

# Nicolas Sanchez Noguera

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## EDUCATION

### University of Michigan

Ann Arbor, MI

*Bachelor of Science in Engineering in Data Science, Minor in Mathematics*

Aug 2023

Relevant Coursework: Machine Learning, Artificial Intelligence, Data Structures and Algorithms, Financial Engineering, Conversational AI, Hands-On Robotics, Web Systems, Interest Theory, Data Mining, Computer Security

## SKILLS

**Programming:** Bash, C++, C#, CSS, HTML, JavaScript (React), Matlab, Python, R, Solidity, SQL

**Technologies:** AWS, Docker, Git, Jupyter, MySQL, .NET, OpenSSL, Tableau, VMWare, WireShark

**Operating Systems:** Windows, Linux

**Languages:** Fluent in Spanish, French, English

## RELEVANT EXPERIENCE

### Rovisys

Aurora, OH

*Software Engineering Intern*

June-August 2022

- Collaborated with team to design, build, and launch a full-scale data reporting Windows Service for FirstEnergy in C#
- Implemented a data collector that retrieved data from governmental websites using Newtonsoft and HttpClient
- Configured a PI Data Archive which stored and organized the service's collected data using PISDK

### University of Michigan - Project Team

Ann Arbor, MI

*Bioastronautics and Life Support Systems (BLISS)*

January-May 2022

- Cooperated in designing and building a multi-agent lunar base simulation for ICON's project Olympus
- Co-Designed the initial event sourcing database which held total state of the simulation, with plan to integrate with Kafka
- Researched and designed AI pathfinding algorithm to optimize the rover's travel time and fuel expenditure

## PROJECTS

### Personal Project

Miami, FL

*Convolutional Neural Network – Image Classification (Python, React)*

September 2023

- Designed and implemented a multi-class Image Classifier using a PyTorch 2-D CNN on a Google Colab Notebook
- Trained the model using augmented images from the CIFAR10 dataset to improve model's generalization
- Tested the model on unshuffled, non-transformed validation and test sets, scoring accuracy of 76%

### University of Michigan

Ann Arbor, MI

*Simulated Breach Investigation – Capture the Flag (Python, SQL, JS, Docker)*

April 2023

- Investigated the disk image of a machine to discover hidden tokens within an autopsy file, across the web, and in TOR sites.
- Collected tokens using security techniques such as password cracking (JTR), steganography, and buffer overflows
- Searched through PCAP files for network traffic anomalies using WireShark and connected to networks using OpenSSL

*Autonomous Drawing Arm – Team Project (Python)*

December 2022

- Engineered a robot arm that autonomously drew a square on a paper oriented in different angles within a given workspace
- Developed the 3 degrees of freedom arm by incorporating inverse kinematics into the software using numpy and sklearn
- Calibrated the arm using non-linear transformations on the pen and paper coordinates to find appropriate joint angles

*Simulated Search Engine – Team Project (Python, Bash)*

December 2022

- Developed a scalable search engine which used PageRank and TF-IDF to output appropriate results to a search query
- Designed an inverted index pipeline using MapReduce to organize and compute relevance of documents
- Applied Flask, Jinja, and threading alongside an SQLite database to serve the webpage

## LEADERSHIP & INVOLVEMENT

### ALPFA (Association of Latino Professionals For America)

Ann Arbor, MI

*VP of Education*

January 2022 – Dec 2022

- Presented weekly educational sessions to inform club members on the recruitment process for Computer Science roles
- Coordinated with E-Board to organize 3 professional Diversity Networking events
- Organized 3 mentor sessions focused on connecting underclassmen with older club members in their career field