

# Julien Blanchet

## PHD Student at Dartmouth College

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<https://portfolio.julien.studio>

### Experience

#### PHD Graduate Student    Dartmouth College

Aug 2019 – Present    Hanover, New Hampshire

Primarily focused on the "Human Motion Project", which aims to develop technology and study methods for using computers to teach motion tasks to humans. Publications include "Teaching American Sign Language in Mixed Reality" (UbiComp 2020), "Overlapping semantic representations of sign and speech in novice sign language learners" (CogSci 2022), and "Automatic Generation and Teaching of Dance Lessons from Video" (HotMobile 2023). Ongoing work includes (1) incorporating large language models into a dance-learning platform to power an AI dance coach, offering empathetic, personalized feedback, (2) embodying the AI dance coach with a Nao humanoid robot, (3) deepening computers' understanding of dance-video content thorough multimodal analysis, and (4) integrating multimodal biosensing (ECG, EMG, EEG, and facial affect) as a signal to enhance the virtual coach's understanding of the human learner's experience.

#### Computer Science Coordinator / Teacher    The Winchendon School

May 2018 – Jun 2019    Winchendon, Massachusetts

Taught 2 sections of algebra-based physics and 2 sections of coding. Redesigned coding classes with units on Javascript, HTML, CSS, p5.js, Arduinos, and Circuitry. Emphasized hands on learning by creatively developing physics lab exercises at minimal expense. Coached the school's FRC Robotics (Winter) and Ultimate Frisbee (Spring) teams and served as a secondary dorm parent.

#### Software Developer    Grove

Sep 2017 – Apr 2018    Somerville, MA

Spearheaded software development for a Boston startup focused on web connected indoor gardening systems. We built out fundamental infrastructure for our backend (Typescript, Express.js, MongoDB, Docker) & frontend (iOS / Swift), developing APIs that our software uses to interface with partner companies, collaborating with UX on product design (Sketch, Zeplin), and more. The project incorporated IOT, machine learning, mobile apps, and physical tags (RFID), and tied all these together with a delightful, user-centric design.

#### Software Engineer    Microsoft

Nov 2015 – Jul 2017    Cambridge, MA

Worked on the Intune Company Portal App for iOS & macOS (Objective-C, Swift). Led an end-to-end initiative for improving our app by incorporating and learning from telemetry, which ultimately led to a 70% reduction in login error rates, improved live-site serviceability, and more-informed feature development (through AB testing). Also made contributions with respect to an app-wide rewrite from Objective-C to Swift, extending our iOS app to support macOS, several new user-flows, threat-modeling and security hardening, bug & crash fixes, and quality improvements.

#### Volunteer Teacher    Marshall Islands Ministry of Education

Jan 2014 – Mar 2014    Ejit Island, Majuro, Marshall Islands

Taught 4th grade math, 5-6th grade science, 7-8th grade science, and 4-8th grade computer skills in a third world public elementary school.

### Education

#### Doctor of Philosophy - PhD Computer Science

Dartmouth College    2019 – 2024

#### Bachelor of Arts (B.A.) High Honors in Computer Science (Minor in Education)

Dartmouth College    2011 – 2015

### Volunteering

#### Big Brother Big Brother Big Sister Foundation, Inc.

Oct 2017 – Present

Long-term mentor for a kid (now a teen) from the Greater Boston area.

#### Founder, Chair, and Volunteer Dartmouth CoderDojo

Feb 2012 – Jun 2015

Started a community service project dedicated to exposing and engaging kids in the STEM fields of computer programming, digital art, and maker culture. The project lives on to this day, led by current undergrads!

### Selected Coursework

#### Graduate

Principles of Robot Design and Programming (COSC 181), Robotics Perception Systems (COSC 169), Multirobot Systems (COSC 269), Machine Learning (COSC 274), Artificial Intelligence (COSC 276), Mobile X (COSC 169), Operations Research (ENGS 103), 3D Digital Modeling (COSC 122), Computer Animation (COSC 124).