Christopher D. Whitmire

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Portfolio, Honors, and Research Projects located here (only available on digital pdf of CV)

EDUCATION

Masters of Science in Artificial Intelligence
University of Georgia, Athens GA

AUG 2017 - Aug 2019

Thesis: Machine Learning and Feature Selection For Biomass Yield Prediction Using Weather and Planting Data

GPA: 4.0/4.0

Bachelors of Science in Physics with a Minor in Creative Technology
Berry College, Mount Berry GA

AUG 2013 - MAY 2017

Thesis: Developing an Interactive Smart Garden with Human Centered Design

GPA: 3.98/4.0

WORK EXPERIENCE

Visiting Clinical Instructor of Creative Technology
Berry College's Campbell School of Business, Mount Berry GA

Aug 2019 - PRESENT

- Designs course curriculum that is consistent with Departmental and School learning goals.
- Teaches material in the areas of design, rapid prototyping, CAD, and programming.
- Maintains lab space and supervises student lab assistants.

Student Research Assistant
University of Georgia's Department of Crops and Sciences, Athens GA

FEB 2019 - July 2019

- Developing machine learning algorithms to predict the yield of particular crops.
- Collecting, exploring, combining, and processing relevant data sets.
- Developing presentations showing characteristics and patterns of relevant datasets.

Machine Learning Intern
United States Medical Scientific, Milton GA

OCT 2017 - SEPT 2018

- Developed machine learning algorithms to improve the company's product.
- Developed a software system that made it easier to explore data and to use machine learning to model patterns.
- Developed an autonomous system that updated prediction models and recorded results in the company's database.

Design Instructor
Governor's Honors Program at Berry College, Rome GA

JUNE 2017 - JULY 2017

- Gave lectures to gifted high school students on 2 and 3 dimensional design and its relation to prototyping tools like 3D printers, laser cutters, and milling machines.
- Guided several groups of students through the design process, resulting in a final engineering project that the students presented.
- Developed the Design curriculum within the Engineering Department of the Governor's Honors Program for 2017.

Designed Courses

CRT 420 Special Topics: Python
Berry College, Mount Berry GA

Spring 2022

- An introduction in Python and its application to game design, statistical analysis of data, scientific computing, computer vision, and machine learning. The Scrum project management system and version control practices/tools are also explored and used.

CRT 498 Directed Study: Rapid Prototyping and Assistive Technologies
Berry College, Mount Berry GA

Fall 2021

- An exploration of the current work being done within the field of assistive technologies and its applications to people who attend cosplay conventions. Methodologies for user testing vulnerable populations will be discussed and explored. Prototyping tools will be used to develop devices to assist individuals who participate in cosplay conventions and who experience a physical disability.

CRT 498 Directed Study: Advanced Topics in Creative Computing
Berry College, Mount Berry GA

Summer 2021

- An exploration of the underlying mathematics and principles of neural networks. Software is developed to code working neural networks without the use of external machine learning libraries. Machine learning libraries are later used to make supervised machine learning models and to make predictions.

CRT 498 Directed Study: Game Design and User Testing
Berry College, Mount Berry GA

Spring 2021

- An exploration of game development techniques, game design principles, and iterative design based on user feedback and playtesting.

CRT 320 Computer Numerical Controls
Berry College, Mount Berry GA

Spring 2021

- An introduction in using computer-aided manufacturing (CAM) software and G-code programming to operate computer numerically controlled (CNC) equipment and robotics. Microcontrollers will be used to develop motion control systems. Computer Aided Design (CAD) tools will be used to model and animate CNC systems. The design of user interfaces will also be explored within the context of controlling CNC and robotic systems.

CRT 320 Programmable Logic Controllers
Berry College, Mount Berry GA

Spring 2020

- An exploration in physical computing and its application to robotic systems. Prototyping tools and CNC equipment will be used to manufacture robotic arms, and microcontrollers will be used to control them. Graphical user interface (GUI) design will be explored and used to control the robot.

CSC 235 Physical Computing: Embedded Systems
Berry College, Mount Berry GA

Spring 2020

- An introduction to electronics and microcontroller programming for prototyping physical systems that incorporate sensors, displays and actuators. Explores techniques for creating richly interactive experiences using computationally-enabled devices.

CRT 230 Intermediate 3D Design (formerly CRT 420)
Berry College, Mount Berry GA

Fall 2019

- An exploration of using 2D and 3D computer aided design (CAD) tools to make manufacturable parts, to communicate design ideas, and to solve problems. Parametric design is emphasized. The process of designing parts to be manufactured on a laser cutter, 3d printer, plasma cutter, and other cnc machines is explored.

CSC 103 Creative Computing
Berry College, Mount Berry GA

Fall 2019

- An introduction to the fundamentals of computing and programming in the context of computer graphics, animation, digital sound, and interactivity. Explores the use of computation as a creative medium while developing fundamental ideas and techniques of programming, computational problem solving, algorithms, and data representation.

RESEARCH, PROJECTS, AND PUBLICATIONS

Using Machine Learning and Feature Selection for Alfalfa Yield Prediction
Published February 2021

Whitmire, C. D., Vance, J. M., Rasheed, H. K., Missaoui, A., Rasheed, K. M., & Maier, F. W. (2021). Using Machine Learning and Feature Selection for Alfalfa Yield Prediction. *AI*, *2*(1), 71–88. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ai2010006

Predicting Alfalfa Crop Yield using Weather and Previous Yield Data
University of Georgia, Athens GA

Graduate Thesis Project

DEC 2018 - Aug 2019

- Uses crop yield and weather data to make machine learning models which predict future crop yield.
- Could help geneticists predict a crop variety's yield, which could speed up the process of developing more efficient varieties of alfalfa.

Solar Panel Design with Evolutionary Algorithms
University of Georgia, Athens GA

Evolutionary Computation Course Project

AUG 2018 - DEC 2018

- Used the principles of evolution to computationally evolve different solar panel designs with the hope of finding a more efficient solar panel.
- Confirmed that current designs are the most efficient design given our problem formulation.

Using Human Centered Design to Develop an App that Helps People Maintain their Goals
University of Georgia, Athens GA

Human Computer Interaction Course Project

AUG 2018 - DEC 2018

- Developed an app that would help users maintain progress on their goals.
- Went through the entire design process, resulting in a functioning prototype.

Predicting Solar Radiation with Machine Learning
University of Georgia, Athens GA

Machine Learning Course Project

JAN 2018 - MAY 2018

- Used historical weather and solar radiation data to build machine learning models that would predict future amounts of solar radiation.
- Got results comparable to that found in scientific literature.

Developing Context Aware Smart Homes
University of Georgia, Athens GA

Knowledge Based Systems Course Project

JAN 2018 - MAY 2018

- Explored the use of ontology design and answer set semantics in developing smart home systems.
- Successfully made a working prototype of a smart home.

Using Human Centered Design to Develop a Smart Garden System
Berry College, Rome GA

Undergraduate Thesis Project

JAN 2017 - MAY 2017

- Developed a smart garden system that connected to the internet, graphed the soil moisture and solar radiation over time, texted updates to the user, and used lights to alert the user of the current soil moisture.
- Went through the entire design process, resulting in a functioning prototype.

SKILLS

Software

- Languages: Python, Arduino, Processing, JavaScript.
- Machine Learning packages: Sckit-learn, Tensorflow, Keras, Weka.

Design

- Fusion 360 for 2 and 3D design.
- Inkscape for 2D design.
- easyEDA for the design of electrical circuits.

Prototyping

- Arduino, Raspberry Pi's, and Beaglebone Blacks.
- 3D printers.
- Laser Cutters.
- Breadboards, soldering, and other electrical circuit prototyping tools

Other
- General woodworking.
- General metal working, including the use of lathes, milling machines, and MIG welders.

NOTABLE SERVICE

Organizer of Hackathons
Berry College, Mount Berry GA

Eight times a year from Aug 2019- Present
- Ensures that students and faculty feel welcome to visit HackBerry Lab and feel empowered to make devices and art pieces
- Ensures that participants can work safely and learn how to properly use the available tools
- Judges participant's final projects and awards a prize to the winners
- Organizes other judges among college faculty, alumni, and industry partners

Member of the Portfolio Critique Board for Creative Technologies Seniors
Berry College, Mount Berry GA

Every Spring from 2020 - Present
- Provides critiques and feedback to students as they present their Senior Capstone projects.

Discover Berry Creative Technologies Representative
Berry College, Mount Berry GA

Various dates from Fall 2019- Present
- Represents the Creative Technologies program to perspectives students, their families, and members of the wider community

Host and organizer of Philosophy Night at HackBerry Lab
HackBerry Lab at Berry College, Mount Berry GA

Fall 2020
- Organized and planned weekly meetings where students and faculty would meet to discuss different philosophical questions.
- Questions that were explored include how do you make ethical designs, what is morality, what is the Tower of Babel and what does it tell us about knowledge

Taught 3D Design and 3D printing at Elm Street Elementary
Rome GA

APRIL 2017
- Taught elementary school students how to use 3D Designing tools and 3D printers.

Printed a Prosthetic Hand for a Child
Rome GA
FALL 2015

- Researched, customized, and made a 3D printed prosthetic hand and gave it to a boy in need of a prosthetic hand.

HONORS AND AWARDS

Martha Berry Outstanding Undergraduate Achievement Award
Berry College, Rome GA
APRIL 2017

- Awarded to one senior student at Berry College per year in recognition of academic achievement, an excellent student work record, and active involvement in volunteer services.

Lawrence E. McAllister Physics Award
Berry College, Rome GA
APRIL 2017

- Awarded to one senior student at Berry College per year in recognition of exceptional academic achievement in the field of physics.

Winner of Southeast Entrepreneurship Venture Pitch Competition
Chattanooga TN
MAR 2017

- Won first place in the SEEC pitch competition, where students from universities across the Southeast United States give business pitches and are judged on the quality of their pitch and business idea.