# Nirajan Acharya

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## EDUCATION

**Youngstown State University**                                                                                           Youngstown, OH
*Bachelor of Science in Computer Science | GPA: **4.00 /4.00***                                          *Aug 2018 - Aug 2022*
President's List Award, YSU International Scholar Award

## COURSEWORK & COMPUTER SKILLS

- **Programming:** C, C++, Java, Python, and JavaScript
- **Tools:** Visual Studio, NetBeans, PyCharm, JupyterLab, Atom, Unity
- **Technologies**: AWS (EC2 and RDS), Spring Boot, MySQL, PostgreSQL
- **Coursework:** Data Structures & Algorithms, Operating Systems, Advanced Object-oriented Programming
- **Frameworks:** Spring Boot, React Js, Hibernate
- **Query Languages:** SQL, HQL, JPQL

## PROJECTS

**Variable Length Subnetting Mask**

- Simulated network connection using Variable Length Subnetting Mask (VLSM) to augment usability of subnets.
- Applied OSPF (Open Shortest Path First) link-state routing protocol replacing Static routing for the IP networks.
- Facilitated Dynamic Host Configuration Protocol (DHCP) to generate IP addresses for 300 hosts in a network.

**Project VDI**

- Created a program that duplicates files into and out of a VirtualBox VDI file comprising a Linux ext2 filesystem.
- Designed a program that checks a file system's integrity after executing read and write operations in the VDI file.
- Performed read and write operations with 100% accuracy without corrupting the file system.

**Penguin Health App**

- Built a web app to serve as a daily health assessment tool using Spring Boot Java Framework, React Js and MySQL.
- Developed diagnostic tool and analyzed patient data to resolve the health risks of Coronavirus disease (COVID19).

**Branch Predictor**

- Implemented 7 different Branch Prediction simulator algorithms to ameliorate the flow in the instructions Pipeline.
- Leveraged Smith Predictor, Global-History Two-level Predictors, Local-History Two-level Predictors, and Gshare Predictor.

**Online Shopping App**

- Created an online shopping app using React Js, HTML, Thymeleaf, Hibernate, MySQL, and Java Spring Boot.
- Integrated AWS relational database for user authentication and authorization, as well as storage and retrieval of electronic items data.
- Employed JSON Web Token (JWT) to authenticate users and configured HTTP Security in the application.

**Finite State Machine**

- Programmed Finite State Machine for a non-player character with the help of randomness, depth-first search algorithm, and breadth-first search algorithm.

## WORK EXPERIENCE

**The Shodor Education Foundation, Inc.**                                                                               Durham, NC
*Machine Learning Researcher*                                                                                      *Aug 2021 - May 2022*

- Collaborated with a team of 5 members on the project "Accelerating the Inference Pipeline for Particles Track Finding".
- Improved the algorithm's execution time on 40 and 48 node CPUs.
- Reduced total wall-time by 40% using Facebook AI Similarity Search (FAISS) library, Mpi4py, SciKit Network, and Multiprocessing.