VICTOR ARANGO-QUIROGA

HTTPS://WWW.VICTOR-ARANGO-QUIROGA.COM

varangoquiroga@ucsd.edu linkedin.com/in/victor-arango-quiroga

SUMMARY

M.S. in Computer Science student with 4+ years of industry experience who is highly interested in machine learning (ML) and natural language processing (NLP). Experienced technical leader who has led teams through several challenging ML engagements with strong positive outcomes. Skilled communicator between clients, managers, and dev team for ML engagements.

SKILLS & ABILITIES

ML, MLOps, NLP, Agile, TDD, Python/Java/C++, PySpark, Django, Flask, Elasticsearch, GCP, Argo/Tekton, Kubernetes, Seldon, HPC, HDFS

Relevant courses: *Machine Learning, Natural Language Understanding, Robotics, Comm & Signal Proc., Image Processing, Embedded Systems, Data Structures, Networks & Internet, Electronics I, Circuits I & II, Signals and Systems.*

EDUCATION

University of California San Diego, **La Jolla, CA**

M.S. in Computer Science – AI Specialization *Expected Dec 2023*

University of Massachusetts Amherst, **Amherst, MA**

B.S. in Computer Engineering – Cum Laude GPA: 3.8/4.0 *May 2018*

Honors &Awards: Dean's List (2015-2018), Jack Cryan Scholarship & Arlindo Jorge Scholarship from College of Engineering.

PROFESSIONAL CERTIFICATE: Stanford Professional Certificate in Artificial Intelligence (2022)

ONLINE CERTIFICATES: MLOps (2021), GCP Big Data and ML Fundamentals (2021), GCP Fundamentals: Core Infrastructure (2021), Natural Language Processing in TensorFlow (2021), Machine Learning (Coursera) (2020), NN and DL (deeplearning.ai) (2017)

WORK EXPERIENCE

FORD MOTOR COMPANY **DEARBORN, MI**

TECH LEAD – ARTIFICIAL INTELLIGENCE ADVANCED CENTER *SEPT 2021 – AUG 2022*

- Led team of 24 ML engineers through 20+ engagements through planning tasks, estimating dev times, and defining requirements.
- Worked with product managers (PMs) to assign resources to each engagement and signed off scoping document.
- Defined technical tasks, estimated development time, delegated tasks to ML and software engineers, and demoed to stakeholders.
- Collaborated with the interview process standardization throughout my department where I led 30+ technical interviews.
- Integrated Tekton CICD pipeline to automatically generate testing and vulnerabilities report through SonarQube.
- Decreased onboarding time by ~40% by creating technical guides with working code to self-train incoming ML engineers.

ML ENGINEER – ARTIFICIAL INTELLIGENCE ADVANCED CENTER *JAN 2021 – SEPT 2021*

- Delivered POCs and MVPs that leveraged ML and NLP algorithms coupled with Kubernetes applications to deliver robust and scalable enterprise solutions through Ford's internal ML platform (Mach1ML).
- Defined scope of project engagements and architected solutions for internal clients that later were evaluated by system architects.
- Developed Ford internal Elasticsearch-based search engines for dealer technicians and customer surveys databases in the United States, Canada, and Mexico. Standardized multiple databases and data formats across the applications.
- Created the ETL process to create an index on Elasticsearch developed using Apache Beam pipelines and triggered by GCP pub/sub.
- Developed clustering algorithm that grouped issue-related tickets that contained numerical and textual data which was parsed to the K-means algorithm using NLP techniques to create embeddings. The model was deployed to an API with token-based authentication.

SOFTWARE ENGINEER & RESEARCH ASSOCIATE – FORD MOTOR CREDIT COMPANY *JAN 2020 – DEC 2020*

- Improved the accuracy of a Random Forest Regressor model by 10% while decreasing its number of features by 30% by creating Python programs with multiprocessing capabilities to perform feature engineering tasks and hyper parameter tuning.
- Delivered MVPs with Flask-based ML cloud APIs with a response time of ~250ms and model accuracies ranging from 70% to 97%.
- Trained, tested, and validated different ML models (Scikit-learn models such as Random Forest Regressor, Logistic Reg., K-means).

SOFTWARE ENGINEER – INTELLIGENT CUSTOMER INTERACTIONS *JULY 2018 – DEC. 2019*

- Co-created a distributed system integrating Pega and HPC servers and worked with cross-functional teams in India, Canada, and the United States to integrate applications to send marketing communications based on a naive Bayes classifier prediction.
- Created Finite State Machines (FSM) based on customer journeys for EV market and helped defining technical requirements.
- Demoed software product to internal clients resulting in 3 new customers.
- Trained new members and created onboarding guides which significantly decreased the onboarding meeting time.

PERCEPTION AND INTELLIGENT SYSTEMS, UNIVERSIDAD DEL VALLE **CALI, COLOMBIA**

RESEARCH INTERN – AUTONOMOUS VEHICLE PROJECT – PROF. BLADIMIR BACCA *SUMMER 2017*

- Conducted literature review on vision-based topological mapping and localization methods, and 2D Projective Transformations.
- Created, in an offline phase, a localization system using the Bag-of-Visual-Words (BoVW) model where nodes were detected based on Euclidean parameters (distance/angle variation) and described by the SIFT/SURF features. RANSAC was used to detect outliers.
- Created, in an offline phase, the inverted index of the BoVW model which, given visual features of an input image, retrieved the most likely node that the input image corresponded to.

- Evaluated performance (PR curves/confusion matrix). Achieved 90% testing accuracy.
- Created guide on how to create topological maps and reported findings and potential ways to improve the BoVW model.

CENTER FOR AUTOMATION TECHNOLOGIES AND SYSTEMS (CATS), RENSSELAER POLYTECHNIC INSTITUTE **TROY, NY**

RESEARCH INTERN - AUTONOMOUS VEHICLE PROJECT (DUCKIETOWN) - PROF. JOHN WEN *SUMMER 2016*

- Assembled, configured, and calibrated robot by using ROS and Python. Evaluated performance and improved software capabilities.
- Created new functionalities to follow pre-computed navigation commands and follow stipulated road rules.
- Discovered robot limitations in certain light environments in which the robot misunderstood the reflected colors from road markings, which negatively impacted the CV algorithm causing the robot to behave erratically.
- Collaborated with MIT's Computer Science Artificial Intelligence Duckietown Team by contributing to the official FAQ section and creating a detailed technical guide with a cost analysis section and explaining how to build and configure the robot.

UNIVERSITY OF MASSACHUSETTS AMHERST **AMHERST, MA**

UNDERGRADUATE RESEARCHER – PROF. BILL LEONARD *FALL 2016, 2017*

- Developed and designed website using Django and Angular hosted on Heroku to improve and ease feedback communication between professors and students. Progress and new prototypes were demoed biweekly. Delivered prototype which TAs used.

RELEVANT SCHOOL PROJECTS

SENIOR DESIGN PROJECT (SDP) – PROF. GUANGYU XU **FALL 2017, SPRING 2018**

- Designed FSMs to develop a fault tolerant system that automatically validated an ID based on its unique pattern of microspheres to build a secure and unclonable personal ID system. Created APIs to integrate RPi to AWS databases.
- Integrated all sensors to RPi. Developed a customized template matching algorithm and improved its runtime by a factor of 10 by vectorizing all mathematical calculations. The accuracy of the system based on a synthetic database was 70%.

ROGER-THE-CRAB SIMULATOR - ROBOTICS – PROF. RODERIC GRUPEN **SPRING 2018**

- Designed and developed a simulated robot that implemented mathematical foundations of robotics such as actuation, control, kinematics, dynamics, path planning, uncertainty, probabilistic models and inference, and machine learning for motor control.
- Developed reinforcement learning algorithm (Q-learning) in C to teach robots abstract tasks such as touching, grabbing, and carrying.

REACHABILITY ANALYSIS LAB – MODELING AND VERIFICATION OF EMBEDDED SYSTEMS – PROF. DANIEL HOLCOMB **SPRING 2017**

- Created, for a traffic light interception, the state transition graphs and sequential Verilog modules with combinational logic and state updates. Wrote Verilog testbench integrated to Verilog modules to randomly cycle through the system and check for reachability.
- Wrote a Python program to parse Verilog modules, unroll the transition relation and convert it to DIMACS formatted Conjunctive Normal Form (CNF). Performed symbolic reachability analysis using SAT solvers on CNF clauses.

AWARDS

1st Place and People's Choice Awards at Ford-GCP Hackathon (2021) |Ford Recognition Awards (2018-2019-2020-2021) | 1st Place and People's Choice Awards at Ford College Graduate Hackathon (2019) | Coordinator's Choice - Senior Design Project Award (2018)

TEACHING & VOLUNTEERING EXPERIENCE

PYTHON 101 – PROGRAMMING CLASS INSTRUCTOR, FORD MOTOR CREDIT COMPANY **2020**

Volunteered as one of three instructors for a 12-weeks programming training for 50 plus engineers and managers.

FORD VOLUNTEER CORPS – Delivered clean water to Flint and helped to pack food at the Gleaners Community Food Bank **2018-2019**

FORD HISPANIC NETWORK (FHN) – Helped to create presentations for the FHN Heritage Gala. Helped as recruiter. **2018-2019**

SOCIETY OF HISPANIC PROFESSIONAL ENGINEERS (SHPE) – HEAD EVENT COORDINATOR **2015-2018**

Planned company tours and led activities with high and middle schools to motivate underrepresented communities to engage in STEM activities. Participated on the outreach committee where I coordinated events with other societies such as NSBE and ALPFA.

TEACHING ASSISTANT, CITIZEN SCHOOLS - BROWNE MIDDLE SCHOOL, CHELSEA, MA **2015**

Tutored Math to ESL students. Applied behavior strategies and worked with students, teachers, and parents to improve student's academic performance. Designed school material for students that successfully improved mathematical skills and MCAS scores for 10-15 students.

TEACHING ASSISTANT/ BETA TESTER (ADVANCED INTRODUCTORY CLASSICAL MECHANICS - MITX) **2015**

Tested new software features, reviewed class material, and helped students online. Reported bug findings to admins.

TEACHING ASSISTANT, DIFFERENTIAL EQUATIONS – PROF. HENDEL YAKER, ICESI UNIVERSITY, CALI, COLOMBIA **2013**

Tutored differential equations and calculus to engineering students. Graded class material and hosted TA sessions.

LANGUAGES: Spanish. English.