

Alexander Hay

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Chicago, IL

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Education

Northwestern University

M.S. Robotics

Evanston, IL

2020

Iowa State University

B.S. Mechanical Engineering

Ames, IA

2014

Skills

- Coding: MatLab, Python, C, Git, OpenCV, ROS Design: Solidworks, Cura, AutoCAD, Inventor
- Relevant Coursework: Neural Control of Movement, Quantitative Methods in Neuroscience, Adv Mechatronics, Machine Learning and AI for Robotics, Biomechanics, Neurobiology

Projects

Portfolio: alexanderhay2020.github.io

Development of an MRI-Compatible Tactile Stimulation Device - Thesis Project

- Built an MRI compatible pneumatic device to stimulate a sensory response at the fingertip
- Interdisciplinary approach from the ground-up; embedded software design, modeling and fabrication, characterization and control

Learning Motion Model using Neural Network - ML/AI for Robots

- Implemented a neural network from scratch using gradient descent to generate a motion model of a roomba-like robot exploring its space

Biomimicry using SMA - Winter Project 2020

- Utilized shape memory alloy actuators to mimic the movement of a human elbow joint
- Apparatus used four actuators as analogues to the tricep, bicep, and brachialis muscles

Experience

Pearce Services - Des Moines, IA

Apr 2016 - Aug 2019

Design Engineer

- Facilitated telecom infrastructure plans for major metro ISPs and carriers
- Scope of projects ranged from small businesses to residential communities
- Budgeted construction and labor costs, dispatching engineers on site when necessary

Drive Spotter - Omaha, NE

Jun 2015 - Jan 2016

Product Engineer

- Developed a working prototype construction zone detector using OpenCV
- Conducted prior art research; assisted in writing, editing, and revising patents and proposals
- Traveled frequently, giving demonstrations to investors and securing accounts

Medline Industries - Mundelein, IL

Jan 2015 - May 2015

R&D Material Technician

- Conducted tests evaluating material properties of medical products for manufacturers
- Constructed new testing procedures in compliance with relevant ISO regulations
- Quantified experimental data in the final report of quality assurance investigation

Rehabilitation Institute of Chicago - Chicago, IL

Jun 2014 - Sep 2014

Research Intern

- Worked in a team to develop a novel adaptive wheelchair controller for spinal cord injury patients
- Utilized ML algorithms to optimize sensor data with user ability
- Volunteered for BMES conference