

Nathan Villicaña-Shaw

Researcher

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I am a researcher, programmer, and mechatronic sculptor that enjoys collaborating with driven, dedicated teams to create innovative solutions to problems that matter. I thrive as both a team leader and dedicated work horse to get the job done.

PROFESSIONAL EXPERIENCE

JUNIOR RESEARCH ENGINEER

Kadenze Inc.

2015-present

- Lead developer for the auto-grader on the *Programming Max: Structuring Interactive Software for Digital Artists* class. Worked with Stanford university professors to develop coursework for the class and built software tools to algorithmically grade students on their code.
- Assistant developer and current maintainer for auto-grader on *Sound Synthesis Using Reaktor* which is in its fourth successful run.
- Assists with building and labeling data-sets for machine learning algorithms to assist with various company ventures.
- Co-developed internal data visualization tools for company employees to track user metrics and demographics.

GRADUATE ASSISTANT

CalArts

2014-present

- Maintains ensemble of 10 mechatronic instruments, a 3D printer, a CNC router, and a CNC mill for the music technology department.
- Lectures on mechatronic electrical engineering, interface design, digital fabrication, and PCB design.
- Tutor for upper-division classes on physical computing, interface design, electrical engineering, and mechatronic music composition.
- Leads team of upper division BFA and MFA students to maintain the Electronics Lab, Machine Lab, Masters Room and Supplies Vault at CalArts.

CREATIVE TECHNOLOGIST

Freelance

2014-present

- Develop hardware and software solutions for artists and companies.
- Projects have included building LED curtains that have toured around the country, electromagnetic transducers for corporate installations in malls cross the country, and digital effects pedals for experimental music performances.
- Contracted by companies such as On Track Themes, Radiance Lightworks, and Light Riders Production.
- Collaborates with artists, authors, and intellectuals such as Mike Leisz, Norman Klein, and Margo Bistis to create interactive public installations.

EDUCATION

MASTER OF FINE ART

CalArts

Music Technology

- Studied under mentorship of Dr. Ajay Kapur and Dr. Owen Vallis.
- Research topics include mechatronic musical instrument design, mechatronic music performance and human-circuit interaction.
- President and founder of the Hardware Hacking Club and the Circuit Bending Club.

BACHELOR OF FINE ART

CalArts

Music Technology

- Studies encompassed object-oriented programming, electrical engineering, interface design, concert production, sound synthesis, music performance, machine learning as well as music composition, theory, skills, and history.
- Minor in Digital Arts.

SKILLS

Python, C, ChuckK, Processing, Pure Data, Max MSP, C++, JavaScript, **EAGLE CAD**, LT SPICE, Ableton Live, Reaktor, Unity, Video Editing, rapid prototyping, **Raspberry Pi**, network design, physical computing, digital fabrication, data visualization, sound synthesis, **mechatronics**, audio mixing, concert production, **interface design**, music composition, **Arduino**, control system design