ALEJANDRO SALVADOR VEGA NOGALES

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Data Scientist and Data Engineer with applied and research experience in Geospatial CV, NLP, data transformation pipelines, and Business Intelligence analytics. Pursuing work in the development of AI/ML applications and analytics for Earth Observation and Geospatial Intelligence

RESEARCH INTERESTS

Computational

AI/ML, Natural Language Processing, Computer Vision, Human Computer Interaction

Multidisciplinary

Remote Sensing, Environmental Monitoring, Disaster Mitigation, Public Health, Change Detection

EDUCATION

MS in Computer Science, University of Puerto Rico, Río Piedras (UPRRP) | *Aug. 2024 - Present*
Completing part-time studies sponsored by employer.

BSc Computer Science, UPRRP | *Jan. 2015 - May 2019*

Honors: *magna cum laude*   **Graduation GPA**: 3.50   **Major GPA**: 3.75

Completed curriculum for the Cybersecurity minor that was approved later in 2020

EMPLOYMENT HISTORY

Data Scientist Apprentice, Maxar Puerto Rico (FKA Wovenware) | *Sept. 2022 - Present*

Analytics Engineer at Customer Platforms and Insights team (07/24 - ongoing)

- BI Dashboard for Synthetic Aperture Radar (SAR) order reports:
    - Developed the first data consumer product powered by our internal Data "Lakehouse"
    - Using dbt Cloud, Starburst query engine, and Apache Superset.
- BI dashboard for MGP Pro Platform
    - Lead development of backend models (dbt CLoud) and BI frontend (Tableau)
    - Assisted in defining development priorities and preparing FDR doc

Data Engineer role at electric utility data aggregation client [*06/23 - 05/24*]

- Handled ETL for >500K customers' data from one of USA's largest electric utilities
- utilized Matillion Pipelines, Google Cloud Platform, BigQuery SQL, and Python scripts to transform raw utility client data to client's proprietary data spec
- Successfully met lead developer responsibilities from first round of User-Acceptance-Testing in 09/23 until initial Production load in 05/24

Internal Wovenware projects [*03/23 - 06/23*]

- assisted in preparation of AI in Medicine NIH federal research grant
- Object detection of urban accessibility infrastructure in high-res satellite imagery

Geospatial Intelligence client [*09/22 - 02/23*]

- Image segmentation of roads and airstrips & object detection for land and air vehicles

Teaching Assistant, <u>University of Notre Dame</u> | *Aug. 2019 - May 2020*

Ethical and Professional Issues in Computer Science and Engineering | *Spring 2020*
Human Computer Interaction | *Fall 2019*

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RESEARCH EXPERIENCE

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Research Assistant, HCI Lab, University of Notre Dame | *Aug. 2019 - Sept. 2020*
- Led research and development of DL-based recommendation system for local social services
- Created tools for gaining insight from noisy, unstructured text data: topic models, visualizations of social services referrals, text embeddings, and network model of different data sources
- Advised by Dr. Ronald Metoyer

GEM program intern at Oak Ridge National Laboratory (ORNL) | *Summer 2019*
- Researched Anomaly Detection (AD) techniques for Cyber-Physical Systems (CPS)
- Participated in agile software development (Scrum) sprints involving AD R&D such as comparison of *causal graphs* and modeling behavior of time-series data from CPS
- Advised by Dr. Kalyan Perumalla

Undergraduate Research, UPRRP | *Fall 2018*

- Reviewed literature on Anomaly Detection Machine Learning systems
- Utilized network flow datasets to train baseline classifiers to detect anomalous connections
- Advised by Dr. José Ortiz-Ubarri

Summer Research Fellowship , National Institute of Standards and Technology(NIST) | *2018*
- Developed GUI tool that allowed users to design and draw computational graph algorithms
- The tool defined C++ boilerplate code for the HTGS project, a scheduler for heterogeneous computing developed at NIST
- Advised by Dr. Timothy Blattner

Undergraduate Research, UPRRP | *Spring 2017- Spring 2018*
- Researched use of ML to identify animals in remote recordings for biodiversity monitoring
- Codebase for processing spectrogram data, and work for remote jupyter nb container
- Advised by Dr. Carlos Corrada

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PRESENTATIONS

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Oral

"The HTGS Generator: A Tool for Generating Code for Multi-Core Systems", NIST SURF
Colloquium | *Aug. 2018, Gaithersburg, MD*

"Machine Learning approaches for Detecting and Isolating Anomalous Botnet Network Traffic",
Puerto Rico Interdisciplinary Scientific Meeting (PRISM) | *May 2019, Mayagüez, PR*

Poster

"The HTGS Generator: A Tool for Generating Code for Multi-Core Systems", Great Minds in
STEM HEENAC Conference | *October 2018, Pasadena, CA*