Edward S. Ly, Ph.D.

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Summary

A disabled but innovative and socially-conscious free software engineer and researcher with over ten years of all-around development experience. Eager to both utilize and create state-of-the-art software solutions with a minimalist, creative, and detail-oriented mindset. Enthusiast of music/rhythm video games and electronic music production. Conducts interdisciplinary research in computer science and music, with expertise in the areas of digital audio signal processing and evolutionary algorithms. Research topics of interest also include: accessibility, computer graphics, deep learning, human-computer interaction, and other areas of computer music.

Areas of Expertise

Audio Programming - Data Analysis & Visualization - Digital Signal Processing - Full-Stack Web Applications - Game Development - Genetic & Evolutionary Algorithms - Machine Learning - Task Automation & Scripting - Web Hosting

Education

Ph.D. | **Comp. Sci. and Engineering,** *University of Aizu*   **Aizu-Wakamatsu, Fukushima, Japan** *10/2020 – 03/2024*
- 4.00 GPA
- Doctoral Dissertation: *Applications of Evolutionary Algorithms to Digital Audio Signal Processing*

M.Sc. | **Comp. Sci. and Engineering,** *University of Aizu*   **Aizu-Wakamatsu, Fukushima, Japan** *10/2018 – 09/2020*
- 3.86 GPA
- Master's Thesis: *Genetic Reverb: Synthesizing Artificial Reverberant Fields Via Genetic Algorithms*

B.A. | **Comp. Sci. and Mathematics,** *Earlham College*   **Richmond, Indiana, USA** *08/2014 – 12/2016*
- 3.93 GPA, 4.00 Computer Science Major GPA, Phi Beta Kappa (Delta Chapter of Indiana)
- Senior Capstone Thesis: *Open-Source Gesture Recognition for Virtual Orchestra Conducting Using the Kinect*

Publications

Journal Articles...

[1] **E. Ly** and J. Villegas, "Cartesian Genetic Programming Parameterization in the Context of Audio Synthesis," *IEEE Signal Process. Lett.*, vol. 30, pp. 1077–1081, Aug. 2023. DOI: `10.1109/LSP.2023.3304198`.

[2] **E. Ly** and J. Villegas, "Generating Artificial Reverberation via Genetic Algorithms for Real-Time Applications," *Entropy*, vol. 22, no. 11, pp. 1–19, Nov. 2020. DOI: `10.3390/e22111309`.

Conference Proceedings...

[3] P. Kudry, **E. Ly**, K. M. Diaz España, C. Ming-Jung, M. Soga, and D. Roy, "Metaverse in Education for Students with Disabilities," in *Proc. 2nd Int. Conf. Ent. Tech. and Manag. (ICETM2023)*, D. Roy and G. Fragulis, Eds., AIP Publishing, Nov. 2023, pp. 1–9. DOI: `10.1063/5.0182107`.

[4] **E. Ly** and J. Villegas, "Digital Filter Design via Recurrent Cartesian Genetic Programming," in *Proc. 2023 IEEE 13th Int. Wkshp. Comput. Int. and Appl. (IWCIA)*, Hiroshima, Japan: IEEE, Nov. 2023, pp. 7–12. DOI: `10.1109/IWCIA59471.2023.10335891`.

[5] **E. Ly** and J. Villegas, "Additive Synthesis via Recurrent Cartesian Genetic Programming in FAUST," in *Proc. 153rd Audio Eng. Soc. Conv.*, New York, Oct. 2022, pp. 1–7. [Online]. Available: `https://www.aes.org/e-lib/browse.cfm?elib=21954`.

[6] **E. Ly** and J. Villegas, "Genetic Reverb: Synthesizing Artificial Reverberant Fields via Genetic Algorithms," in *Proc. 9th Int. Conf. AI in Music, Sound, Art and Design (EvoMUSART 2020)*, J. Romero, A. Ekárt, T. Martins, and J. Correia, Eds., Cham: Springer, Apr. 2020, pp. 90–103. DOI: `10.1007/978-3-030-43859-3_7`.

Professional Experience

Software Developer, *Altonimbus Entertainment* **Portland, Oregon, USA** *10/2023 – Present*
- Accelerated the repair, maintenance, and upgrade of web server and network infrastructure by automating previously manual tasks.
- Filled critical roles in operations and customer service during Kumoricon, a Japanese pop culture convention with 10,000+ yearly paid attendees.

Software Engineer (Back-End), *Eyes, JAPAN Co. Ltd.* **Aizu-Wakamatsu, Fukushima, Japan** *10/2018 – 09/2023*
- Consistently met deadline and client requirements in the development of custom full-stack web solutions and data analytics.
- Acquired real-world business and leadership experience in a hybrid IT consulting startup environment with international team members spanning five continents.

Engineering Intern, *We Vote USA* **Oakland, California, USA** *07/2017 – 09/2018*
- Developed key front-end and back-end features in the early years of We Vote, an open-source social media platform that brings ballot information to the voters in order to increase voter turnout.
- Acquired non-profit, public-sector experience in a fully remote work environment while continuing to meet deadlines and deliver consistent results.

Support Technician, *Dave & Buster's, Inc.* **Happy Valley, Oregon, USA** *03/2018 – 07/2018*
- Maintained 100% customer satisfaction through the repair and maintenance of arcade video games, simulators, and technical equipment, along with with providing customer service and maintaining ideal conditions across the entire store at all times.

Xtern Bootcamp, *powered by Techpoint* **Indianapolis, Indiana, USA** *05/2016 – 07/2016*
- Selected as one of 25 students for the inaugural Xtern Bootcamp.
- Intensive 10-week training program built to close the skills gap between the CS degree and industry demand.
- Project-based curriculum focused on the MEAN stack.

Awards & Certifications

Travel Grant, *University of Aizu* *10/2022*

SAISUA Scholarship, *Support Association for International Students of the University of Aizu* *04/2020 – 09/2020*

AES Student Competition: MATLAB Plugin Finalist, *Mathworks/Audio Engineering Society* *10/2019*

Travel Grant, *Mathworks* *10/2019*

SAISUA Scholarship, *Support Association for International Students of the University of Aizu* *10/2018 – 03/2019*

IndyGo/Pacers Bikeshare Challenge Finalist, *#indycivichack 2016 Hackathon* *06/2016*

Certificate of Training (Scrum Introduction Course), *beLithe* *05/2016*

Benjamin A. Gilman International Scholarship, *US Department of State* *08/2013 – 05/2014*

Skills

- **Programming Languages:** C, C++, C#, HTML/CSS, JavaScript, LaTeX, MATLAB, PHP, Python, Ruby, Scheme, Shell
- **Version Control Systems:** Git
- **Music/Audio Programming Languages:** FAUST, LilyPond, Max/MSP, Pure Data
- **Data Analysis & Visualization:** Looker Studio, Python, R
- **Web Frameworks:** Angular, Django, Electron, jQuery, Hugo, Quasar, React (Native), Ruby on Rails, Vue.js, WordPress
- **Operating Systems:** Arch Linux, Debian GNU/Linux, macOS, Ubuntu, Windows

Volunteer Experience

Competition Management Volunteer (Golf), *Special Olympics World Games Berlin 2023* **Berlin, Germany** *06/2023*

Event Services Team Leader, *Tokyo 2020 Paralympic Games* **Tokyo, Japan** *08/2021 – 09/2021*

Venue Technology Team Member, *Tokyo 2020 Olympic Games* **Tokyo, Japan** *06/2021 – 07/2021*