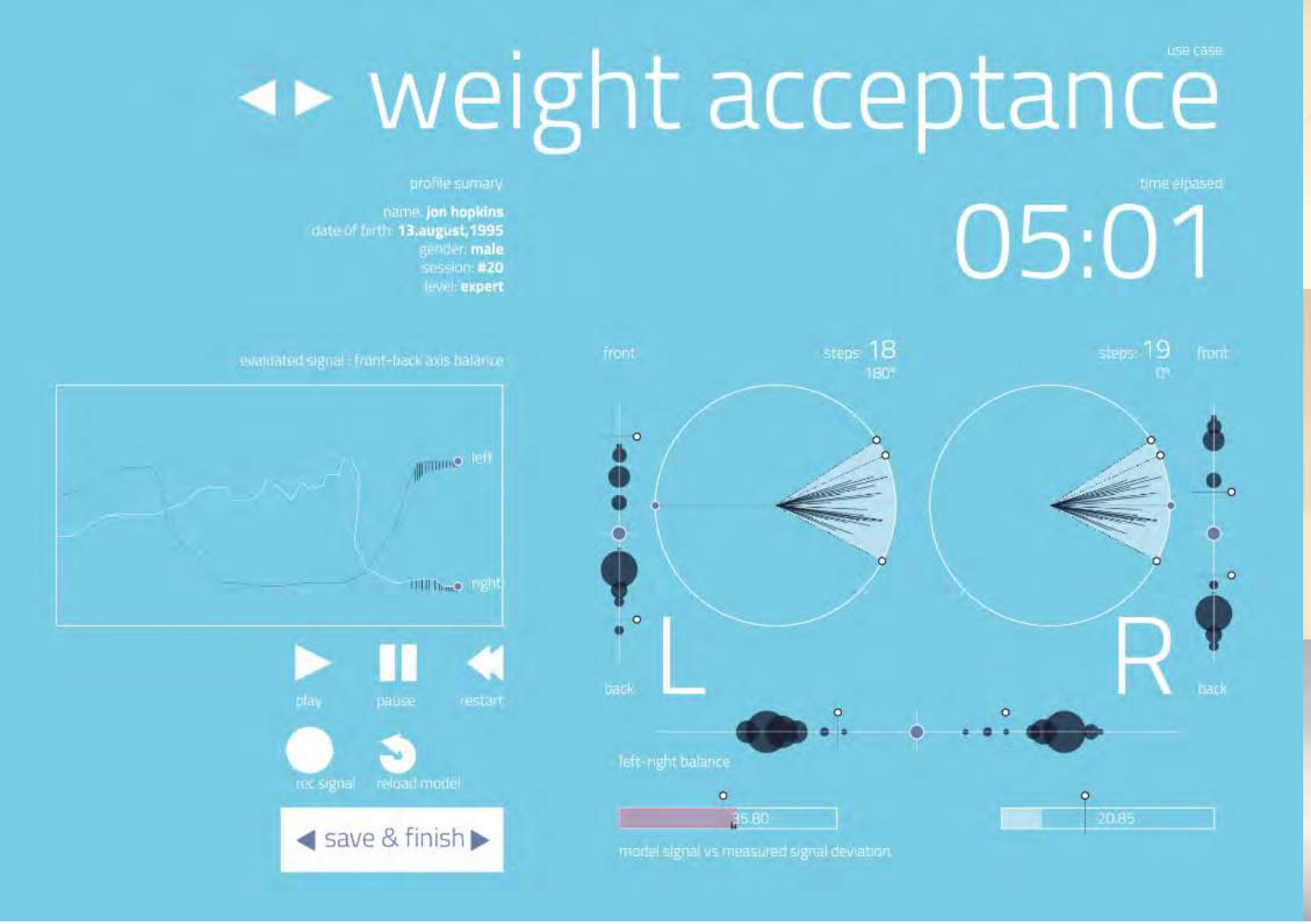
Period

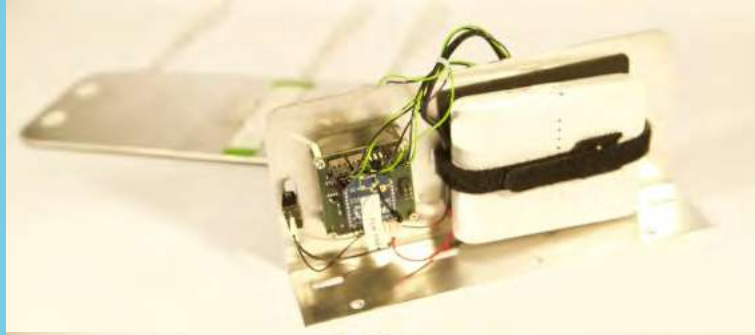
February 2012 - July 2015

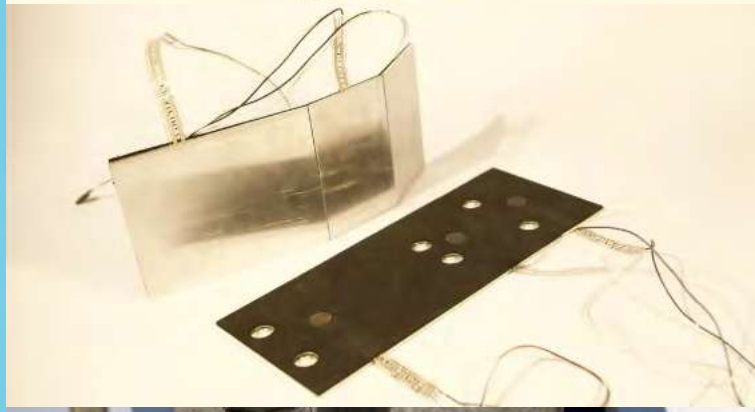
EFS + A-Int

Auditory Feedback for Robotic Gait Training

Sensor Foot Plates, Research Interactive System, Clinical Trials, Instrument Validation, Human Centered Design, Graphical & Auditory Interfaces







EFS + A-Int

Auditory Feedback for Robotic Gait Training

Sensor Foot Plates, Research Interactive System, Clinical Trials, Instrument Validation, Human Centered Design, Graphical & Auditory Interfaces

During my Research Associate period at Collegium Helveticum, I led the R&D Team of a Prototype System for monitoring **Electromagnetic Radiation** (EMR) associated with WiFi and Digital Information Traffic. Through understanding the complexity and variety of Information Traffic in everyday life, we provided the UZH Dynamics of Healthy Aging group with a **Portable** Wireless Device and an Interactive Big Data Storage and Management System suitable for a pilot study towards the proof of concept of the **impact of EMR** in the process of **Human Cognitive Aging**.

https://youtu.be/suxHaYao64A

Partner Institutions

Collegium Helveticum ETH UZH ZHdK, UZH Dynamics of Healthy Aging, Smartronic GmbH

Team

Prof. Hannes Rickli, Andrés Villa Torres, Dr. Christina Röcke, Prof. Dr. Mike Martin, Lukas Stäussi

Technologies

Linux, C#, Python, Java, node.js, Raspberry Pi, Air Spy, Digital Fabrication

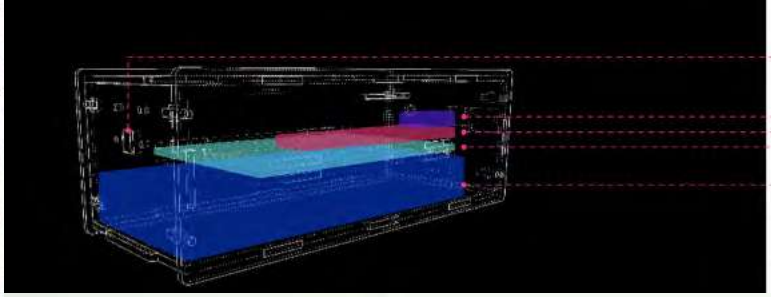
Period

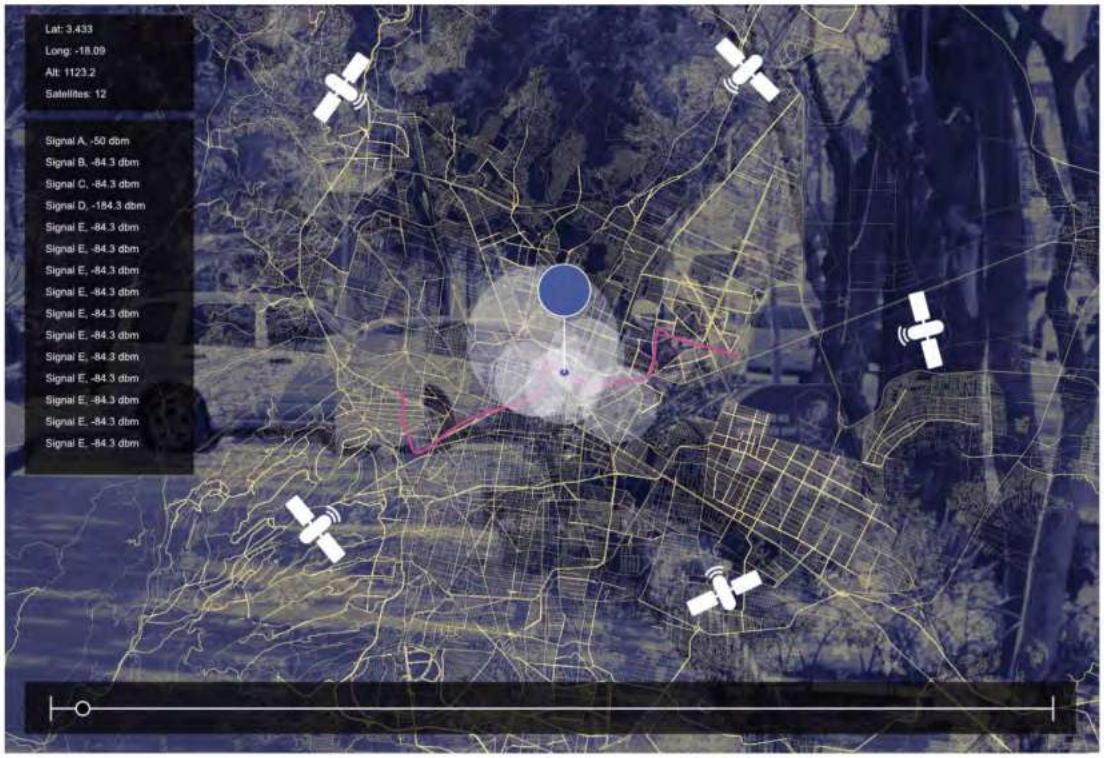
November 2017 - October 2019

Digital Space(s)

Electromagnetic and WiFi Radiation Monitoring

Eelectromagnetic Radiation, Human Cognitive Aging, Environmental Monitoring





Digital Space(s)

Electromagnetic and WiFi Radiation Monitoring

Eelectromagnetic Radiation, Human Cognitive Aging, Environmental Monitoring

During my period as Research Associate at Collegium Helveticum, I was part of the Team behind this **interdisciplinary publication***. We were concerned with the historical and contemporary political narratives of **information technologies and infrastructures behind the digitalization of Switzerland**. My contribution was mainly background research, location scouting, field-recordings, data collection, conducting interviews, mentoring, and co-writing.

https://www.lars-mueller-publishers.com/data-centers

Partner Institutions

Collegium Helveticum ETH UZH ZHdK, Lars Müller Publishers

Team

Prof. Dr. Monika Dommann, Prof. Hannes Rickli, Dr. Max Stadler, Giorgio Scherrer, Andrés Villa Torres, Andrea Hebling, Sascha Deboni

Authors

Scherwin Bajka, Silvia Berger Ziauddin, Sascha Deboni, Monika Dommann, Kijan Espahangizi, Lena Kaufmann, Moritz Mähr, Ioana Marinica, Fatih Öz, Hannes Rickli, Giorgio Scherrer, Renate Schubert, Max Stadler, Andrés Villa-Torres, Emil Zopfi, Andrea Hebling, Yann Mingard and Roland Schneider

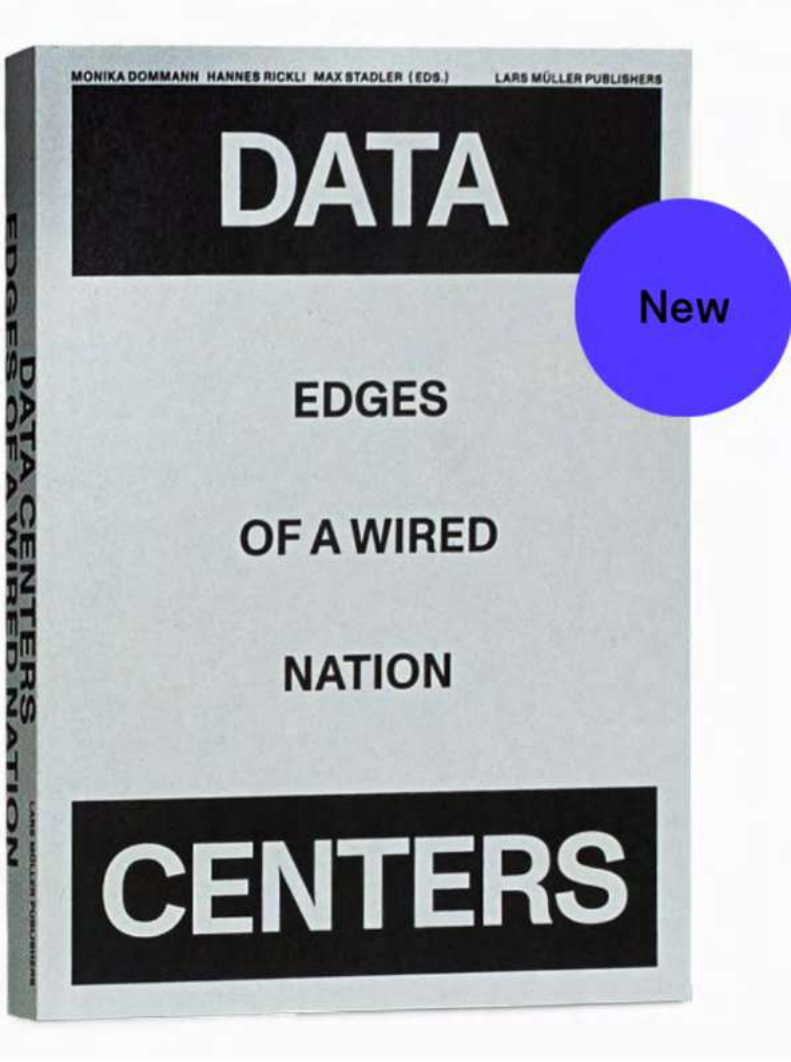
Period

November 2017 - December 2020

Data Centers

Edges of a Wired Nation

Background Research, Fieldwork Recordings, Ethnography, Writing



Data Centers

Edges of a Wired Nation

Background Research, Fieldwork Recordings,
Ethnography, Writing

For the First Zurich Design Biennale, I collaborated as a Freelancer with the IAD R&D Team from ZHdK for the conception and realization of this Installation. We developed a concept that reflected on the **future of Artificial and Non-Human Sentience**. The result is an Uncanny Kind that is aware of human presence and invites the visitors to explore the space around them. My part was Co-Conception, Design, and Implementation of a **Spatial Interactive Sound System**, Generative Sound Composition, as well as the Conception and Implementation of **Interactivity and Spacial Responsiveness using Computer Vision**. The Installation has been presented further at Toni Areal, Tempe Center for the Arts, and included in an awarded Publication with Honorable Mention at the CHI 2019*.

* K. Franinovic, L. Franzke. Shape Changing Surfaces and Structures: Design Tools and Methods for Electroactive Polymers. Online Access:

https://dl.acm.org/doi/10.1145/3290605.3300355

Partner Institutions

Interaction Design R&D ZHdK, Labor5020, TEI, ASU, Tempe Center for the Arts, CHI, Zurich Design Biennale, Old Botanical Garden Zurich

Team

Prof. Dr. Karmen Franinovic, Luke Franzke, Andrés Villa Torres, Florian Wille

Technologies

C#, Java, MQTT, Electro Active Polymers, Real Sense, Computer Vision, Supercollider, Arduino, Digital Fabrication

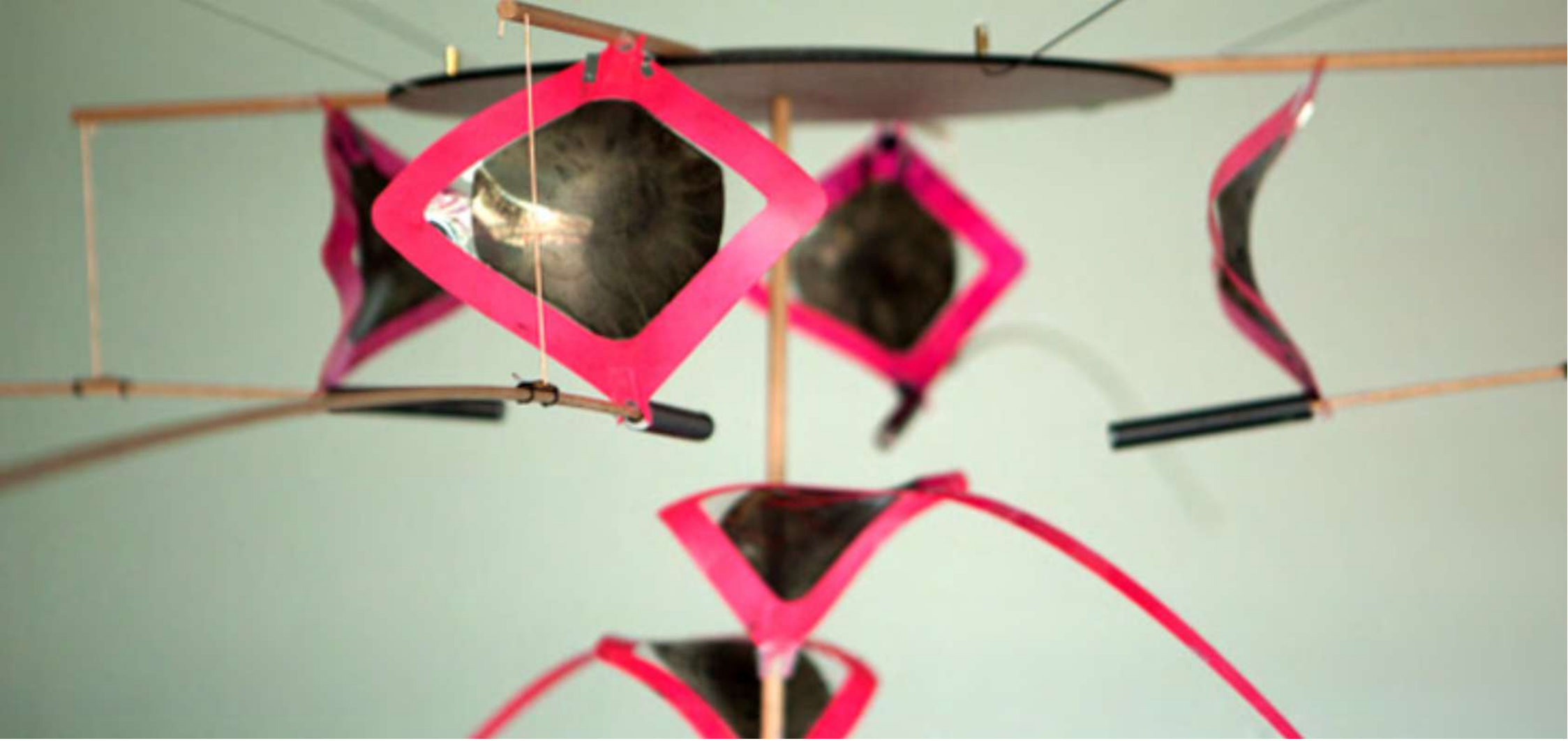
Period

July 2017 - April 2019

Electrical Animal Plant

Kinetic and Sound Interactive Installation

Sonic Interaction, Electroactive Polymers, Responsive Environments, Artificial & Non-Human Sentience, Computer Vision



Electrical Animal Plant

Kinetic and Sound Interactive Installation

Sonic Interaction, Electroactive Polymers, Responsive Environments, Artificial & Non-Human Sentience, Computer Vision

How does **Wireless Digital Information Traffic** is **associated with Health**, Environmental and Political Issues?

During this Residency in Berlin, I continued with my inquiries on **Electromagnetic Pollution** gained at my previous research period at Collegium Helvetic.

My research has consisted of exploring Reproducible **Monitoring and 3D Mapping of EMR** as well as proposign a Technology suitable for a Collaborative and Interactive Network. The aim is to provide an Open Access Platform that allows Humans around the Globe to contribute and to share with their Regional Data.

https://airberlinalexanderplatz.de/blog/A1WXQIlwwzbCl58iv9jdZNHH5Y73/ibKYh5xhweq18U1UIE0B

Partner Institutions

Pro Helvetia Swiss Arts Council, ABA Artist in Residency Berlin Aleksander Platz, Betahaus

Team

Andrés Villa Torres (Solo Project)

Technologies

Linux, Raspberry PiZW, Python, Semantic Segmentation, PyTorch, Colab, PX4 Autopilot, C#, C++, Java, Computer Vision, Point Cloud, Depth Maps, ML, Rhino, node.js, socket.io, 3D Printing, py-hackrf

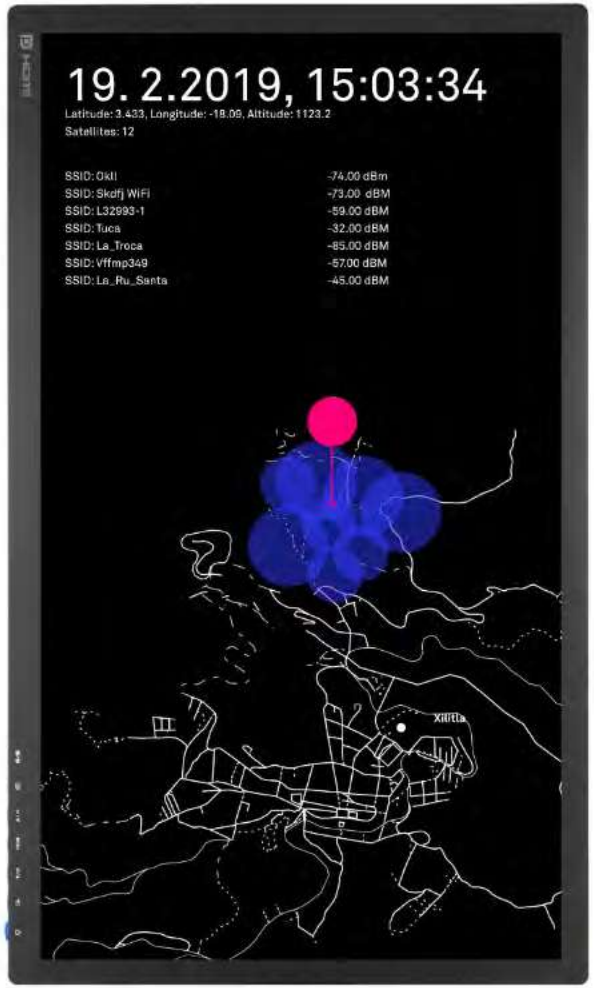
Period

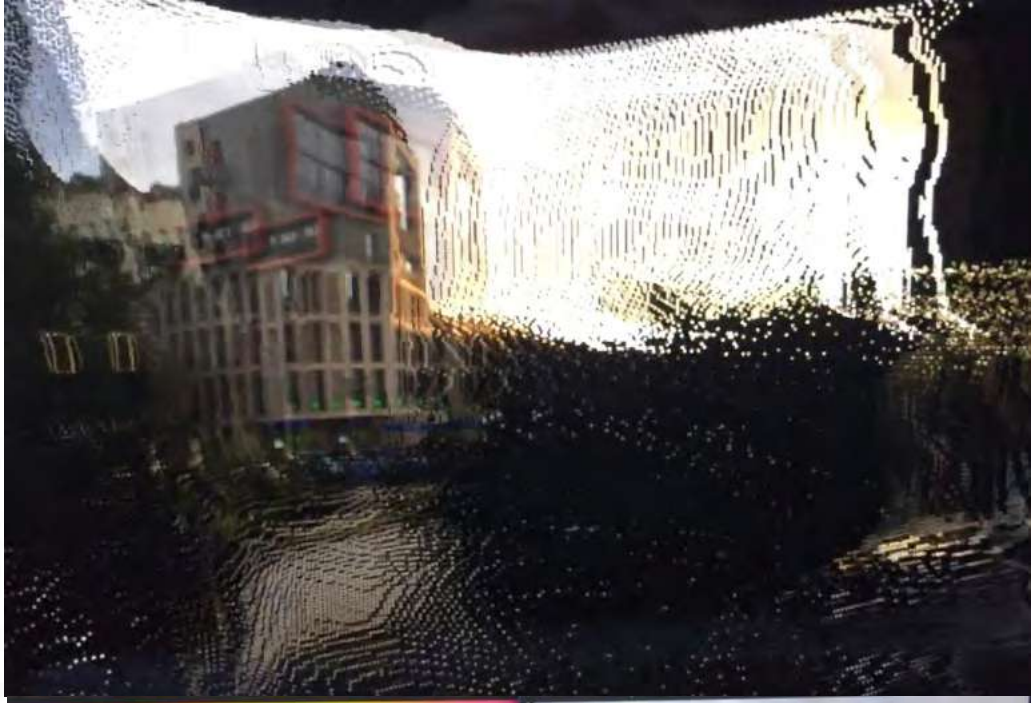
September 2020 - Ongoing

Signal Topographies

3D Electromagnetic and WiFi Radiation Mapping

Eelectromagnetic Radiation, Politics of Airspace, Information Theory, Environmental Monitoring





Signal Topographies

3D Electromagnetic and WiFi Radiation Mapping

Eelectromagnetic Radiation, Politics of Airspace,
Information Theory, Environmental Monitoring

How can body movement and synchronic acting be a transversal form of non-verbal communication?

During my MA in Interaction Design, I focussed on understanding the aspects of **Social Integration** and the **Non-Verbal, Emotional, and Bodily Communication.** This aspects are intrinsic to the Hearing Impaired (HI) Language. A series of Participatory Workshops with the HI Community in Zurich facilitated the conception and development of an **Interactive System** based on the transfer of **Remote Body Sensing** and Bilateral Movement Signals through Space. This enabled a **Multimodal and Multi Located Sensorial Setting**, that either through Haptic, Visual and Auditory Feedback engaged the Participants in an **Exploration Interplay**.

Partners and Participation

ZHdK Interaction Design, Pro Com Deaf Interpreter Center, Deaf Community Zurich, ETH Haptic Feedback and Engineering

Team

Prof. Dr. Karmen Franinovic, Prof. Dr. Yeongmi Kim, Prof. Max Rheiner (Mentors)

Andrés Villa Torres (MA Interaction Design Project)

Technologies

Kinect, C#, Arduino, Java

Period

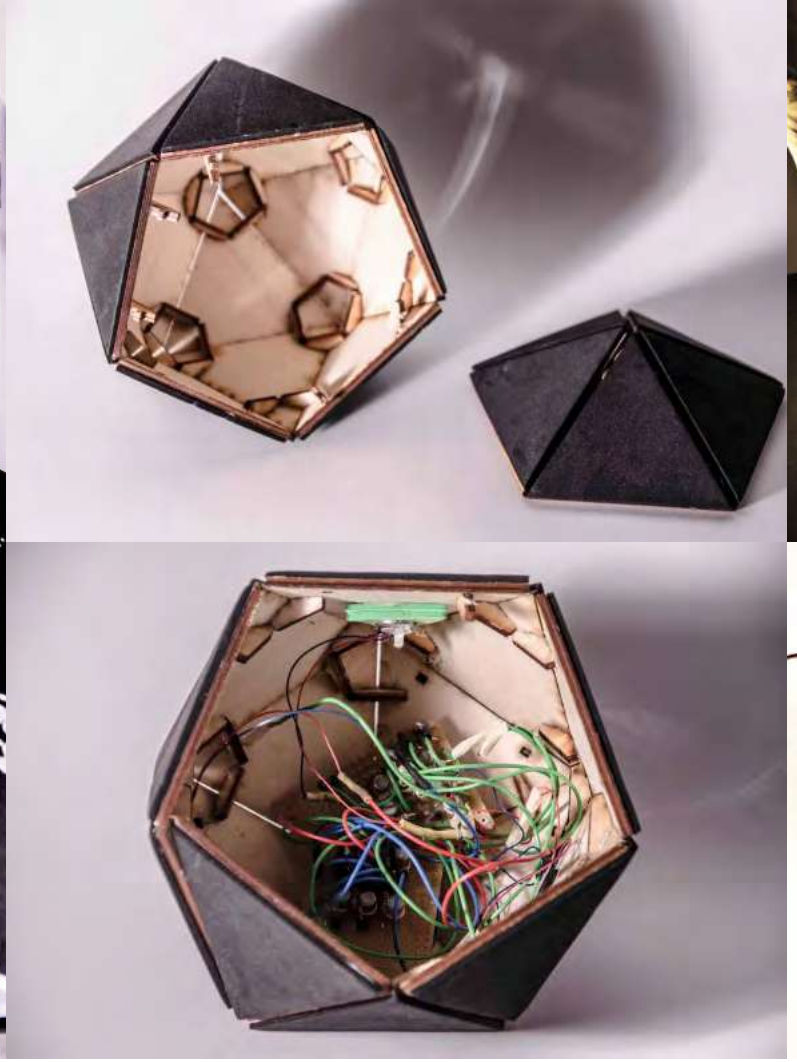
February 2011 - July 2012

https://vimeo.com/43015924

Follow or be followed

Remote Embodied Interactions

Telepresence, Haptic Feedback, Remote Interactions, Connectedness



Follow or be followed

Remote Embodied Interactions

Telepresence, Haptic Feedback, Remote Interactions, Connectedness

I collaborated with H-Farm and Sandro Poli for the conception and realization of a Sensual Installation based on **Interactions with 3D Pointclouds**. The result was a Spacial Installation that engaged visitors to interact with it through touch and **engage with strangers** in **full-body contact** stimulated by a **Responsive Light Membrane**. My work consisted of co-conception, full development, and installation. The Installation was part of the exhibition "**Sensorium**" during the **European Innovation Festival** - a Technology Conference and Media Art Exhibition curated by Fast Company and H-Farm and hosted at the Gucci Hub in Milan in Summer 2019. Among other speakers and visitors, the Installation LOVE was very well complimented by **Yuval Noah Harari***.

Partners and Participation

H-Farm, Labor 5020, Gucci, Fast Company

Team

Andrés Villa Torres (Labor 5020)

Sandro Poli (H-Farm & Labor 5020)

Technologies

Kinect, C++, Java, Open Frameworks

Period

July 2019

installation video: https://youtu.be/RlOA5lrl8Y0

LOVE

Sensual Installation

Pointclouds, Proximity Differential Algorithms, 3D Surface Deformation Recognition, Realtime CGI, Projection Mapping

LOVE

Sensual Installation

Pointclouds, Proximity Differential Algorithms, 3D Surface Deformation Recognition, Realtime CGI, Projection Mapping

In collaboration with Sandro Poli and Simón Schwarz, we developed a **Low Energy Light Installation** for the **Lilu Festival 2019** - First Light Festival in Luzern.

During our creative process, we had participated in the **Temp Studio** Residency # 3*. The result is a swarm of **Fluorescent Artificial Water Organisms** in a Network Array that react to the currents of the Reuss river.

The installation has been shown at diverse locations including **Sensorium** / European Innovation Festival at the Gucci Hub 2019 in Milan. Due to COVID-19 the Installation couldn't be shown at the **Amsterdam Light Festival**.

*A New Media Art Residency Program organized by a Media Arts Community from Lisbon.

Installation Documentation (Amsterdam Light Festival) : http://labor5020.ch/alivestream/

Partners and Participation

Labor 5020, Aroma, Lilu Festival, Temp Studio #3, Sensorium, H-Farm, Gucci, Fast Company

Team

Sandro Poli, Andrés Villa Torres, Simón Schwarz

Technologies

Linux, Raspberry Pi, Java, Python, C#, Arduino, Digital Fabrication, Signal Processing

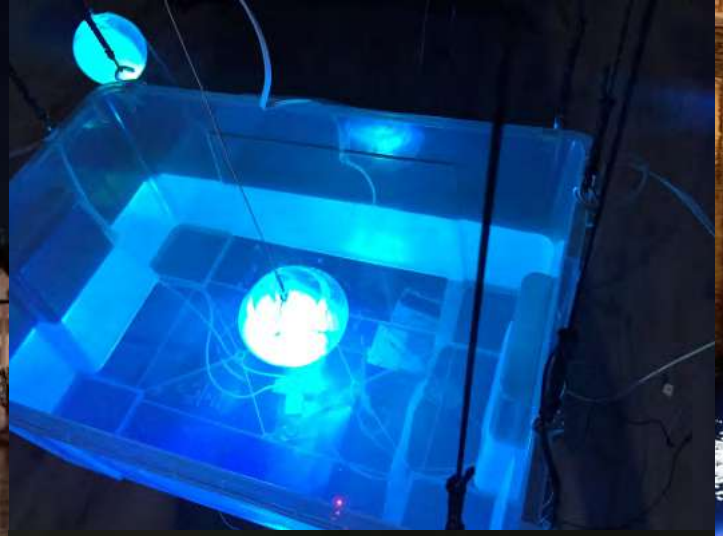
Period

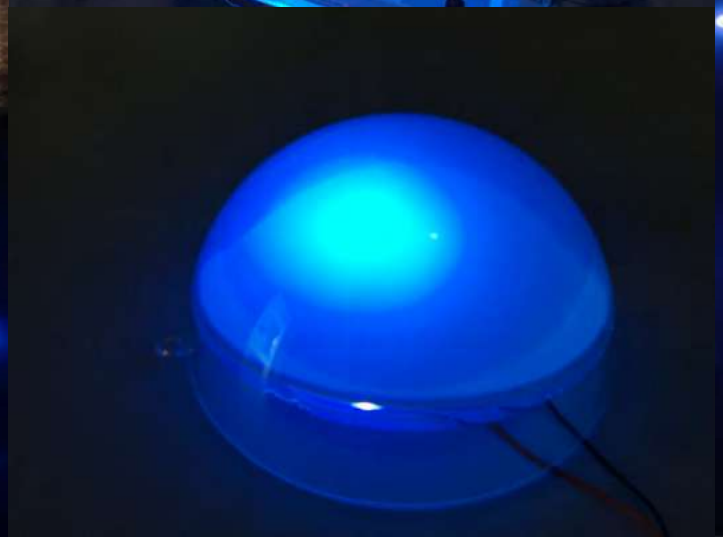
August 2018 - January 2019

Fluorozoa

Fluorescent Water Installation

Fluorescence, Swarm Behaviour, Environmental Data Monitoring, Wet Electronics





Fluorozoa

Fluorescent Water Installation

Fluorescence, Swarm Behaviour, Environmental Data Monitoring, Wet Electronics

SOLO is a design and artistic collaboration with Karmen Franinovic. We delved into the aspects of **Artificial Sentience concerning pain**. How does an organism sense and **react to pain impulses**? Inspired by **Neuronal Activity,** we explored - through electroactive polymers - the limits of **electricity in interaction with fluids** as well as the principles of acoustic feedback loops as mechanisms of self and environmental awareness. The result is an **immersive space**, composed of spatialized sonic impulses and a **retractable alive-lens** that modulates and projects a beam of light into a room and augments the nuances of a responsive being.

Partner Institutions

Interaction Design R&D ZHdK, Gessnerallee, Laokoon Festival, Produktionszentrum ZHdK

Team

Prof. Dr. Karmen Franinovic, Andrés Villa Torres

Technologies

C#, Electroactive Polymers, Machine Listening, Supercollider, Robotics, Arduino, Light Design

Period

August - November 2016

https://vimeo.com/219971330

SOLO

Immersive Light and Sound Installation

Electroactive Polymers, Machine Listening, Spatial Sound, Robotics, Light Design, Wet Electronics, Acoustic Feedback Loops

SOLO

Immersive Light and Sound Installation

Electroactive Polymers, Machine Listening,
Spatial Sound, Robotics, Light Design, Wet
Electronics, Acoustic Feedback Loops

This installation is a critical approach towards intelligent machines. It unfolds the emergence that the learning process from **Artificial Sentience in Mixed Realities** can encounter. It consists of a feedback loop between a **3D portrait**, a camera, a **robotic mirror**, and an **evolving machine-learning model** which mimics self-awareness through **facial recognition**. Narcissus searches for its reflection randomly, learns from it, and evolves through chaotic expressive exchanges. The installation is a **metaphor from the mirror-stage** and the moment of self-recognition, Lacan identified as an essential act of intelligence. Whether this act is also a symptom of consciousness or not, is open to discussion. Narcissus intends to argue, to which extent artificial beings can be perceived as self-aware. Among others, it has been shown and published at **ISMAR Fukuoka** 2015, xCoAx Bergamo 2016, and awarded by Pro Helvetia.

https://vimeo.com/223564849

Partner Institutions

Labor 5020, ISMAR, xCoAx, Pro Helvetia

Team

Eugen Danzinger, Andrés Villa Torres

Technologies

C#, C++, Python, Arduino, Computer Vision, Unity 3D, Machine Learning

Period

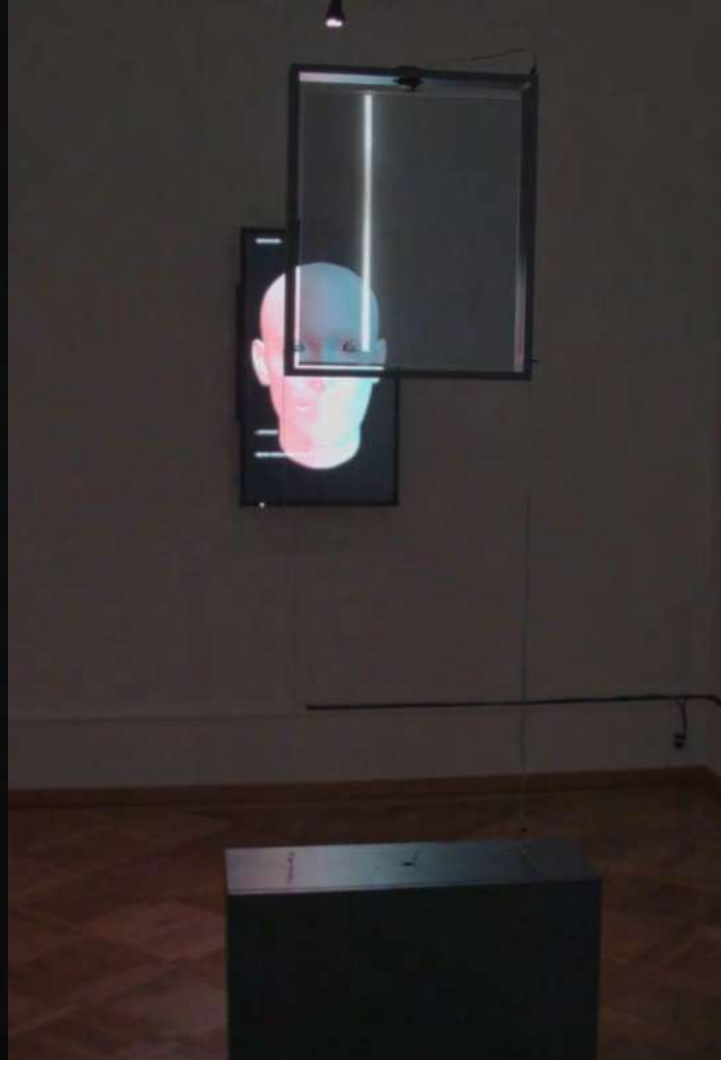
January 2015 - July 2017

Narcissus

Machine learning from machine learning from m...

Facial Recognition, Artificial Sentience,
Machine Learning, Feedback Systems,
Robotics, Mixed Reality, CGI





Narcissus

Machine learning from machine learning from m...

Facial Recognition, Artificial Sentience,
Machine Learning, Feedback Systems,
Robotics, Mixed Reality, CGI

For the Conference xCoAx 2020, I presented this installation which generates a **threedimensional artificial skin**. The Artificial Skin is generated using Machine Learning through a collection of **Tinder profile pictures**. The images are scraped from the matches of an account created for research purposes. The collection of images is then classified through a **Semantic Segmentation approach** to be able to **recognize skin regions** in any image where a human body is visible. After the ML model is trained, I provide any random combination of 2D shapes using the same Semantic Segmentation Schema, which allows the system to generate imagery of skin blobs.

Partner Institutions

xCoAx, Pro Helvetia, MUMUTH, Forum Stadtpark, IEM

Team

Andrés Villa Torres

Technologies

Python, PyTorch, Computer Vision, WEB, Colab, Java, three.js, Machine Learning

Period

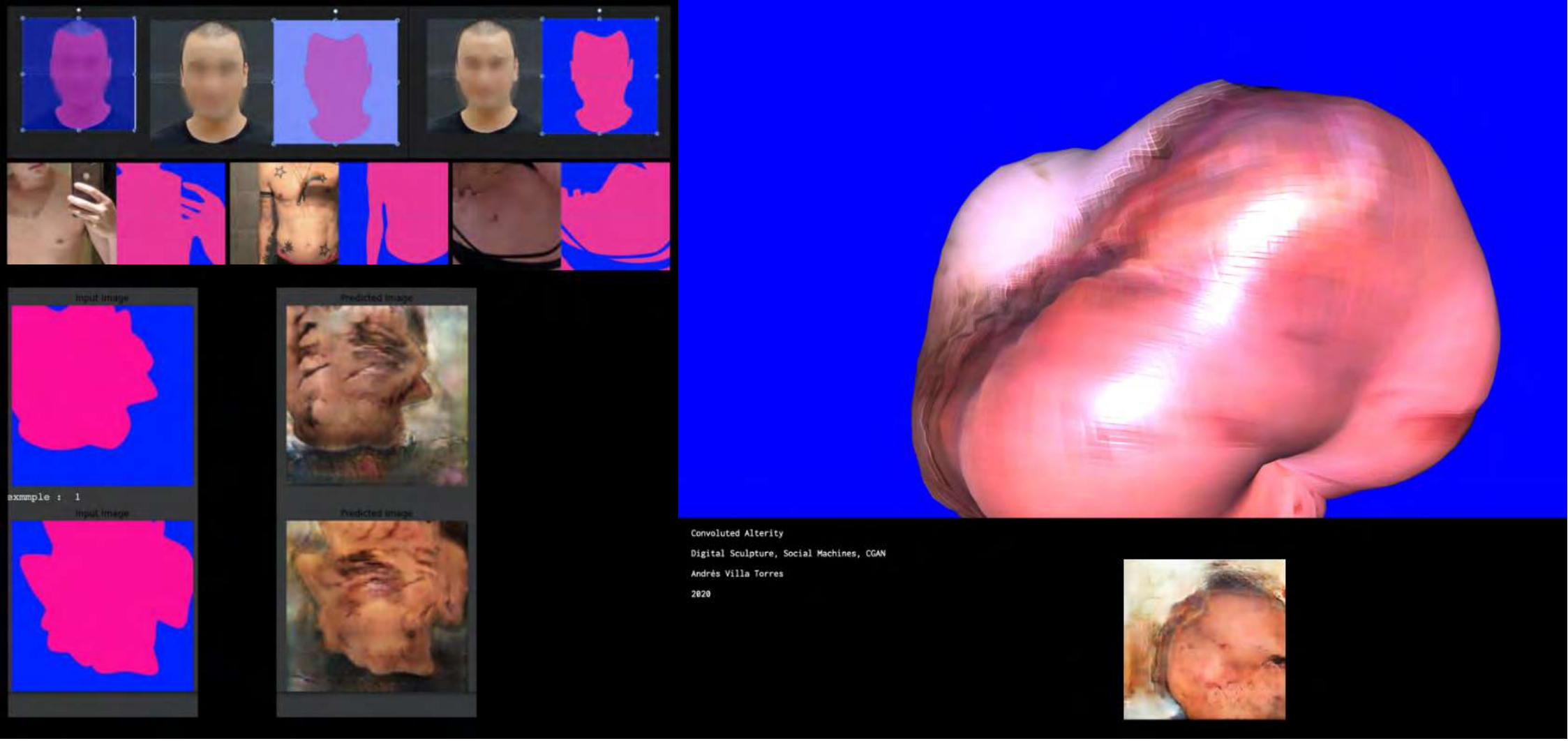
January - July 2020

https://www.labor5020.ch/convolutedAlterity/

Convoluted Alterity

Web Generative Sculpture

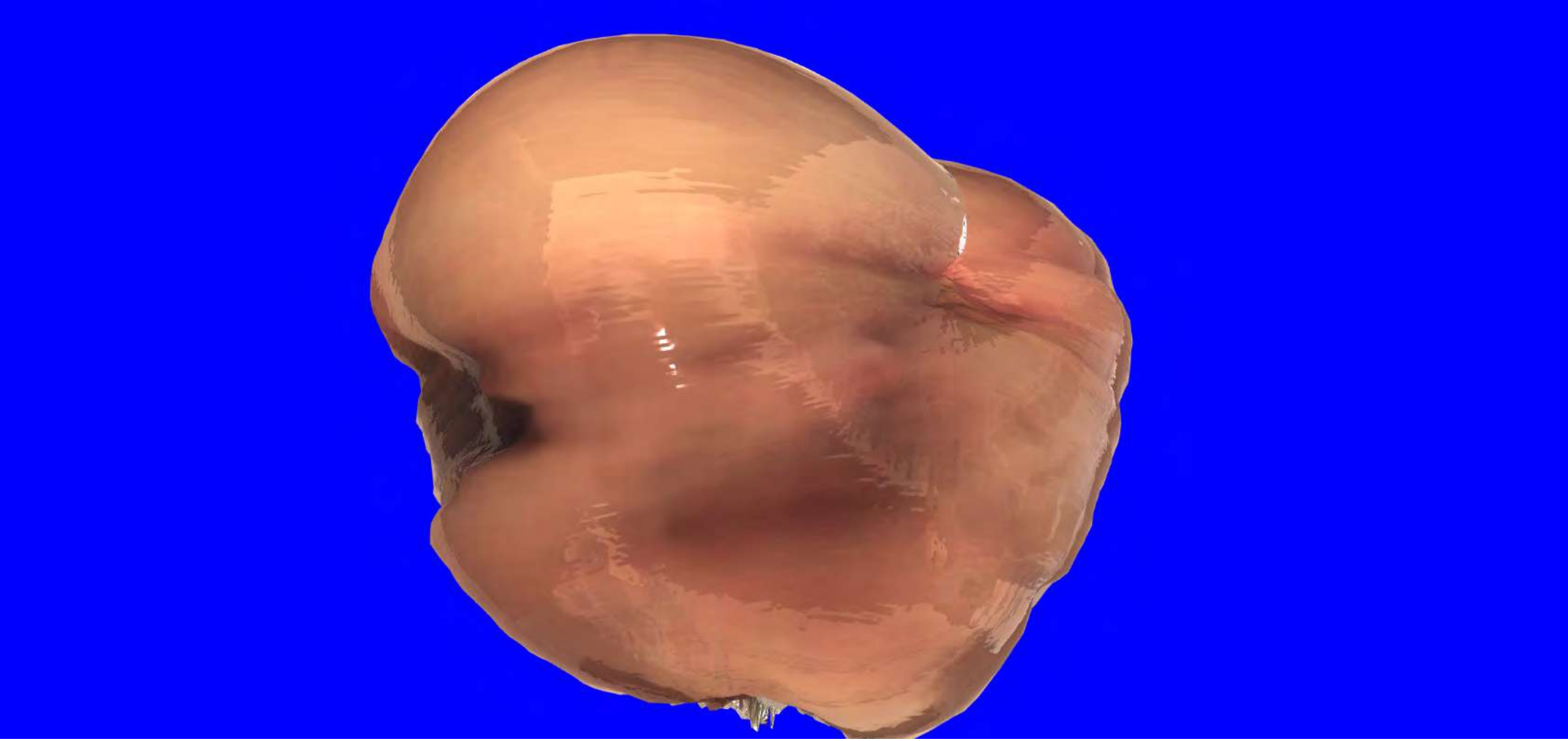
cGAN, Machine Learning, Digital Anthropology, Information Theory, Social Entropy, Semantic Segmentation, Computer Vision



Convoluted Alterity

Web Generative Sculpture

cGAN, Machine Learning, Digital Anthropology, Information Theory, Social Entropy, Semantic Segmentation, Computer Vision



Convoluted Alterity

Web Generative Sculpture

cGAN, Machine Learning, Digital Anthropology, Information Theory, Social Entropy, Semantic Segmentation, Computer Vision

I have been collaborating with a group of researchers from the Lancaster University, Liverpool John Moores University, and the University of Texas at Austin in a project grant entitled '**Unlocking the Colonial Archive:** Harnessing Artificial Intelligence for Indigenous and Spanish American Historical Collections' which has been recently granted with **ESRC and NEH grants**.

In this funded research, we propose an interdisciplinary approach towards the **narratives of Space, Cartography, and Decolonisation**, including the facilitation of an **open-access Machine Learning approach** based on a **Semantic Segmentation cGAN**, which I have further developed for the group to **classify cartographic data from historical archives**.

Partner Institutions

Lancaster University, Liverpool John Moores University, University of Texas at Austin, University of Bern, ESRC, NEH

Team

Dr. Patricia Murrieta-Flores, Dr. Javier Pereda, Andrés Villa Torres, Kelly McDonough, Alberto Palacios, Bruno Martins

Technologies

Python, PyTorch, Runway ML, Java, Computer Vision, Colab, Machine Learning

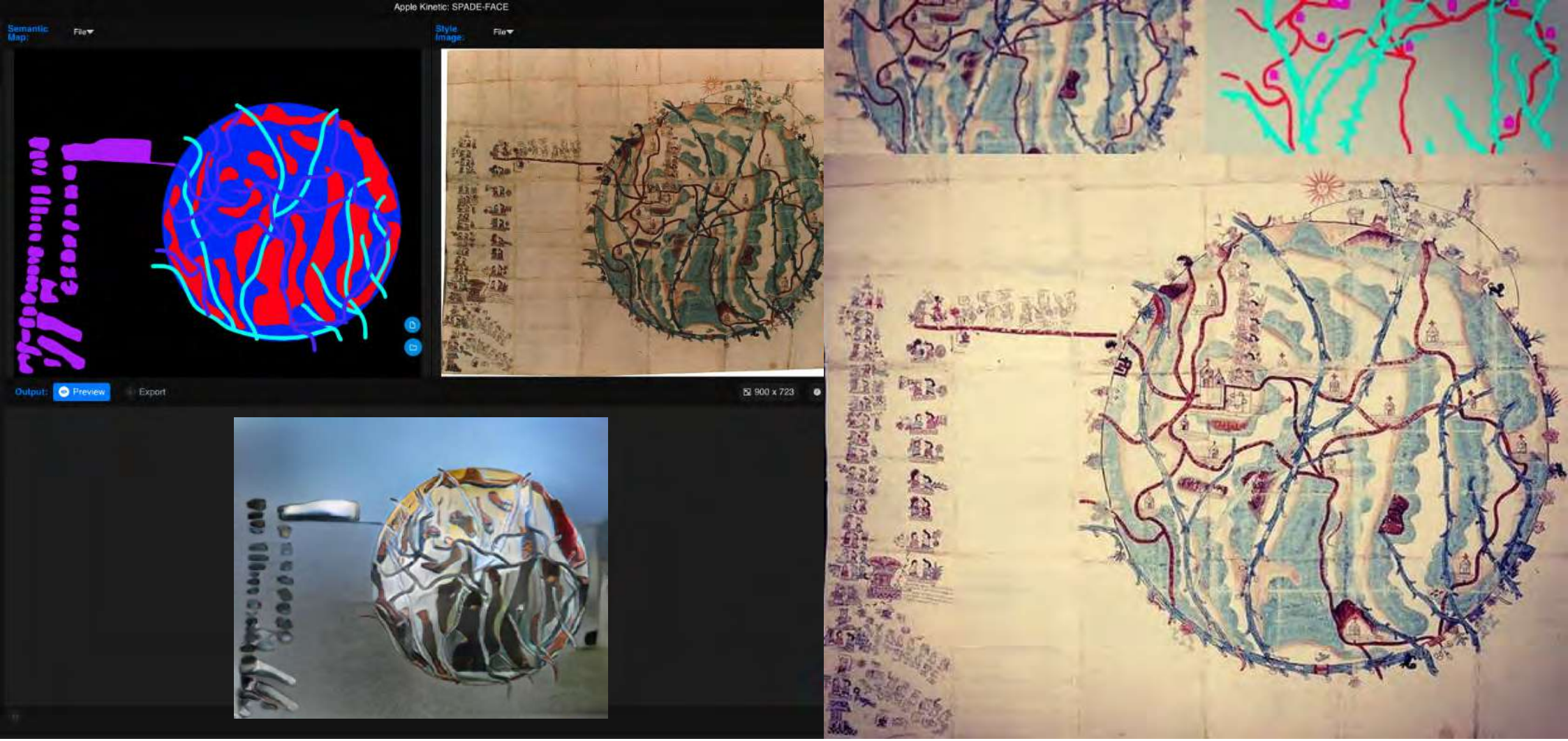
Period

February 2020 - Ongoing

Unlocking Colonial Archive

Decolonisation of Cartography

cGAN, Machine Learning, Digital Anthropology, Semantic Web, GeoVisualization, Semantic Segmentation, Computer Vision



Unlocking Colonial Archive

Decolonisation of Cartography

cGAN, Machine Learning, Digital Anthropology, Semantic Web, GeoVisualization, Semantic Segmentation, Computer Vision

Unlocking Colonial Archive

Decolonisation of Cartography

cGAN, Machine Learning, Digital Anthropology, Semantic Web, GeoVisualization, Semantic Segmentation, Computer Vision

During ongoing cooperation between the Interaction Design R&D Team at ZHdK and the CrowtherLAB at ETH, I collaborated in the conceptualization and development of this **Tangible Framework for Geodata Visualization** based on IR Tracking. The framework allows integrating Interaction with an ML Data Model for tackling deforestation and **CO2 emissions** globally. Our team has designed, developed, and built this adaptable framework to allow BA Students and further developers to explore these technologies and environmental topics during their studies and research.

https://youtu.be/k3KeHizweYI https://youtu.be/Z31M1a9VR3Q

Partner Institutions

IAD ZHdK, Crowther LAB ETH, Schreinerei SM

Team

Luke Franzke, Jürgen Späth, Andrés Villa Torres, Florian Bruggisser,
Technologies

C#, Java, Arduino, Computer Vision, Primesense, Digital Fabrication, node.js, socket.io, three.js, p5.js
Courses

Embodied Interaction, Data Visualization and Literacy, Human-Data Interaction, Interactive Visualization

Period

November 2019 - November 2020

GeoData Framework

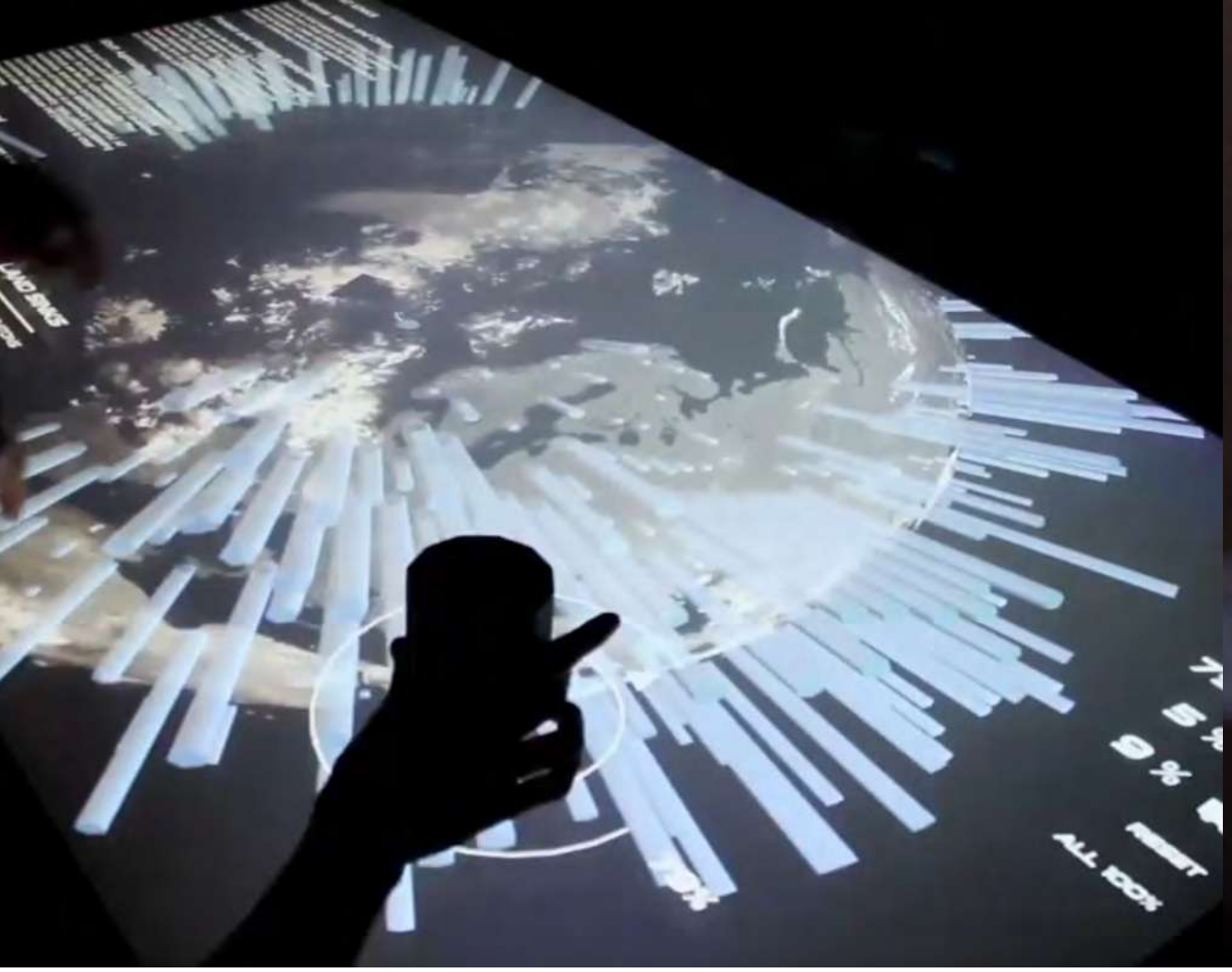
Tangible Interface for Environmental Sciences

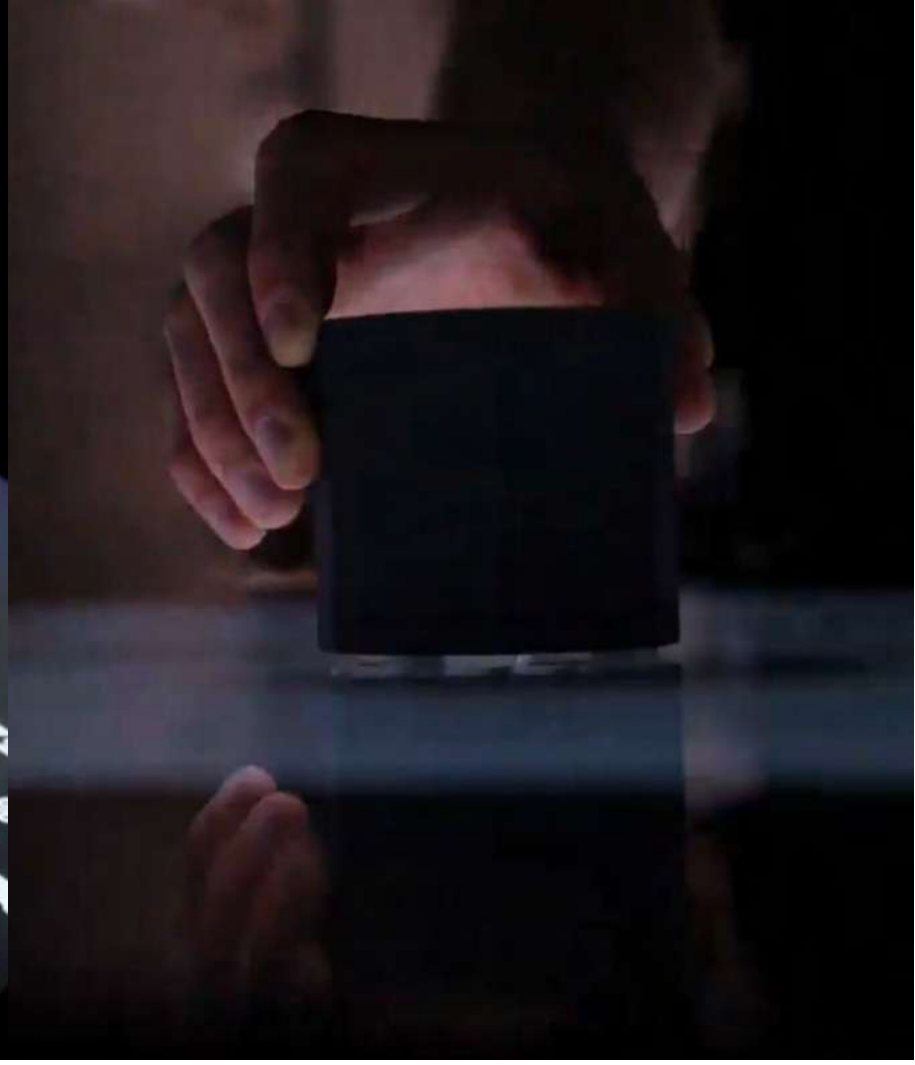
Computer Vision, Tangible Interfaces, Environmental Data, IR Tracking, Point Cloud Projection, GeoTIFF, Human-Data Interaction

GeoData Framework

Tangible Interface for Environmental Sciences

Computer Vision, Tangible Interfaces,
Environmental Data, IR Tracking, Point Cloud
Projection, GeoTIFF, Human-Data Interaction





GeoData Framework

Tangible Interface for Environmental Sciences

Computer Vision, Tangible Interfaces,
Environmental Data, IR Tracking, Point Cloud
Projection, GeoTIFF, Human-Data Interaction