ISHAAN PATHAK

Phone: +1 (724) 205-2383   1130 Beech Street, Apt 102
pathakis@msu.edu   East Lansing, MI - 48823
www.linkedin/in/pathak-ishaan

EDUCATION

Michigan State University, East Lansing, MI
Bachelor of Science, Physics   *May 2022*

Michigan State University, East Lansing, MI
Bachelor of Science, Data Science   *August 2022*

Michigan State University, East Lansing, MI
Minor, Computational Mathematics Science and Engineering   *May 2022*

EXPERIENCE

Undergraduate Learning Assistant   *Aug 2017 – Dec 2017*
PHY-183/231, Department of Physics and Astronomy, MSU
- Held a weekly meeting to assess student progress and mastery over concepts.
- Held office hours 2-3 times per week, assisting students with specific difficulties in class material and assignments.

Sensors Sub-Team Lead   *May 2018 – May 2019*
STARX (STrength Augmenting Robotic Exoskeleton) Team, MSU
- Worked on integrating and processing data gathered from EMG and Gyroscopic sensors.
- Collaborated with members from Electrical and Mechanical teams regularly.
- Worked on creating a machine learning algorithm which accommodates the suit's motion to the pilot's gait.

Biomedical Team Lead   *May 2019 – May 2020*
STARX (STrength Augmenting Robotic Exoskeleton) Team, MSU
- Supervised 3 sub-teams under the STARX Biomedical team which included: the Sensors, the Electronics, and the Ergonomics sub-teams.
- Managed collaborations between the Biomedical sub-teams and various other teams' sub-teams.
- Drafted the ruleset and judgement criteria for the annual ACE competition.

Student Grader   *Aug 2019 – June 2020*
PIRE Research Group, Department of Education – Hannah Chair, MSU
- Graded and rated student responses to high school physics questions to provide raw data for training the Neural Network to help automate grading process.

- Participated in intradepartmental meetings to assess progress with grading and to decide adjustments needed to be made to future assessment criteria.

Undergraduate Learning Assistant *Jan 2021 – May 2021*
MTH-314, Department of Mathematics, MSU
- Assisted the professors with teaching daily lessons and assisted students with in-class learning assignments.
- Held office hours 2-3 times per week, assisting students with difficulties in class material and assignments.

Undergraduate Research Assistant *May 2021 – August 2021*
Open Educational Resource Program, MSU Libraries, MSU
- Advisor: Dr. Dirk Colbry (colbrydi@msu.edu)
- Helped make assignments and solutions for the 'Matrix Algebra with Computational Applications' open educational resource.
- Helped de-bug existing code and added Google Collab and Binder extensions for notebooks. Project Page: https://colbrydi.github.io/MatrixAlgebra/0-Introduction.html

Undergraduate Research Assistant *Jan 2021 – Sept 2022*
MIDI Lab, Biomedical Engineering Department, MSU
- Advisor: Dr. Adam Alessio (aalessio@msu.edu)
- Used Artificial Intelligence Based Models for PET Image Reconstruction.
- Performed supervised research into porting software between different programming languages like: IDL to Python, and MATLAB to Python.

Undergraduate Learning Assistant *Jan 2022 – May 2022*
CMSE-314, Department of Mathematics, MSU
- Assisted the professors with teaching daily lessons and assisted students with in-class learning assignments.
- Held office hours 2-3 times per week, assisting students with difficulties in class material and assignments.

Research Assistant *Oct 2022 – Current*
SEE-Insight Lab, Department of CMSE, MSU
- Advisor: Dr. Dirk Colbry (colbrydi@msu.edu)
- Designed a GUI to accelerate manual annotation of images.
- Helped with de-bugging the existing codebase and conducting research into improving the efficiency of the algorithms therein.

PROJECTS, PRESENTATIONS & COMPETITIONS

ACE (Applied Collegiate Exoskeleton) Competition *2018*
Was part of a team representing Michigan State University and helped assemble the exoskeleton on competition day. Placed 2nd overall.

ACE (Applied Collegiate Exoskeleton) Competition *2019*

Was part of a team representing Michigan State University and helped assemble the exoskeleton on competition day. Placed 3rd overall.

DeepRecon *2021*

Carried out research under the guidance of Dr. Adam Alessio to design a Neural Network that reconstructs PET Images from raw PET data and compared its performance with existing algorithms like FBP. Project Page: https://github.com/pathakis/DeepRecon

UURAF (University Undergraduate Research and Arts Forum) *2022*

Presented my research on DeepRecon and answered audience questions pertinent to DeepRecon. Was graded by and received good feedback from members of academia present in the audience on overall quality of research and presentation.

Research Project for Ford Motor Company *2022*

Carried out research with 3 fellow students under the guidance of Dr. Dirk Colbry as part of the final thesis project for the Undergraduate Data Science Program (CMSE-495). Submitted a comprehensive report along with the newly developed image analysis pipeline aimed at streamlining Ford's workflow. Project Page: Unavailable due to NDA.

SEE-Insight *2022-23*

Carried out research under the guidance of Dr. Dirk Colbry to design a Graphical User Interface (GUI) that allows for easy integration of existing SEE-Insight tools and features into an easy-to-use GUI. Project Page: https://github.com/see-insight/see-tkinter-gui

LANGUAGES

Hindi:
Native Language

English:
Advanced Listening (25/30), Speaking (30/30), Reading (28/30), and Writing (28/30)
TOEFL Total: 111/120

COMPUTER SKILLS

Programming Languages: Python, C++, R, IDL, and MATLAB

Programming Skills: Data Analytics, Machine Learning, Neural Network Design, and GUI Design in Python.

Programming Portfolio: https://github.com/pathakis