

Scott Penman

scottpenman@gmail.com
Somerville, MA 02144

SUMMARY

Multi-disciplinary designer and researcher interested in architecture, emerging tech, and computational models of human creativity. After training as an architect in Mississippi and working on nationally-recognized projects in Arkansas, I came to MIT to pursue a career in computational design and emerging tech research. In my current role with the Sasaki Strategies team, I work with data analysts, product managers, and software developers to create computational tools for a variety of the firm's disciplines, conduct research into emerging technology, and help project teams implement computational design into their workflows.

CURRENT POSITIONS

Watertown, MA **Sasaki**

2020 - present **Design Technologist**

Creating computational design workflows for project teams in various design disciplines (architecture, landscape architecture, urban design)

Working alongside product manager and developers to deliver high quality tools that elevate design thinking, generate new ideas, and encourage designers to become self-sufficient

Centralizing, streamlining, and expanding computational design resources and knowledge

Conducting ongoing research into emerging technology in order to stay on top of recent trends and find ways to apply to project work

Boston, MA **Boston Architectural College**

2019 - present **Instructor for *ARC3306***

Second Year Architectural Design Studio focused on the design of a mixed-use transportation hub on the Boston waterfront, with a focus on precedent analysis, site analysis, diagramming, and research as a generative tool

EDUCATION

Cambridge, MA **Massachusetts Institute of Technology**

2015 - 2018 Master of Science in Architecture Studies in Design + Computation
Master of Science in Electrical Engineering and Computer Science

Starkville, MS **Mississippi State University**

2008 - 2013 Bachelor of Architecture
Summa Cum Laude

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RESEARCH EXPERIENCE

- Cambridge, MA **MIT Design Lab**
2019 - present **Research Associate**
Conducted primary and secondary research, including ethnographic research and data collection, emerging technology research, and UI + UX research

Led multidisciplinary teams in design projects, incorporating project visioning and roadmapping, design iteration, rapid prototyping, computational design workflows, and final deliverable fabrication

Coordinated and managed lab projects, including project publication, report writing, project presentation, workshops, hackathons, and communication with project sponsors
- Cambridge, MA **Massachusetts Institute of Technology**
2017 **Research Assistant**
Collected, reviewed, and organized secondary research on topics related to temporality and computational making

Professor: Terry Knight
- Starkville, MS **Mississippi State University**
2010 **Research Assistant**
Initiated and edited the first edition of *BARNworks*, an annual publication of student work

Professor: Ernest Ng
- Seattle, WA **Gensler**
2012 **Computational Design Intern**
Conducted and presented self-guided research on digital design, HCI, and gestural modeling

Project lead: Susana Covarrubias
- Starkville, MS **MSU Carl Small Town Center (CSTC)**
2011-2012 **Intern**
Initiated research project titled *Rural Sustainability*, a study of small towns in Mississippi

Project lead: John Poros
- Jackson, MS **MSU Jackson Community Design Center (JCDC)**
2010 **Intern**
Conducted research into urban development around the Jackson-Metro area

Project lead: Whitney Grant Swanson

SELECTED RESEARCH PROJECTS

- Design Lab **Research on Emerging Tech Trends**
2018 - 2019 **Bocconi University**
Research Associate
Yearly research report on emerging tech trends

Assisted with secondary research into emerging tech trends, organization of trends into overall categories, and final report writing

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SELECTED RESEARCH PROJECTS, CONT'D

Design Lab **Adaptive Dynamics**

2019 *PUMA*

Research Associate, Project Lead

Research project designing future visions and prototypes for adaptive footwear

Led the team in charge of the computational design, FEA simulation, and production optimization of an auxetic-based structure for use in a manufacturable product

Led the team in charge of the development of a low-cost pressure-measuring and -mapping system for use in the design of new footwear products

Assisted with the development of an adaptive material-based solution for a running shoe

Conducted early-stage material and structure research for use in various projects

Organized and mapped previous project materials in order to create roadmaps for future work

Created frequent project updates and presentations, hosted in-person workshops with stakeholders, and acted as point person for client communication

Design Lab **Connected Lighting for a Caring City**

2018 - 2019 *Signify (formerly Philips Lighting)*

Research Associate

Research project designing a future vision for an ambient intelligent agent that provides customized lighting solutions to users in urban environments

Assisted with secondary research into emerging tech trends, primary research on user values and experiences related to light and urban environments, value mapping exercises, and development of personas for use case scenarios, and development of experience scenarios

Assisted with initial seed concept brainstorming, initial design of ambient intelligent agent, development of agent touchpoints and data flow, and overall project synthesis and final report publication

Created project updates and presentations, hosted in-person workshops with stakeholders, and acted as point person for client communication

**published in Future Technologies Conference 2019*

**poster presentation in Human-Computer Interaction International 2019*

Design Lab **Augmented Tailor**

2018 *Luxury Fashion Brand (NDA)*

Research Associate

Research project designing a prototypical digitally-augmented wooden table for use in the artisanal tailoring process

Assisted with the design, shipment, and on-site installation of the augmented table, including both analog components (traditional woodworking) and digital components (projection, microcontroller accessories)

Design Lab **Millennial Home Experience**

2018 *Electronics Company (NDA)*

Research Associate

Research project exploring the values of the Millennial generation around the topics of food, safety, and audio

Conducted initial project roadmapping, secondary research into emerging tech trends, primary research (including user interviews), research distillation and value mapping exercises, and final report writing

Design Lab **Envisioning the Future Aquarium**

2018 *New England Aquarium*

Research Associate

Research project creating 50-year design visions and prototypical experiences for the New England Aquarium

Hosted one-week workshop with students, collected design visions and prototypes into research report, synthesized workshop results into framework for project development

Acted as communication point person between Design Lab, MIT Media Lab, and New England Aquarium

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SELECTED RESEARCH PROJECTS, CONT'D

Design Lab **Advanced Safety Devices**

2017 *Eni*

Research Associate

Research project designing autonomous monitoring and safety equipment for use by industrial workers in factory settings

Collected secondary research on tech components for use in an autonomous drone

MIT **Ludus Ex Machina: Toward Computational Play**

2015 - 2018 Thesis research

Master's thesis investigating how to implement playful design techniques in an autonomous computational drawing machine

Developed implementation framework and proof-of-concept drawing machine prototype

**published and presented in ACADIA 2017: Disciplines and Disruptions*

**excerpts published and virtually presented in Design Research Society (DRS) 2018: Catalyst*

**excerpts published in Journal of Design Science (JoDS) 2019*

MSU **Digital Play**

2012 - 2013 Capstone project research

Undergraduate thesis exploring role of playfulness within the creative design process

Collected secondary research on the topic of play, developed definition of play and suggestions for implementation in digital environments

Gensler Seattle **HCI + Gestural Modeling**

2012 Self-guided research

Exploratory research into the role of human-computer interaction (specifically, gestural modeling) in the design process

Developed custom implementations of basic gesture-based modeling using webcams

MSU Carl Small Town Center **Rural Sustainability**

2011 - 2012 Intern

Research project investigating the health and wellness of small towns in Mississippi according to a triple bottom line: social, environmental/ecological, and financial sustainability

Conducted secondary research on triple bottom line metrics and primary research in several small towns around Mississippi, developed measurement system and graphic representation for sustainability analysis, developed presentation materials for project publication

**presented in Design in Action conference, Philadelphia, PA 2011*

**presented in MSU Undergraduate Research Symposium, Starkville, MS 2011*

**received ARCCI King Student Medal, Starkville, MS 2012*

PEER-REVIEWED PUBLICATIONS

- 2019 Pavlovic, Milica, Sotirios Kotsopoulos, Yihyun Lim, Scott Penman, Sara Colombo, and Federico Casalegno. 2020. "Determining a Framework for the Generation and Evaluation of Ambient Intelligent Agent System Designs." In Proceedings of the Future Technologies Conference (FTC) 2019, edited by Kohei Arai, Rahul Bhatia, and Supriya Kapoor, 1069:318-33. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-32520-6_26.

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PEER-REVIEWED PUBLICATIONS, CONT'D

- 2019 Leon, Kimberly, Will Walker, Yihyun Lim, Scott Penman, Sara Colombo, and Federico Casalegno. 2019. "*Tangible Map: Designing and Assessing Spatial Information Retrieval Through a Tactile Interface.*" In Human-Computer Interaction. Design Practice in Contemporary Societies, edited by Masaaki Kurosu, 11568:329–40. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-22636-7_24.
- 2019 Penman, Scott, Sara Colombo, Milica Pavlovic, Yihyun Lim, and Federico Casalegno. 2019. "*Designing Value-Centric Aml: Building a Vision for a Caring AI Using Ambient Intelligent Systems.*" In HCI International 2019 - Posters, edited by Constantine Stephanidis, 1033:499–506. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-23528-4_68.
- 2018 Penman, Scott. 2018. "*Drawing to See / Drawn to Seeing: Multimodal Reinterpretation in an Autonomous Drawing Machine.*" In Proceedings of DRS2018, 4:1530–46. London: Design Research Society.
- 2017 Penman, Scott. 2017. "*Toward Computational Play.*" In Proceedings of the 37th Annual Conference of the Association for Computer Aided Design in Architecture, 482–91. Acadia Publishing Company.

JOURNAL ARTICLES

- 2019 Penman, Scott. 2019. "*Gaming the System: Modeling Play in Creative Design.*" Journal of Design and Science, March. <https://jods.mitpress.mit.edu/pub/014suqrf>.

PUBLICATION CONTRIBUTIONS

- 2018 Knight, Terry. "Craft, Performance, and Grammars." In Computational Studies on Cultural Variation and Heredity, edited by Ji-Hyun Lee, 205–24. Singapore: Springer Singapore, 2018. https://doi.org/10.1007/978-981-10-8189-7_16.
Digitized shape grammar drawings and coordinated with publisher

CONFERENCES HOSTED

- Cambridge, MA **Design and Semantics of Form and Movement (DeSForM) XI: Beyond Intelligence**
- 2019 International conference hosted by Design Lab on the implications for design from emerging tech
Moderator for panel discussion, *Beyond Digital: Designing with Living Things*
Chair for paper session, *Interacting with Urban Intelligences*
Chair for paper session, *Designing with Humans, Machine Intelligence, and Data*
Extensively involved in conference preparation, organization, and setup, including signage and marketing material design and production, website design, and publication of proceedings
- Cambridge, MA **Tingling the Senses Hackathon**
- 2018 MIT-wide hackathon hosted by Design Lab on sensory experience
Fabrication assistant
Project juror
Extensively involved in hackathon preparation, organization, and setup, including signage and marketing material design and production

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PUBLICATION EXPERIENCE

- Design Lab **Proceedings of DeSForM XI: Beyond Intelligence**
2019 Printing coordinator
Published proceedings for DeSForM XI: Beyond Intelligence conference
- modus studio **modus works 13-18** [in progress]
2018 - 2019 Editor
Follow-up monograph of five years of architectural work of *modus studio*
- Design Lab **Emerging Technologies for Intelligent Communication Project Report**
2019 Editor
Comprehensive three-volume report of secondary research and workshop presentations
- Design Lab **Millennial Home Experience Project Report**
2018 Editor
Comprehensive four-volume report of secondary and primary research, mapping exercises, workshop activities, and subsequent ideation and synthesis work
- Design Lab **Envisioning the Future Aquarium Project Report**
2018 Editor
Comprehensive report of workshop activities and subsequent ideation and synthesis work
- Safdie Architects **Safdie T5 Submittal**
2016 - 2017 Overall coordinator
Multi-volume, 50,000+ printed page submittal for Changi Airport Terminal 5 project proposal
- modus studio **modus works 08-13**
2013 Assistant Editor
Monograph of the first five years of architectural work of *modus studio*
- MSU School of Architecture **BARNworks 10|11**
2011 Editor
Yearly publication of all five years of student work in the Mississippi State University School of Architecture
- MSU School of Architecture **BARNworks 09|10**
2010 Assistant Editor
Yearly publication of all five years of student work in the Mississippi State University School of Architecture
**received CAAD Undergraduate Student Research Award*

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TEACHING EXPERIENCE

Boston, MA **Boston Architectural College**

Fall 2019 - present Instructor for *ARC3306*
Second Year Design Studio focused on the design of a mixed-use transportation hub on the Boston waterfront

Cambridge, MA **Massachusetts Institute of Technology**

Spring 2017 Research Assistant
Prepared and packaged course material for Visual Computing II, an elective course on the use of computational formalisms in the design process
Professor: Terry Knight

Spring 2016 Teaching Assistant for *Design Across Scales*
Trans-disciplinary and project-based design elective studying design in various industries and applications
Instructor: Neri Oxman

Spring 2016 Teaching Assistant for *Paperlight Workshop*
Elective course focused on the design and development of lightweight, easily-deployable lighting infrastructure for a provider in Karnataka, India
Instructor: Sheila Kennedy

Starkville, MS **Mississippi State University**

Spring 2012 Teaching Assistant for *Active Building Systems*
Required course on mechanical building systems
Instructor: Amber Ellett Penman

INVITED CRITIC

Cambridge, MA **Massachusetts Institute of Technology**

December 2019 Guest critic for *Designing for Experiences*
Project-based course focused on the use of user-centered design methodologies for designing experiences and novel interactions in tech-enriched environments
Instructors: Yihyun Lim, Sara Colombo

Boston, MA **Boston Architectural College**

December 2018 Guest critic for *ARCH1001*
Second Year Design Studio
Instructor: Amber Ellett Penman

Boston, MA **Wentworth Institute of Technology**

December 2017 Guest critic for *ARCH1000*
First Year Design Studio
Instructor: Dina El-Zanfaly

April 2017 Guest critic for *Creative Spatial Design and Computation*
Design elective focused on the use of shape grammars and other computational formalisms in the process of architectural design
Instructor: Asli Arpak

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LECTURES + WORKSHOPS

- Cambridge, MA **Innovation: Beyond the Buzzword**
July 2018, July 2019 Lecturer, Workshop Assistant
One-week course offered through MIT Professional Education introducing design thinking
Lecture title: *Envisioning the Future*
- Burlington, MA **Signify Outdoor Cocreate Workshop**
February 2019 Lecturer, Workshop Participant
One-day workshop hosted by Signify to discuss macro trends, challenges, and design concepts related to lighting
Lecture title: *Connected Lighting for a Caring City*
- Cambridge, MA **All Hands on Deck**
November 2018 Workshop Leader
One-day workshop hosted by the Open Ocean group at the MIT Media Lab to create design visions for an aquarium experience shaped around the conservation-focused values of impact, awareness, and guidance
- Cambridge, MA **Charlesgate Park Cocreate Session**
October 2018 Lecturer, Workshop Participant
One-day workshop hosted by Signify to discuss possible design visions and strategies for an underused Boston park
Lecture title: *Connected Lighting for a Caring City*
- Cambridge, MA **Driving Innovation Through Design**
August 2018 Lecturer, Workshop Assistant
One-week course offered through MIT Professional Education introducing design thinking
Lecture title: *Envisioning the Future*
- Cambridge, MA **Envisioning the Future Aquarium**
January 2018 Workshop Leader, Lecturer
One-week workshop held in partnership with the New England Aquarium to create design visions and prototype experiences of the future aquarium
Lecture title: *Envisioning 2069*

ACADEMIC INVOLVEMENT

- 2009 - 2013 Member of AIAS
2009 - 2012 Member of NOMAS
2011 - 2012 Student representative on SJARC Director's Student Advisory Council
2011 - 2012 Student representative on SJARC Lecture Committee
2011 - 2012 Vice President of Tau Sigma Delta
2008 - 2009 Position on CAAD Dean's Council

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PROFESSIONAL EXPERIENCE

- Watertown, MA **Sasaki**
2020 - present **Design Technologist**
Creating computational design workflows for project teams in various design disciplines (architecture, landscape architecture, urban design)
Working alongside product manager and developers to deliver high quality tools that elevate design thinking, generate new ideas, and encourage designers to become self-sufficient
Centralizing, streamlining, and expanding computational design resources and knowledge
Conducting ongoing research into emerging technology in order to stay on top of recent trends and find ways to apply to project work
- Cambridge, MA **MIT Design Lab**
2017 - present **Research Associate**
Conducted primary and secondary research, including ethnographic research and data collection, emerging technology research, and UI + UX research
Led multidisciplinary teams in design projects, incorporating project visioning and roadmapping, design iteration, rapid prototyping, computational design workflows, and final deliverable fabrication
Coordinated and managed lab projects, including project publication, report writing, project presentation, workshops, hackathons, and communication with project sponsors
- Somerville, MA **Safdie Architects**
2016, 2017 **Designer**
Assisted with firm-wide imaging and project description editing
Conducted pre-design research for several international projects
Assisted with organization and delivery of complex RFP submittals
- Fayetteville, AR **modus studio**
2013 - 2015 **Designer**
Assisted with projects in all stages of development, occasionally acting as project lead
Served as co-editor for *modus works* publication
- Seattle, WA **Gensler**
2012 **Computational Design Intern**
Created design workflows for several parametrically-designed project components
- Detroit, MI **Massie Architecture**
2009 **Fabricator**
Assisted with the fabrication and installation of several design-build projects

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SELECTED ARCHITECTURAL PROJECTS

- Hot Springs, AR **Garvan Tree House**
2014 - 2015 Designer
Educational tree house in a botanical garden
Concept Design, Schematic Design, Design Development
Assisted with sketching, computational design, modeling, and fabrication of design iterations
Prepared presentations and drawings for design reviews, and participated in design reviews with the botanical garden board of directors
**2019 AIA Small Project Award*
**2018 AIA Arkansas Design Merit Award*
- Flippin, AR **Flippin Elementary**
2013 - 2015 Designer, Project Lead
48,000 sf² elementary school for grades K-5
Concept Design, Schematic Design, Design Development
Documented existing conditions, worked on site analysis and selection and overall design, prepared materials for client presentations, acted as point person for communication with client, consultants, and contractor
- Flippin, AR **Flippin FEMA Safe Room**
2013 - 2015 Designer, Project Lead
4800 sf² FEMA-rated safe room and PE facility
Concept Design, Schematic Design, Design Development, Construction Documents
Worked on site analysis and selection and overall design, prepared materials for client presentations, acted as point person for communication with client, consultants, and contractor
- Fayetteville, AR **Art + Design District**
2014 Designer
33,000 sf² sculpture studio for the University of Arkansas Art Department
Provided construction drawing support and rendering support
**2018 AIA Gulf States Region Honor Award*
**2018 AIA Central States Region Honor Award*
**2017 AIA Kansas City Project of the Year*
**2017 AIA Kansas City Honor Award*
**2017 AIA Arkansas Honor Award*
**2017 Fay Jones School of Architecture Merit Award*
- Melbourne, AR **Melbourne Elementary**
2013 - 2015 Designer
68,000 sf² elementary school for grades K-6
Schematic Design, Design Development, Construction Drawings
Providing drawing support for Design Development drawings and Construction Drawings
- Hot Springs, AR **Klipsch Amphitheater [unbuilt]**
2013 - 2015 Designer
Proposal for multi-building media venue and entertainment space in botanical garden
Concept Design
Provided diagramming and rendering support

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HONORS + AWARDS

- 2008 - 2013 MSU Distinguished Scholar
highest award given to incoming students
- 2013 AIA Henry Adams Certificate
award given for general excellence in architecture throughout course of study
- 2013 Academic Achievement Award for highest cumulative GPA
- 2012 Tau Sigma Delta/Charles Calvo Memorial Digital Media Award
- 2012 ARCC|King Student Medal for *Rural Sustainability*
- 2011 CAAD Undergraduate Student Research Award for *BARNworks*
- 2009, 2010 Faculty-selected S|ARC Book Award
- 2010 Inducted into Phi Kappa Phi
- 2010 Inducted into Tau Sigma Delta
- Jackson, MS | 2010 Featured as one of *Portico Jackson's* "Rising Artists"
- Washington, DC | 2008, 2009 Drawings displayed at the Department of Education in Washington, D.C.

SKILLS

Strong background in architectural design and ability to rapidly pick up technical skills. Strong project management and communication skills. Ability to engage a broad range of design projects, from architecture to product design. Ability to engage all stages of design process, including initial visioning and roadmapping, research and prototyping, client and stakeholder communication, and project presentation and publication. Organized, detail-oriented, and process-focused.

Software + technical skills:

Modeling, CAD, + Computational Design

- Rhino + Grasshopper
- Revit + Dynamo
- Python
- C#
- Javascript
- HTML
- CSS

Fabrication + Rapid Prototyping

- 3D printing
- Laser cutting
- Arduino
- Raspberry Pi
- Model making
- Woodworking
- Casting

Publication + Graphic Layout

- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign

Office + Administrative Skills

- Microsoft Word / Google Docs
- Microsoft PowerPoint / Google Slides
- Microsoft Excel / Google Sheets