

Alexander Berman
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Computer Scientist
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Overview: Human-Computer Interaction Researcher with experience in Machine Learning, Web Design, and Digital Fabrication seeking employment starting Winter 2020 – More Details at <https://Alexander-Berman.github.io>

Experience

Research with Dr. Francis Quek **2015 to Present**

Developing **HowDIY**, a website guiding printing-newcomers' first-steps in 3D printing by recommending personally-relevant online resources and disambiguating printer function from operation. Employing a self-scraped, -cleaned, and -published dataset **ThingiPano**, to train multi-modal (text, images, 3D renders) self-supervised machine learning recommendation models for 3D printing designs and information. **Leads and Mentors** the design and fabrication of STEM education-kits, proximally and over the internet, with multiple large Multi-Disciplinary Teams

Intern at the U.S. Department of Defense **Summers 2017 and 2018**

Analyzed associations between images and text in unstructured multimedia datasets (Darknet Markets and Wikipedia) by training Convolutional Neural Networks via transfer-learning to predict semantic embedding of source text associated with a given image. Published these methods and analysis in a **best-paper**.

Research with Dr. Emily Mower-Provost **2013 to 2015**

Trained SVM Classifiers to determine speaker's Emotion in real-time with audio-video (webcam) data of speaker. Created real-time website to demonstrate Emotion Classification, and Coded Machine Learning Tools for a Course.

Intern at John Deere - Moline, IL Headquarters **Summer 2014**

Setup a server and simple phone application for farm supervisors to monitor fleets and receive security notifications. Created low-cost distributed prototype Surveillance System on 6150R Tractor and other Farm Equipment by Integrating new Sensors and Processors (RaspPi and Arduino) into vehicle CAN buses.

Math Tutoring Center at Northwestern Michigan College **Summer 2012**

Education

Texas A&M - Computer Science PhD **2015-Present (planned to graduate Fall 2020)**

All courses completed in addition to electives relating to **HCI, Machine Learning, and Digital Fabrication**.

University of Michigan – Computer Science BSE **2011-2015**

Courses related to HCI, AI, and Robotics while researching with Dr. Emily Mower Provost on Emotion Recognition

Activities

UM::Autonomy **2011-2015**

Design and code small fully-autonomous boat to navigate buoy course and perform various tasks. Electrical Team Leader (2013-2014): Assemble & Maintain onboard computer with sensors, work with embedded systems, and write Perception Software in Multi-Disciplinary Team. **AUVSI RoboBoat Competition Champions**

IEEE-ACM **2012-2015**

Department Relations Officer (2013-2014): organize events with Faculty in the Electrical Engineering and Computer Science department to improve collaboration between students and faculty. (Biweekly Meetings and Events)

Michigan Marching and Hockey Bands **2011-2015**

Perform Tuba at all home and some away football and hockey games (~2 Hours a Day plus Games)
2014 Parkinson Michigan Marching Band Scholarship recipient

Boy Scouts of America Eagle Scout and Senior Patrol Leader **2011**

Skills

Programming: Python, Keras, JavaScript, HTML, CSS3, Bootstrap, Django, SQL, C/C++, Java, MATLAB

Fabrication: Simple Circuit Design, Microprocessor Utilization, Laser Cutting, Power Tools, **3D Printing**

Software: Jupyter Notebook, PyCharm, Linux, XCode, Photoshop, Qt, CAD (Fusion 360), Cura, Three.js

Publications

- Berman, Alexander, Osazuwa Okundaye, Francis Quek, Jeeun Kim. “HowDIY: Introducing Anyone to 3D Printing Services through Online Computational Tools”. IEEE Pervasive Computing – Special Issue on Pervasive Manufacturing (pending)
- Mohanty, Ronak, Alexander Berman, Shinjiro Sueda, Francis Quek, Vinayak Krishnamurthy. “Clock-Maker's Work-space: Investigating Spatial Object Manipulation in Peripersonal Space”. TEI 2020, ACM. (pending)
- Berman, Alexander and Quek, Francis. “ThingiPano: A Large-Scale Dataset of 3D Printing Metadata, Images, and Panoramic Renderings for Exploring Design Reuse”. IEEE BigMM (pending)
- Peña, Alexander and Berman, Alexander. “Visually Exploring Relationships Between Textual Embeddings, User Data, and Recommendations”. RecSys 2020, ACM. (pending)
- Berman, Alexander, Osazuwa Okundaye, Francis Quek, Jay Woodward, Jeeun Kim. “Anyone Can Print”: Supporting Collaborations with 3D Printing Services to Empower Broader Participation in Personal Fabrication”. NordiCHI 2020, ACM.
- Osazuwa, Okundaye, Sharon Chu, Francis Quek, Alexander Berman, Glen Hordemann, Larry Powell, Leming Yang. “Investigating Telepresence Robotics for Supporting Hands-on Distance Instruction”. NordiCHI 2020, ACM.
- Natarajarathinam, Malini, et al. “Making in The Colonias: Motivating STEM Participation through a Making as Micro-Manufacturing Model”. 127th Annual Conference for the American Society for Engineering Education (ASEE). 2020 (poster)
- Berman, Alexander and Paul, Celeste. “Making Sense of Darknet Markets: Automatic Inference of Semantic Classifications from Unconventional Multimedia Datasets”. HCII, Springer. 2019. **(Best Paper Award)**
- Nam, Beth, Alexander Berman, Brittany Garcia, Sharon Chu. “Towards the Meaningful 3D-Printed Object: Understanding the Materiality of 3D Prints”. HCII, ACM. 2019 (poster)
- Berman, Alexander, Sharon Chu, Francis Quek, Osazuwa Okundaye, Leming Yang, Beth Deuermeier, Enrique Berrios, Skylar Deady, and Jessica Doss. “Proximal and Distal Mentors: Sustaining Making-Expertise in Rural Schools”. Fablearn 2019, ACM. NY, NY. 2019
- Natarajarathinam, Malini, et al. “Developing Communities of Practice through Peer Mentorship in Making through Micro Manufacturing Model”. 126th Annual Conference for the American Society for Engineering Education (ASEE). 2019
- Berman, Alexander, Elizabeth Deuermeier, Beth Name, Sharon Chu, Francis Quek. “Exploring the 3D Printing Process for Young Children in Curriculum-Aligned Making in the Classroom”. IDC, ACM. 2018. (poster)

- Okundaye, Osazuwa, Sharon Chu, Francis Quek, Alexander Berman, Malini Natarajarathinam, Matthew Kuttolamadam. "Making to Micro-Manufacture: Catalyzing STEM Participation in Rural High Schools". Fablean Europe, ACM. 2018.
- Berman, Alexander, Leela Krishna Chaitanya Gottumukkala, Zepeng Huo, Seth Posley, Francis Quek, and Tracy Hammond. "iCanTrace: Avatar Personalization through Selfie Sketches." WIPTTE. 2017 (poster)
- Chu, Sharon Lynn, Francis Quek, Sourabh Bhangaonkar, and Alexander Berman. "Physical Making Online: A Study of Children's Maker Websites." *Proceedings of the 7th Annual Conference on Creativity and Fabrication in Education*. ACM, 2017.
- Chu, Sharon Lynn, Elizabeth Deuermeyer, Rachel Martin, Francis Quek, Alexander Berman, Mario Suarez, Niloofar Zarei, Beth Name, and Colin Banigan. "Becoming Makers: Examining Making Literacy in the Elementary School Science Classroom." *Proceedings of the 2017 Conference on Interaction Design and Children*. ACM, 2017.
- Berman, Alexander, Brittany Garcia, Beth Nam, Sharon Chu, Francis Quek. "Toward a Making Community of Practice: The Social Aspects of Elementary Classroom-Based Making." *Proceedings of the 6th Annual Conference on Creativity and Fabrication in Education*. ACM, 2016.