# Josh Urban Davis

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## RESEARCH INTERESTS

• Novel Sensor Design • Generative Design • Ubiquitous Computing • Human-Computer Interactions • Post-Touch-Screen Interactive Devices • Machine Learning • Biofeedback • Virtual Reality • Human-AI Interaction • Accessibility • Enabling Technologies

## EDUCATION AND TRAINING

**Dartmouth College,** Hanover, NH. 2018-Present
Ph.D in Computer Science
Department of Computer Science Human Computer Interaction Lab
Advisors: Prof. Xing-Dong Yang

**Dartmouth College,** Hanover, NH. 2016-2018
M.S. in Computer Science and Digital Arts
Bregman Media Labs and Department of Computer Science
Advisors: Prof. Michael Casey, Prof. Xing-Dong Yang, Prof. Grace Leslie

**University of Houston,** Houston, TX. 2016
B.S. Computer Science
B.F.A. Studio Arts
Cum Laude
Areas of Concentration: Natural Language Processing, Machine Learning, New Media, Interactive Installation

**A note on publication venues:** in my primary area of research, Human Computer Interaction, the ACM Conference on Human Factors in Computing Systems (CHI) is considered one of the best forums for dissemination of research results and covers the broad spectrum of research in Human Computer Interaction. The ACM Symposium on User Interface Software and Technology (UIST) is of similar quality, but is focused on a particular sub-area of the field, namely interactive techniques and devices. Papers in these conferences are refereed as full papers, and have an acceptance rate of around 15-25% each year.

## MANUSCRIPTS IN PREPARATION

1. **Josh Urban Davis,** Fraser Anderson, Merten Stroezel, Tovi Grossman, George Fitzmaurice "Calliope: Supporting Human-AI Creative Collaboration in Virtual Enviornments"
2. **Josh Urban Davis,** Yizhe Zu, Xing-Dong Yang. "PantoTouch: Enabling Precision Gestural Input on Smart Watches Using a Pantograph"
3. Jun Gong, Teddy Sayed, **Josh Urban Davis**, Songlin Xu, Yao Zou, Yuke Wang, Xin Lui, Da-Yuan Huang, Xing-Dong Yang. " SpringBoard: A Haptic Feedback System for Breadboards Using Virtual Springs."

**PEER-REVIEWED PROCEEDINGS**

1. **Josh Urban Davis**, Te-Yen Wu, Bo Shi, Hanyi Lu, Athina Panotopoulou, Emily Whiting, Xing-Dong Yang. "TangibleCircuits: An Interactive 3D Printed Circuit Education Tool for People with Visual Impairments". *Proceedings of Human Factors in Computing (CHI).* Honolulu, Hawaii. 2020. [Acceptance Rate: 24.31%] [Best Paper: Top 5%] [Neukom Institute Award for Outstanding Graduate Research]

2. **Josh Urban Davis**, Jun Gong, Yunxin Sun, Parmit Chilana, Xing-Dong Yang. "CircuitStyle: A System for Peripherally Reinforcing Best Practices in Hardware Computing". *Proceedings of User Interfaces Software Technology (UIST)* New Orleans, LA. 2019. [Acceptance Rate: 20.6%]

3. **Josh Urban Davis**. "IllumiWear: A Bendable Interactive Fiber-Optic eTextile for Audio and Visual Interactions." *Proceedings of New Interfaces in Musical Expression (NIME).* Porto Alegre, Brazil. 2019. [Acceptance Rate: 31%]

4. Jun Gong, Xin Yang, Teddy Sayed, **Josh Urban Davis**, Xing-Dong Yang. "Indutivo: Contact-Based Object-Driven Interactions with Inductive Sensing." *Proceedings of User Interface Software Technology (UIST)*, Berlin, Germany. 2018. [Acceptance Rate: 21%]

5. **Josh Urban Davis.** "Postcards from the Electric Void: Interactive Generation of Animations, Images, and Sound Using Adversarial Learning". *Second Workshop on Machine Learning for Creativity and Design, Neuro Information Systems Processing (NeruIPS).* Montreal, QC. 2018. [Acceptance Rate: 21%]

6. **Josh Urban Davis.** "The Gender Generator: Towards a Brain-Computer Interface for Evocation of Gender Dysphoria Symptoms." *Proceedings of the 8th Annual Workshop on Creative Applications of Brain-Computer Interfacing, Human Factors in Computing (CHI).* Montreal, QC. 2018. [Acceptance Rate: 27%]

7. Fatih Akdag, **Josh Urban Davis**, Christoph Eick. "A Computational Framework for Finding Interestingness Hotspots in Large Spatio-Temporal Grids." *Proceedings of the 3rd ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data, BigSpatial* 2014.

**RESEARCH EXPERIENCE**

**Autodesk Research, User Interface Research Intern**
June 2020 – September 2020

☐ Deployed studies examining the accessibility of wearables and personal protective equipment masks for people with special needs

- Submitted findings from accessibility study for publication at ACM SIGACCESS
- Prototyped a prototype interactive mask which uses a commodity smartphone to enable live translation, captions, and expressivity
- Evaluated prototype in study and reported results intended to be submitted for publication to Human Factors in Computing (CHI)
- Facilitated partnerships between the research team and commercial interests in order to patent and develop prototype into product

**Autodesk Research, User Interface Research Intern**
January 2020 – May 2020

- Designed interfaces for virtual reality which facilitated fluid human-ai interaction
- Developed and evaluated novel interaction methods intended in publication (*User Interface Software Technology* **UIST**)
- Prototyped and deployed interactive generative design systems using generative adversarial networks for virtual reality

**XDiscovery Lab, Dartmouth College, Graduate Student Researcher**
March 2018 - Present

- Prototyped post-touch screen devices and novel sensing techniques
- Developed and evaluated novel interaction methods resulting in publication (*Human Factors in Computing* **CHI** *and User Interface Software Technology* **UIST**)
- Collaborated with Kelley Center for the blind to implement enabling technologies for visually disabled users.

**Bregmann Media Labs, Media Arts and Sciences Researcher**
February 2017 – February 2018

- Analyzed fMRI data for signal reconstruction of auditory stimuli
- Developed novel brain-computer interaction methods for creating paintings and music
- Led experiment team in collection of EEG and user experience data
- Presented and demonstrated brain-computer interaction techniques at multiple venues (*Human Factors in Computing* **CHI** *and New Interfaces for Musical Expression* **NIME***)*

**DALI Lab, Developer II**
August 2016 – February 2017

- Led team of designers and developers to create virtual reality and biofeedback systems
- Collaborated with NASA and the Space Medicine Laboratory at Geisel Medical School to create virtual reality content for space flights
- Prototyped biofeedback systems for virtual reality to provide assistive health and well-being
- Developed and edited 360 video and 3D modeled VR environments with Unity and Adobe Creative Suite

## BIO

Josh Urban Davis is a research based artist and engineer whose practice spans sculpture, filmmaking, projection, and site-specific performance and installations. He holds a BFA in studio art and BS in computer science as well as an MS in computer sciences and digital arts. Recent projects draw inspiration from speculative fiction to explore the relationship between emerging technologies, social relationships, and identity. Explicitly engaged with the very technologies that he critiques, Davis's work viscerally confronts the viewer, inviting contemplation of the role new technologies play in mediating and reimaging our understanding of reality, corporality, and identity. His work has been exhibited at D!iverseWorks, the Blaffer Art Museum, Art League, Houston, Black Visual Arts Center, Alternatives, Chandler Gallery, and others. They currently live in Hanover, NH with their cat, Nocturne, where they are pursuing a PhD in computer sciences at Dartmouth.

## EXHIBITIONS AND PERFORMANCES

An Archive of Feeling, Chandler Gallery, Randolph,VT. 2019
New Century/New Materials, Heritage Gallery at Alternatives, Whitinsville, MA.  2019
IllumiWear: Concert for Fabric and Light, NIME, Puerto Alegre, Brazil. 2019
Science and Sonnets: Creative Turing Test, Pint of Science, Houston, TX. 2019
Lion's Den, BETA Theatre and DinoLion Productions, (Creative Technologist Collaborator) Houston, TX. 2019

Stabat Mater: For Voice and Electronics, SHIFT Festival, (Electronics and Visuals Collaborator) Hanover, NH. 2018
Postcards from the Electric Void, Artificial Intelligence and Art, Montreal, QC. 2018

Synapstraction, Digital Arts Expo, Black Visual Arts Center, Hanover, NH. 2017
Mixtape, Hardy and Nance Studios, Houston, TX. 2017

RedHoust, BETA Theatre and DinoLion Productions, (Script Writing Collaborator) Houston, TX. 2016

Drawing the Perfect Line, Box 13 Artspace, Lonestar Explosion Performance Art Biennale. Houston, TX. (Curated by Julia Wallace and Jonatan Lopez). 2015.
The Big Machine, El Rincoln Sociale. Houston, TX 2015

Submission, Silver Street Studios. Houston, TX. 2014

Cohesion, Gallery M Squared, Houston TX. 2012
A Taste of Red Ink, G Gallery, Houston TX. 2012

The Big Show, Lawndale Contemporary Arts Center, Houston, TX. **Runner-up: Best in Show** (Juror: Larissa Harris, Curator, Queens Museum of Art, New York, NY) 2011
State Fair, DiverseWorks Alternative Art Space, Houston, TX. 2011
(Juror: Diane Barber, Executive Director, DiverseWorks Alternative Art
Space, Houston, TX)
Luck of the Draw, DiverseWorks Alternative Art Space, Houston TX. 2011
East Austin Studio Tour, Home for Misfit Ideas, Austin, TX. 2011
(Juror: Lizzie Pelz, Curator, Home for Misfit Ideas, Austin, TX)
Ekphrastic: Dionesia, University of Houston Honors College, Houston TX. 2011

**PUBLICITY**
"Janus Turned" poem, "Vitrine #6", and "A Plea for Dorian Gray" images, Glass Mountain Literary Magazine 20 Feb. 2012.
"The Buried Orchestra" cover image, The Aletheia Literary Magazine 21 Feb. 2012.
Interview with Aetheia Literary Magazine Online. 14 Feb. 2012
Klaasmeyer, Kelly. "A State Affair." Houston Press 12 Oct. 2011.
Britt, Douglas. "DiverseWorks' State Fair Offers Alternative to Art Fairs." The Houston Chronicle 7 Sept. 2011.
Hancock, Hank. "Fair Game." Art + Culture 11 Sept. 2011.
"Op 1 No 5" image, The Aletheia Literary Magazine 15 Sept. 2011.

**REFERENCES**

**Prof. Xing-Dong Yang**
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**Prof. Lorie Loeb**
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