Alexander Berman

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Computer Scientist

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Overview: HCI Researcher with experience in machine learning, web design, and digital fabrication seeking employment – More Details at *https://Alexander-Berman.github.io*

Experience

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 (via transfer-learning) Convolutional Neural Networks to predict semantic embedding of source text associated with a given image. Helped develop visualizations for exploring these relations.

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

Studying educational methods and tools used by people employing personal fabrication methods. Have done work investigating how students learn with Making-oriented classroom activities. Developing *HowDIY*, a website utilizing novel multi-modal (text, images, 3D files) search and recommender systems to introduce anyone to 3D Printing

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.
Coded Machine Learning Library and Tools for Intelligent Interactive Systems course.

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

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

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

Education

Texas A&M - Computer Science PhD **2015-Present**

All non-elective courses completed in addition to electives relating to HCI and Machine Learning.
Research with Dr. Francis Quek in TEILab relating to Embodiment Interaction, Education, 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**

Electrical Team Leader (2013-2014): Assemble & Maintain onboard computer with sensors, work with embedded systems, and write Perception Software. Lead, Teach, and Supervise Multidisciplinary Team.
Design and code small fully-autonomous boat to navigate buoy course and perform various tasks.
2012 International 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, 3D Printing, Laser Cutting, Power Tools
Software: Jupyter Notebook, PyCharm, Linux, XCode, Photoshop, Qt, CAD (Fusion 360), Cura, Three.JS

Berman, Alexander et al. “HowDIY: Introducing Anyone to 3D Printing Services through Online Computational Tools”. IEEE Pervasive Computing – Special Issue on Pervasive Manufacturing (pending)

Mohanty, Ronak and Berman, Alexander et al. “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, et al. “Anyone Can Print”: Supporting Collaborations with 3D Printing Services to Empower Broader Participation in Personal Fabrication”. NordiCHI 2020, ACM.

Osazuwa, Okundaye et al. “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, et al. “Towards the Meaningful 3D-Printed Object: Understanding the Materiality of 3D Prints”. HCII, ACM. 2019 (poster)

Berman, Alexander, et al. “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, et al. “Exploring the 3D Printing Process for Young Children in Curriculum-Aligned Making in the Classroom”. IDC, ACM. 2018. (poster)

Berman, Alexander, et al. "iCanTrace: Avatar Personalization through Selfie Sketches." WIPTTE. 2017 (poster)

Okundaye, Osazuwa, et al. “Making to Micro-Manufacture: Catalyzing STEM Participation in Rural High Schools”. Fablean Europe, ACM. 2018.

Chu, Sharon Lynn, et al. "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, et al. "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, et al. "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.