

KEATON B. SHURILLA

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University of Tsukuba

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Education

University of Tsukuba, Ibaraki-ken, Japan

Mar 2024

M.S. in Informatics

Thesis: *Audiovisual Plasma Volumetric Display: Effect of Spatial Modulation on Optoacoustic Transduction*

Advisor: Prof. Yoichi Ochiai

Brigham Young University, Provo UT, USA

June 2021

B.S. in Electrical Engineering, with university honors

Thesis: *Sonic Glass: Display Compatible Aerial Tactile Haptics with Annular PMUTs*

Advisor: Prof. Daniel Smalley

Professional & Research Experience

Digital Nature Group, University of Tsukuba | Research Assistant

Oct 2021 - Present

Link: <https://digitalnature.slis.tsukuba.ac.jp/>

R&D on polymer film-based holography and HOE fabrication. R&D on integrated photonics for holography. Collaboration with Brigham Young University Electro-Holography Lab on near-eye holography and volumetric display. Successful development of femto-second laser-based plasma audio system. Development of fluorescent particle based optical trap volumetric display.

CYBERDYNE INC. | Research Assistant

Aug 2023 - Present

Link: <https://www.cyberdyne.jp/>

R&D on LED based photoacoustic imaging system for democratized low-cost health care devices. Developed an optical power and thermal measurement system using automated scripting and computer vision. LED array metrology.

BYU Electro-Holography Lab, Provo, | Undergraduate Research Assistant

Feb 2019 – June 2021

Link: <https://www.smalleyholography.org/>

Creation of transparent piezoelectric micromachined ultrasonic transducers (PMUT) in a phased array configuration for the purpose of generating tactile feedback. Various holography and volumetric display projects. Extensive work on transducer design, UV photolithography and other cleanroom fabrication techniques. Additional work on PCB design and extensive research into piezoelectric polymers, phased arrays, and other novel tactile feedback projects. Regular public presentations about my research to other students and faculty.

iProspect Japan, Tokyo, Japan | Assistant to the APAC Head of Innovation

April 2018 – Sep 2018

I worked directly under the APAC head of innovation and e-commerce at the Tokyo office of iProspect, part of the Dentsu-Aegis network. Researched current trends in marketing tech, with a specific focus on voice assistants, IoT, and VR/AR technologies. Some programming design work for Google Home and Amazon Alexa. Additionally, I took part in AdWeek Asia and was invited to represent our company at the AWS Developers Summit. Lastly, I also did some translation for others in the office.

Advisor at the campus makerspace. Assisted students with personal projects and instructed them on the proper use of electrical, woodworking, and metalworking equipment. Use of 3D printers, PCB milling machines, and laser-cutters on behalf of students and professors. Designed test rigs for various engineering courses and research labs. Oversaw assembly for the kits used in different classes. Management of an inventory of thousands of electronics components.

Honors and Awards

Alternate for DC1 Doctoral Fellowship - Japan Society for the Promotion of Science	2023
1 st Place - IEEE AP-S International Student Design Contest	July 2021
Recipient of NASA Space Grant for K-12 Educational Outreach	2019

Publications

Google Scholar: [link](#)

2. Schvaneveldt, K. M., Laughlin, A., Guanuna, E., **Shurilla, K.**, Johnson, L., Staker, J., ... & Smalley, D. E. (2022, August). Patterning ITO using a laser cut Kapton® tape mask for flexible PVDF applications. In 2022 IEEE International Flexible Electronics Technology Conference (IFETC) (pp. 1-2). IEEE.
1. Barton, D., Kuttler, R., Weaver, B., Briceno, X., Huffman, B., **Shurilla, K.**, ... & Smalley, D. (2021, July). Photophoretic Optical Trap Display Test Rigs. In 3D Image Acquisition and Display: Technology, Perception and Applications (pp. 3F4A-3). Optica Publishing Group.

Patents

1. SMALLEY, D., LAUGHLIN, E., GUANUNA, E., **SHURILLA, K.**, LUKE, J., SCHVANEVELDT, K., KARAFIN, J. S., & BEVENSEE, B. E. (n.d.). HAPTIC DEVICES (Patent WO/2023/220445). Retrieved April 25, 2024, from <https://www.sumobrain.com/patents/wipo/Haptic-devices/WO2023220445A2.html>

Teaching Experience

TA for Digital Content Expression and Arts Laboratory	2021 & 2023
<i>Prof. Yoichi Ochiai & Tatsuki Fushimi</i>	

Provided technical assistance to students in their individual media art works. Facilitated and secured the space for a culminating exhibition of the class projects.

Skills & Qualifications

Japanese Language Proficiency Test N1 (highest level)	August 2022
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Service, Outreach, and Other Experiences

- ☐ 2023 Aug: Presentation on holography to visiting students from Kakogawa high school
- ☐ 2022 Oct: Lab exhibition at the "Miraikan" [\[video\]](#)
- ☐ 2022 Aug: Presentation on ultrasonic phased arrays to visiting students from Kakogawa high school
- ☐ 2018 – 2019: President of the BYU Japanese Student Association
- ☐ 2018: Member of the BYU UX Design Club
- ☐ 2017: Best Buddies volunteer, BYU college chapter
- ☐ 2014 – 2016: Full-Time Volunteer, The Church of Jesus Christ of Latter-Day Saints, Yokohama, Japan
- ☐ 2013: Eagle Scout

Media

- ☐ 2023: Research Lab visit on Weekly Ochiai [\[video\]](#)

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- ❑ 2022: FUTURES PIXIE DUST RADIO – Interview on Tokyo FM [\[recording\]](#)
 - ❑ 2021: “BYU Capstone team creates world-champion educational device” [\[article\]](#)
 - ❑ 2021: “Electrical Engineering: A Pathway to New Forms of Creativity” – individual highlight [\[article\]](#)