

Mark Hauenstein
Selected Works 2004 - 2013



Indoor Weather Stations

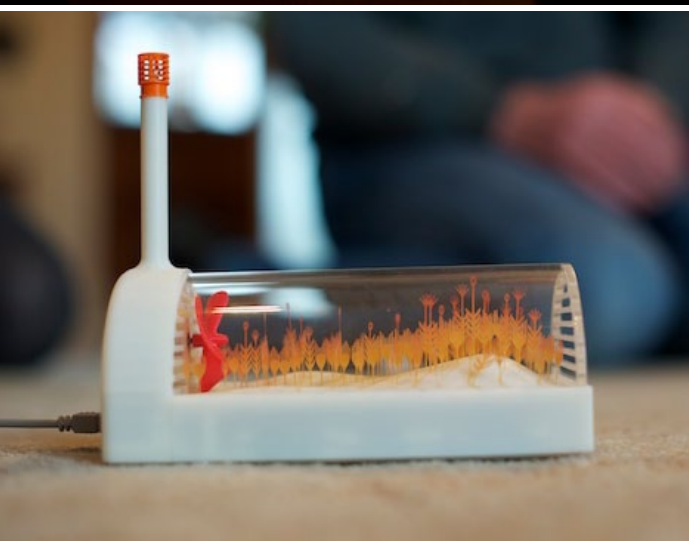
Interaction Research Studio

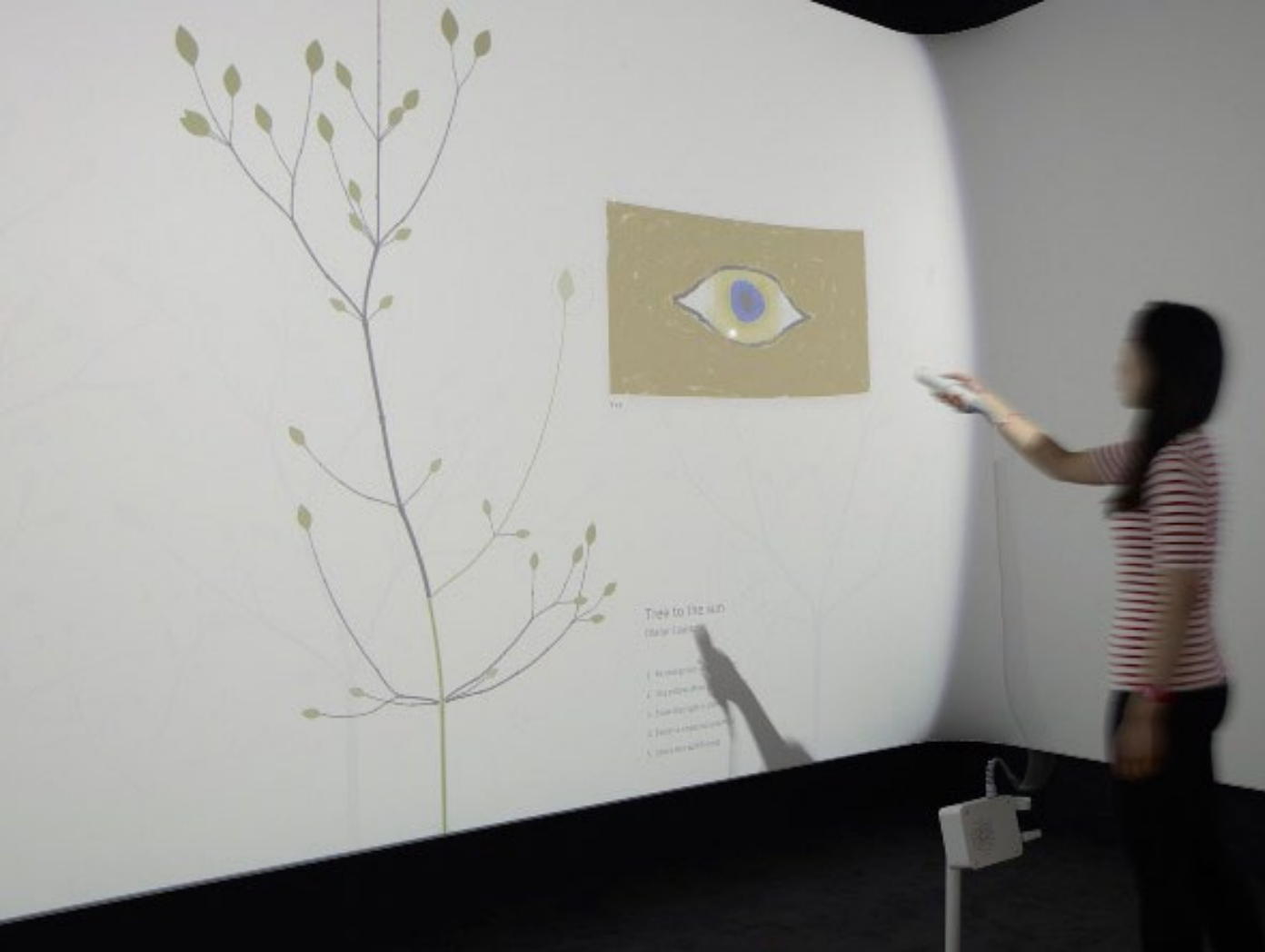
The Indoor Weather Stations are a set of three sensing devices that allow users to explore the microclimate in their home environment.

The Indoor Weather Stations consist of a Light Collector that measures the colour of ambient light, a Wind Tunnel that visualises micro air movements and a Temperature Tape that measures the difference in temperature between two different locations. Each device displays the sensor data in real-time using a unique display mechanism. A 'last day' button enables users to replay the data from the last 24 hours on the device itself and a web-based 'data calendar' displays an archive of all collected data.

The devices were created as part of an ongoing research project called Legible Landscapes (Third Wave HCI) which is conducted by the Interaction Research Studio. We fabricated 60 devices using rapid-prototyping methods and deployed them in a long term field trial to 20 research participants.

Employer	Goldsmiths, University of London
Year	2012 - ongoing
Award	CHI 2013 - Honourable Mention



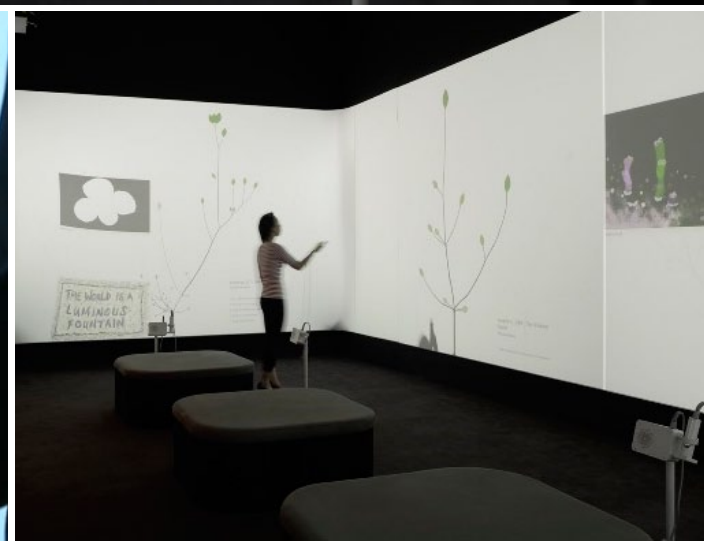


This Exquisite Forrest Google / Tate Modern

'This Exquisite Forest' is an interactive online project by Google Creative Lab which has also been exhibited at Tate Modern as a multi-projection installation. In collaboration with design studio Harmonic Kinetic, I developed a torch-like device which can be used by visitors to browse through a collection of interlinked animations by pointing the device at the leaves of projected trees.

My main responsibility was to come up with an intuitive physical interface and a robust underlying system that can withstand the use by thousands of visitors every day. I developed a bespoke infrared light and computer vision based system with simple calibrating functionality.

Employer	HarmonicKinetic
Client	Google / Tate Modern
Year	2012





Interactive Curtain Mercedes

An interactive kinematic curtain enacting a playful experience of hiding and revealing a showcase vehicle by Mercedes.

The cylindrical curtain is made of 72 shutters that are black on one side and white on the other. The shutters can be rotated programatically. An array of proximity sensors are mounted underneath the shutters in order to open or close the shutters when a visitor approaches or moves away from the car. When no visitor interaction happens for a while then a cycle of shutter motions is played out, creating a mesmerising visual display of cascading black and white stripes.

I researched and implemented the interactive system by developing bespoke PCBs to interface with a large array of sensors and actuators, writing the control software that translates the sensor data into the kinematic motion of the shutters and creating the kinematic motions played out in non-interactive mode.

Employer	Pelonio
Client	Mercedes
Year	2012





Energy Wave Tables KACARE

Three seven meter long wave-shaped tables, each covered in interactive visuals cycling through four main themes of alternative energy – Solar, Wind, Geo-thermal and Atomic.

The installation fills a 27 meter long central hall in the Mishkat Interactive Centre for Atomic and Renewable Energy in Riyadh, Saudi Arabia.

Nine projectors and nine kinect cameras were required to drive an interactive experience where multiple visitors can trigger educational content by touching the table surface and gesturally influence the real-time particle animations that lie at the core of the visual experience.

I worked as part of a multi-disciplinary design team on the concept, design and realisation of the exhibit. I also led a team of developers to build the bespoke software system behind this exhibit using openFrameworks.

Employer	AllofUs Design
Client	KACARE
Year	2011





Atmosphere Science Museum

Atmosphere is an exhibition at the Science Museum on the topic of climate related science. I worked on the central exhibit which plays a crucial role in the overall visual identity of the gallery space.

At the core of the central exhibit is a cycle of 5 multi-user games that provide museum visitors with an overview over the interconnected elements that make up the climate. The results of the gameplay feed into a dynamic representation of the earth's terrain and atmosphere, both expanding as real-time projections across the whole gallery space.

My role in the multi-studio design team was to create with the concepts for interaction and gameplay and led a team of developers to build the multi-touch games and the real-time visualisation software that drives 8 HD projectors covering the gallery floor and 12 additional projectors that bring to life a sculptural screen structure suspended from the ceiling.

Employer	AllofUs Design
Client	Science Museum, London
Year	2010
Award	AAM MUSE Award 2011, Honorable Mention





Light & Space

V&A

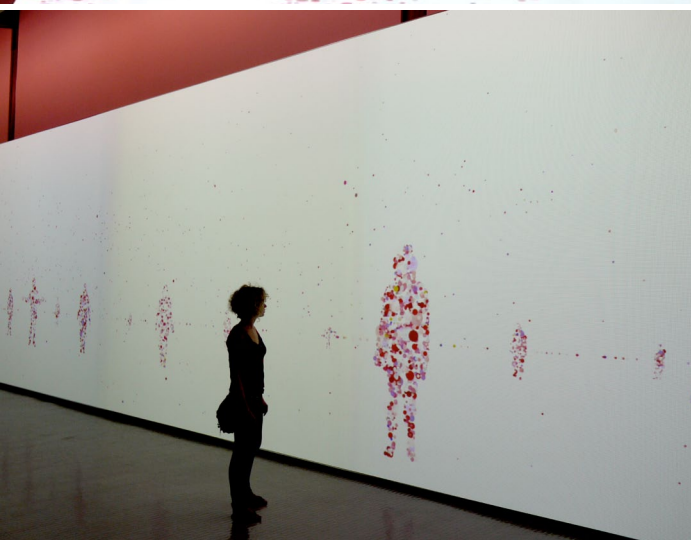
A table top interactive for an exhibition about the Modernist theatre design pioneer Edward Gordon Craig allowing visitors to explore the modelling of space using lights, shadows and tangible objects.

Users can freely move the blocks and figures on the table. The positioning and orientation of the physical blocks are tracked and dynamically translated into a virtual 3D render projected onto a natural canvas screen. Two translucent cylinders control two spotlights on the virtual stage by which users can explore how light and shadow can dramatically change the stage atmosphere.

I created the interactive concept and developed the technology behind this interactive piece, combining computer vision based object recognition, real-time 3D graphics and analog interfaces.

Employer	AllofUs Design
Client	Victoria & Albert Museum
Year	2010





Who Am I Science Museum

Who Am I is a gallery at the Science Museum that scientifically explores the theme of identity.

As a member of a multi-studio design team I worked on the central exhibit which itself consists of three pieces. An interactive attractor that mirrors the silhouettes of people entering the gallery, creating shapes made out of coloured dots. An interactive table that allows multiple visitors to play a series of identity related games and a large scale backdrop projection that visualizes the data collected from the games.

I led a team of developers to create the games and visualisation software. A major achievement was the creation of a modular particle engine that can display graphics and animations solely by way of moving thousands of dots across multiple screens.

Employer	AllofUs Design
Client	Science Museum, London
Year	2009
Award	Design Week Award 2011, Commendation



CTR 360 Interactive Nike

An instore interactive for the launch campaign of the Nike CTR 360 football boot.

A dramatic 3D sequence displayed on a large LCD screen reacts to customers examining a football boot displayed on a pole. By rotating and twisting the physical football boot virtual formations of the boot on the screen mimic the same orientation as the physical boot, highlighting the unique features of different parts of the boot.

I built the gestural sensor interface and the real-time 3D software responding to the sensor data. I also worked closely with a fabricator on the mechanics and construction of the pole.

Employer AllofUs Design

Client Nike

Year 2009



After Xenakis & LeCorbusier Visit London

After Xenakis & LeCorbusier is an interactive public art piece inspired by the collaboration between LeCorbusier and the Modernist composer and architect Xenakis. The piece was installed at the new Spitafield Market as part of the London 'EAST' festival in 2009.

At the core of the piece is an interactive sculpture which takes the form of a concrete cylinder. This sculpture contains a laser measurement device that, through user interaction, acts as a radar-like system mapping out the surrounding space and measuring both the built-environment and the movements and interactions of its inhabitants. In this manner, the activity and life of the architectural space creates an ever-changing musical score which is played out of the cylinder when a user rotates the top plate.

I developed the concept behind this piece and was responsible for researching and implementing the underlying technology and software.

Employer	AllofUs Design
Client	Visit London (Greater London Authority)
Year	2009
Award	Creative Review: The Annual 2010 Shortlisted in 'Interactive & Digital Media'





Digital Ink Marketing Tool Land Securities

A digital presentation tool for a property marketing suite of a major new development on London's Oxford Street.

Inspired by architectural blue prints, we created a set of interactive paper based building maps. By touching hotspots on the maps, related graphics, videos and animations are triggered and displayed on a projection.

I lead the technical realisation of the project and collaborated with Matt Falla, a fellow student at the RCA to develop the wireless conductive-ink based interface.

Employer AllofUs Design

Client Land Securities

Year 2008





Interactive Canvas Microsoft

An interactive exhibit to showcase the creative potential of Microsoft's Expression suite.

Designed to tour Microsoft events around the globe, the Interactive Canvas is a giant guest book that collects the thoughts, comments and ideas of event attendees. Messages are added using an intuitive hand writing interface and then placed into a scrolling landscape displayed on a large video wall. The presence of visitors in front of the video wall triggers the display of messages passing by.

Whilst I worked on the interactive concept as part of a multi-disciplinary design team, I also led a team of technologists to create the graphical software and to build a bespoke sensor system to track the presence and movement of viewers in front of the video wall.



Employer	Allofus Design
Client	Microsoft
Year	2008
Award	Design Week Award - Winner 2009 Digital Design - Information Category

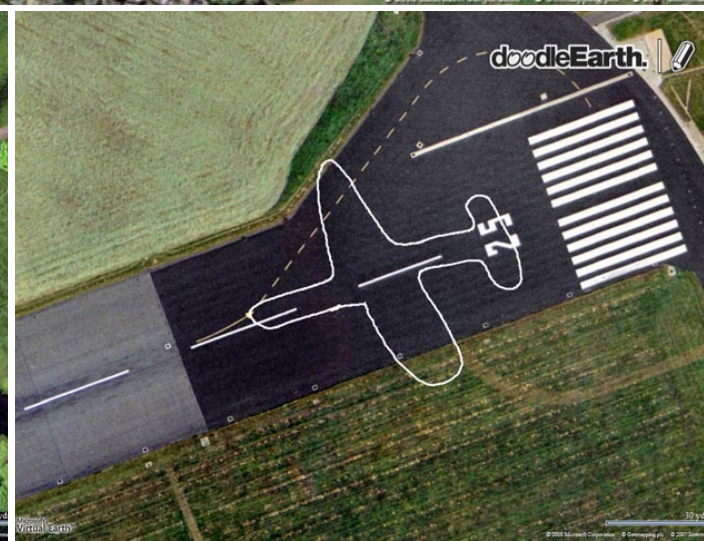


doodleEarth Microsoft

A web app that turns the earth into a giant canvas to doodle on. The interface of the app can solely be controlled using a stylus and stylus related gestures.

The concept of doodleEarth centers around the idea that everyone can doodle with a pen and that people have a natural urge to leave a mark in places that they visit in the world.

I created doodleEarth with a colleague of mine during a 10 day workshop / competition at Microsoft HQ. We managed to build a working prototype despite no prior experience with Microsoft's design tools and won the competition with the other digital agencies.



Employer	AllofUs Design
Client	Microsoft
Year	2007
Award	Microsoft Artist in Residence - Winner 2007



Icestation Antarctica National History Museum

Icestation Antarctica is a touring exhibition that revolves around the activities of scientists working in Antarctica. I created two interactive exhibits for this exhibition.

The first exhibit takes the form of an interactive table-top, presenting visitors with a 3D multiplayer diving game that focuses on the exploration of undersea plants and wildlife. Visitors use an array of touch sensors to control the on screen divers and mimic the behaviour and characteristics of swimming.

The second exhibit takes the form of an arcade-like driving experience in which visitors are asked to collect fallen meteorite samples from the Antarctic snow using a snow mobile.

I programmed the multi-player 3D games in collaboration with a 3D artist and another developer. I also researched and implemented the sensors and electronics involved in the physical interfaces for the exhibits.

Employer	Allofus Design
Client	National History Museum, London
Year	2007





Nature Window NHS

AllofUs were commissioned to create an art installation for Harefield Hospital that would attempt to reduce stress levels in patients awaiting major heart treatment.

Situated in the room where awaiting patients receive their pre-meds, the point in which patient's anxiety levels are at their highest, a local English landscape is projected into a hand-crafted wooden relief. Patients interact and bring the scene to life by pointing the custom air-mouse at key hotspots within the landscape to trigger movement, sound and animations that combine to provide a calming distraction from the nervous anticipation prior to surgery.

As part of a multi-disciplinary design team I worked on the concept of this interactive and developed the software projected onto the wooden relief and implemented the gestural interface.

Employer	AllofUs
Client	NHS RB&H Arts Trust
Year	2006





OiTV

Royal College of Art

OiTV is a television set that occasionally misbehaves. Sometimes it autonomously changes the channels, other times it moves or rotates the image out of its screen. Glitches and lapses in time occur as the playback of the live broadcasted content jumps, slows down or fast-forwards.

This project came out of my research looking into unintentional relationships and curious behaviours between users and devices. My main focus here was the exploration of devices that instigate human emotions like affection and aversion but also creativity and ingenuity through erroneous and comical behaviour.

Created in 2005 whilst studying at the RCA. Exhibited as *Jury Recommended Work* at the *Japan Media Arts Festival 2006*.





Pancam

Royal College of Art

Pancam is a hybrid stillshot and motion camera that creates very long panoramic images by being attached to a moving vehicle.

Similar to a video camera, it records a spatio-temporal sequence of images and stitches them together to create one long static image. Thus a 55 minute Thames boat ride covering a few kilometers can be captured in one static 20m long image.

In order to create a 'coherent' panoramic image the Pancam camera needs to move spatially. Conceptually this is the reversal of Edward Muybridge's pioneering setup of using an array of cameras to capture the motion of a galloping horse. An experiment that contributed to the invention of motion pictures.

Whilst Pancam is mainly a concept for a hypothetical low cost fun camera, it also is a play on the perceptual paradigm shift that comes with the invention of new media and related technologies.

Created in 2004 whilst studying at the RCA and featured in the book *Digital by Design: Crafting Technology for Products and Environments* and *Axis Magazine* vol. 118.





Audioshaker

Royal College of Art

The Audioshaker is a tactile container to capture, shake up and pour out sounds.

Anything sung, spoken, clapped, whistled or played near it is trapped inside, where it takes on an imagined yet tangible physicality. Sounds caught in this void are transformed, given weight and permanence, reacting directly to the shaker's movements, subtle or violent. Shaken sounds have to settle down before becoming still and silent, behaving more like fluid than transient energy.

The linear timescale of sound is broken, a conversation is split into words and mixed up in the shaker, and can be poured out separately, tipped out in a simultaneous splash or added to and shaken up further.

The project explores our perceptual understanding of sound whilst creating a rich, intuitive experience that is purposefully open to interpretation and imagination.

Created in 2004 in collaboration with Tom Jenkins whilst studying at the RCA. Featured in the book *IdN Special 04: The Art of Experimental Interaction Design* and exhibited at *NIME 06, IRCAM / Centre Pompidou, Paris*.

