

# Brian Shao-en Ma

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**COLUMBIA UNIVERSITY, SCHOOL OF ENGINEERING AND SCIENCES**, New York, NY, USA

Fall 2020 – Spring 2022

- **Bachelor of Science** – (3-2 Engineering Combined Plan) Major: **Computer Science**

**COLGATE UNIVERSITY**, Hamilton, NY, USA

Fall 2017 – Spring 2020

- **Bachelor of Arts** – (3-2 Engineering Combined Plan) Major: **Physics**; Minors: **Mathematics**, **Jewish Studies** (Overall GPA: **3.51**)

## TECHNOLOGY EXPERIENCE

**COLGATE UNIVERSITY, DEPARTMENT OF PHYSICS**, *Research Assistant*, Hamilton, NY, USA

Summer 2020

- Conducted research with Prof. Ken Segall on simulations of neurons using Superconducting Josephson Junctions. Purpose was to use neural dynamics to create logic components that could operate 100 times faster and be 300 times more efficient than traditional transistor based logic circuits.
- Successfully created first working Josephson-Junction-neuron based half-adder, results allowed a clearer path to creating other logical components based on JJ-neurons.
- Used Xic and WRspice to design and simulate circuits. Wrote scripts to automate testing of circuits and used MATLAB to analyze data.

**BORDERXLAB**, *Front-end Development Intern*, Shanghai, China

Summer 2019

- Built internal software from scratch using React in collaboration with a backend programmer and a PM. System now used by entire sales team to easily send digital coupons to all customers via methods such as SMS, push notifications, email, etc., saving time and improving efficiency over previous methods of doing so.
- Added features and user interface improvements to other internal systems written in legacy AngularJS, Angular, or React. Improvements allowed significant time savings for sales team.
- Gained experience in interfacing with back-end systems, using continuous deployment, and writing pipeline scripts.

**HULU**, *Intern*, Beijing, China

Summer 2018

- Participated in an agile team and supported efforts to upgrade and maintain the front-end systems of Hulu.com.
- Gained better understanding of industry concepts such as MVC, server architecture, VOD, REST API, CDN, load distribution, web routing, cookies etc., as well as corporate processes such as Product Owners, QC, code review, etc., and aspects of Agile development such as Scrum and Jira.
- Migrated around a thousand test cases to a different testing framework and introduced snapshot testing to certain tests. Also wrote original test cases for a microservice written in Go and increased code coverage to 100% for multiple files.
- Participated in Hulu Beijing Office Hackathon in a team of three and won “Coolest Hackathon Project” with RMB 2,000 prize out of 22 competing teams. Project was completed in 2 days and consisted of a “Katamari” ball able to pick up elements of any website and graphically display them as if picked up by a 3-dimensional ball. Wrote particle system and other physics effects based on knowledge from Physics courses.

**COLGATE UNIVERSITY, HCI LAB**, *Faculty Research Assistant*, Hamilton, NY, USA

Spring 2018

- Participated in the development of a videoconferencing web service under the direction of Prof. Madeline Smith. Project allows for synced video-watching using HTML, CSS, JavaScript, WebRTC, Socket.io, and Apache web server
- Provided technical assistance to other members of the team.

**TSINGHUA UNIVERSITY, X-STUDIO HCI LAB**, *Research Intern*, Beijing, China

Fall 2016 – Summer 2017, Winter 2017

- Completed, debugged, and finished major component of an interactive storybook written in Unity that connects to a custom capacitive device able to provide haptic/textural feedback within a 3-day deadline. Learnt to use Microsoft Foundation Classes, Unity inter-process communication, and C++ inter-process communication. Successful completion within deadline and demonstration in front of exhibition visitors.
- Collaborated with graduate students to build interactive device that tracks input on a surface using temperature changes and a game based on the device. Implemented particle system, parts of input detection and game logic, and Arduino code for haptic tools. Used C++ OpenFrameworks library, XBee wireless communication, and various sensors for the haptic tools.
- Participated in numerous other projects. Edited 10+ papers in support of publication efforts and participated in the design of user studies.

**CYDESIGN LTD**, *Programmer*, Beijing, China

Summer 2017

- Brought in by recommendation to debug and implement Kinect gesture control on a motion controlled robotic arm controlled via the internet. Used C# with Unity3D and Microsoft Kinect SDK.
- Exhibited result to the public at “Global Artificial Intelligence Summit Forum & Launching Ceremony of China (Hangzhou) Artificial Intelligence Town” as an official business exhibitor.

## PUBLICATIONS

Lu, Q., Ma, S., Xu, Y., Li, J. (2019). IRelics: Designing a Tangible Interaction Platform for the Popularization of Field Archaeology. In Proceedings of TEI '19: ACM International Conference on Tangible, Embedded and Embodied Interaction. Tempe, AZ.

## SKILLS

### **Programming Languages:**

Proficient: C++, C#, Java, JavaScript, MATLAB

Familiar: Python, R, Processing, Go, Mathematica

### **Technologies:**

Proficient: Teensy, Arduino, OpenFrameworks, HTML/CSS, Git, React, Redux, Angular, AngularJS

Familiar: Kinect SDK, Hololens SDK, Optris Pi SDK, Unity, Unreal Engine, Zigbee, MFC, 3D Printing, Next.js, Mocha, Jest, LaTeX, Xic, WRspice