RAY LC

neuro . tech . art

PROFILE

creative technology and interactive art inspired and supported by multidisciplinary understanding of human behavior.

EDUCATION

2017 - 2018 | Parsons School of Design
Design Technology and Fine Arts, MFA 2018

2013 - 2017 | Tokyo MODE Gakuen (東京モード学園)
Fashion Design and Technology, MPS 2017

2000 - 2003 | University of California, Berkeley
Electrical Engineering and Computer Sciences, BS 2003

EXHIBITION / AWARDS

2019 "Machine Gaze" exhibition.
NYSCI, curator Elizabeth Slagus.
2018 "FLORA" network intelligence.
Java Studios NYC, curator J. Crouse.
2018 "Artistic Intelligence" exhibition.
ISCMA City University of Hong Kong.
2018 "gARment" fashion experience.
NYC Media Lab '18, Justin Hendrix.
2018 Adobe Design Achievement award.
2018 Microsoft Imagine Cup finalist.
VRbal: VR training for speech therapy.
2017 "Secret Lives of Machines" exhibition.
Major Major Dimension show, Parsons.
2017 Best Presentation award.
Serendicity: Verizon AI Design Jam.
2016 Falling Walls speaker.
On the mystery of creation, PTSD.
2015 "3rd Skin" fashion performance.
Tokyo Golden Egg, curator V. Ruijters.
2014 "ダンス目なし" photo exhibit.
12th 1_Wall show, curator R. Takano.
2014 "Kapayaan" philippines before haiyan.
Bohol tourism office, curator Cabarrus.
2013 "Species Descent" mixed media.
Kiyoshi Saito Museum, curator Koreda.

RESEARCH / DESIGN

PARSONS SCHOOL OF DESIGN | 2017 - 2019
Design: 3D poetry installation (Jess Irish), smart objects shy lamp (Carla Diana).

LOOMIA CREATOR LAB | 2017 - 2018
Design: smart textile clothing for gesture-based 3D dance environ interaction.

WEILL CORNELL MEDICAL SCHOOL | 2017 - 2018
Research: wireless IR system for cortex-wide imaging behavior (Connor Liston lab).

RIKEN BRAIN SCIENCE INSTITUTE | 2013 - 2016
Research: rewards are necessary to extinguish PTSD stress (Josh Johansen lab).

UNIVERSITY OF CALIFORNIA LOS ANGELES | 2007 - 2012
Research: modeling inhibitory movement circuits in cerebellum (Tom Otis lab).

PALO ALTO RESEARCH CENTER | 2003 - 2005
Research: particle filter for predicting human motion in clutter (David Fleet lab).

UC BERKLEY GROUP FOR USER INTERFACE RESEARCH | 2002 - 2005
Design: gesture-recognition post-it wall interface in web design (James Landay).

GRANTS / RESIDENCY

2019 NYSCI New York Hall of Science designer in residence: AI edu at Queens Museum.
2018 Brooklyn Fashion Design Accelerator residency: Tek Tiles smart textiles design.
2018 Yahoo-Verizon Sports-Media-Tech startup grant: 5G stadium app for AR views.
2018 Verizon Connected Futures III grant: AI-based VR for emotional training for autism.
2017 Process Space LMCC Governor's Island: gesture recognition in dance music improv.
2015 JSPS Kakenhi Wakate B grant-in-aid (科研費若手) for young scientists 25871125.
2013 1_Wall at Guardian Garden residency: communication of dance "without eyes."
2012 BankArt Studio Yokohama residency: mirroring human implicit acts with wearables.
2011 NSF STEM DIGSSS training grant: computational neuro Suzhou Cold Spring Harbor.
2009 NIH Neural Microcircuits grant: voltage sensitive dyes for circuit dissection UCLA.

CONTACT

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R A Y L C

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MEDIA

mixed media scupture
interactive installation
affective computing
data visualization
fashion technology
nonlinear narratives

I AM NOT

just an artist, nor just a scientist, nor just a designer, nor just an engineer, despite working in each as my career. I am at the junction of human understanding, technology, and creative practice. I create sculptural works and experiences amongst humans and devices that enable empathetic communication, from the multidisciplinary perspectives of neuroscience, installation art, design, and storytelling.

CURRENT TOPIC

I create human-machine environments with embedded intelligence to allow our world to talk to us, so we can empathize deeply with others and with ourselves.

CURRENT WORK

We are always talking about ourselves, thinking about ourselves, taking pictures of ourselves. Using EEG technology to illustrate our obsession about ourselves, I constructed a two-way mirror based on Moritz Wehrmann's Alter Ego installation but made it interactive based on attention signals from NeuroSky headsets. The more we talk and think about ourselves the more we see ourselves, and others see us.
[Look at Me, Think of Me]

Machines are becoming specialized and hard to understand. Instead of simplifying in the digital realm, I adapt the digital to humans by creating smart devices and spaces that evoke emotional reactions. They can be caring, flaky, trusty, nagging, attention-craving, occasionally angry, and mildly jealous. A harmonious future involves machines that are part of human ecology instead of opposing it.
[Secret Lives of Machines]

Machine Learning (ML) has been employed to extend human abilities in image and speech processing. Instead of using ML for data mining, I instead take ML agents part of human ecosystems, applying ML to unexpected forms of interactions that subvert what we think machines ought to do, creating situations where ML goes beyond human expectation of what machine intelligence should mean.
[AI: Artistic Intelligence]

Fashion shows of the future will be more than about clothing, but rather interactive experiences that animate clothing, project sentiment, and narrate 4D stories. Working with fashion designers and audiences, we created an AR and projected experience that narrates the creation and destruction of the universe in a crinoline dress.
[gARment fashion]

Ray LC Portfolio Intro.

1. "Look at Me, Think of Me." (2019) I used human-machine interactions as a model to construct a human-human interface using a two-way mirror and EEG brainwave readers. The side of the person with higher attention brain waves is lit up so that both sides will see only that side's face. The more we pay attention by concentrating, the more we see ourselves, and the more the other side sees us. We seek attention by others seeing us, and by seeing ourselves, and the brain-machine interface narrates this human interaction for us. (https://www.youtube.com/watch?v=nmOsmr_ct6E and https://recfreq.wordpress.com/portfolio/look-at-me-think-of-me/)

2. "Odyssey" and "Secret Lives of Machines." (2017) For the Dimension show at Parsons, I built lamps and micromachines that track human faces using computer vision, but turn away in shyness or make their own performances when the audience gets close to them. I made a chatbot that replies moodily, as if it's talking to someone else. I created a lamp that uses computer vision to follow human faces around, but when audiences get close it turns away in shyness. This simple interaction makes the lamp "cute," "emotional," and "human-like." Finally I made a stage for a group of machines who follow their own agenda interacting with human faces. When humans are not looking they make up their own stories to enact, but when we stare at them they "look" at us inquisitively. A group of machine enacts a story that depends on how we see them. (http://www.raylc.org/machines/machines.html)

3. "FLORA." (2018) For an exhibit at Brooklyn's Java Studios, we created a Unity-based video projection that spouts TV stream to CRT TVs like a junkyard jumbotron, a narrative journey that can be controlled using an analog remote. Flora narrates the evolution of digital technology as a process of mapping ourselves onto our devices, as the devices that populate our past are evolving as an artifact of nature, like the forest in which they inhabit. (https://recfreq.wordpress.com/portfolio/flora-network-intelligence/)

4. "Artistic Intelligence." (2018) For an exhibit at Columbia University Macy Gallery and the City University of Hong Kong, I made 3 artificially intelligent sculptures in plaster that appear to sit in a museum, but really when audiences look closer, they exhibit creative activities. One follows the audience's hand movements interactively in an attempt to imitate, another talks back irreverently by replacing words spoken to it, and one follows the audience's face using LED matrix that lights up that particular side of the face. What makes "smart" sculpture smart is not their algorithms but rather their unexpected nature contrary to human expectations. (https://recfreq.wordpress.com/portfolio/ai-artistic-intelligence/ and http://www.raylc.org/archive/Ray_ArtMachinesPresentTalkCut.mp3)

5. My scientific work includes a first-author paper in Nature Communications (2018) with Joshua Johansen on the way Dopamine drives learning of extinction of fear responses that has an Altmetric influence index of 133 (98 percentile), and which I have been translating into a VR solution for stress and anxiety with a team of speech therapy, education, and AI engineering experts (https://www.nature.com/articles/s41467-018-04784-7 and

http://www.raylc.org/vrbal/vrbal.html). My other papers include one on excitatory GAGA receptors in a circuit for programming movements with Tom Otis at UCLA (http://www.raylc.org/gaba/LuoDellalOtis_GABAExcitationModelConduction.pdf), and more relevant to art, using voltage sensing to label cells and their activities using fluorescent pairs (http://www.raylc.org/voltage/BradleyLuoOtis_DPAVoltageSensingCerebellum.pdf). For visual reference, see this page: http://www.raylc.org/archive01.html

6. My machine learning artistic contributions include experiments in using convolutional neural networks and GANs to classify and generate patterns from a data set of surveillance images and EEG data treated as audio waves (https://recfreq.wordpress.com/portfolio/classifiers-and-generators-explorations-in-ml/). My machine learning scientific contributions include those using high dimensional probabilistic sampling to track humans in complex scenes (with David Fleet of PARC) that I'm using for my exhibition at NYSCI as Designer in Residence scheduled for April 2019, to do real time pose analysis for the projection mapping installation "Machine Gaze" (http://www.raylc.org/tracking/Ray_TrackingPosterPaper.pdf) and using paired Bayesian networks to infer time-specific category learning, working with Michael I. Jordan at UC Berkeley (http://www.raylc.org/semantic/Ray_SemanticBayesianModels.pdf). More info about my science is here: http://www.raylc.org/archive01.html

7. "gARment." (2017) As a resident at Brooklyn Fashion Design BFDA, I built smart sensors in textile that works with computer vision to detect movement, allowing audiences to show emotion using gestures instead of words. We constructed an AR dress and 3-projection system that tell the story of the universe as the audience goes around the fashion show experience. (https://recfreq.wordpress.com/portfolio/garment-augmented-reality-fashion-show/)

8. "The 3rd Skin." For the underground gallery Tokyo Golden Egg in Kabukicho, we created an interdisciplinary performance where artists painted on clothing that I designed to match the concepts of religious bliss, oceanic wave motion, and bestriality. The performance shows that we become the skin we create for ourselves, and that skin can be pushed onto us by others. (https://recfreq.wordpress.com/portfolio/3rd-skin-a-fashion-performance/)

Ray LC Recent References.

Prof. Yuchen Zhang, CEO of Wearable Media, and Professor, Parsons (research).
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Prof. Carla Diana, Director of 4D Design at Cranbrook Academy , Parsons (research).
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