VERONICA MEDRANO

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EDUCATION

NORTHWESTERN UNIVERSITY, MS IN ROBOTICS, GPA: 3.27 **Evanston, IL**
Relevant Course Topics *September 2018 – September 2019*
Robotic Manipulation, Mechatronics, Embedded Systems in Robotics, Computer Vision, AI, Machine Learning, Deep Learning, Affective Computing, Ontology Engineering

TEXAS A&M UNIVERSITY, BS IN ELECTRICAL ENGINEERING **College Station, TX**
September 2008 – December 2013

SKILLS/TOOLS

- Python, C/C++, Ubuntu Linux, Robot Operating System (ROS), OpenCV, SSI, Rviz, Gazebo, Git/Github, Tensorflow/Keras, Scikit-learn, NLTK, Watson and Naoqi APIs, Bash/Batch, V-REP, Javascript/Node.js, SQL, SPARQL, Cyc/CycL, RDFS/OWL, XML, SoapUI, Gherkin, Flask, Awk/Grep, Django, R, Embedded Programming (PIC, Raspberry Pi, Arduino), MATLAB/Simulink, Mathematica, LaTeX, Unreal Engine

PROJECTS

NAO AND COZMO, ROBOTS THAT INFER YOUR FEELINGS, MSR PROGRAM **Evanston, IL**
Graduate Student Researcher *June 2019 – Present*
- Developed a speech and intent recognition system on the Nao Robot that successfully infers a human's f feelings without having to ask the human directly; utilized Naoqi and IBM Watson APIs.
- Enhanced program of the Nao robot by adding facial expression recognition and a smiley face on Cozmo's OLED screen during transition from negative to positive emotion

MULTIMODAL SIGNAL PROCESSING, ADVANCED MULTIMODAL INTERFACES **Evanston, IL**
Graduate Student Researcher *March 2019 – May 2019*
- Developed an application to process real-time multimodal signals (EEG, ECG, PPG physiological signals with audiovisual signals) into SSI (Social Signal Interpretation) Framework pipeline.
- Added new physiological components using SSI's C++ API and Python; utilized XML interface to build pipelines for components.

KUKA YOUBOT MANIPULATION, MSR PROGRAM **Evanston, IL**
Graduate Student Researcher *March 2019*
- Simulated a mecanum-wheeled robot's end-effector to grasp, carry, and drop a cube to specified locations; used rigid body transformations, forward and inverse kinematics, feedback control, odometry, Python and V-REP.

DC MOTOR TRAJECTORY FOLLOWER, MECHATRONICS **Evanston, IL**
Graduate Student Researcher *January 2019 – March 2019*
- Implemented a motion controller using PID Control to enable a DC motor to track reference trajectories; used C, MATLAB, and PIC32 microcontroller.

TJBOT: A CARING ROBOT, MSR PROGRAM **Evanston, IL**
Graduate Student Researcher *January 2019 – March 2019*
- Built a caring, emotionally intelligent robot using IBM's TJBot and Watson services
- Developed Node.js application to interface with the following Watson services: Speech to Text, Text to Speech, Tone Analyzer, Watson Assistant (conversation building tool), Visual Recognition

SAWYER, THE ARTIST, MSR PROGRAM **Evanston, IL**
Graduate Student Researcher *December 2018*
- Programmed Sawyer the Robot to detect and draw faces using ROS; team awarded first place in Robotics competition
- Developed the face detection algorithm using Python and Haar Classifers in OpenCV

PREDICTING MENTAL DISORDERS IN TWEETS **Evanston, IL**
Graduate Student Researcher *December 2018*

- Developed Python program to predict mental disorders in tweets; cleaned tweets using NLTK; extracted tweet features using Bag of Words, TF-IDF and word2vec methods
- Ran features and Naive Bayes machine learning classifier through SciKit Learn Pipeline

TRACKING OBJECTS USING ROS AND PYTHON, MSR HACKATHON **Evanston, IL**
Graduate Student Researcher *September 2018*
- Programmed a webcam mounted on a servo motors to track the motion of a ball using ROS, Python, and OpenCV

MINI ROBOT CAR WITH PYTHON AND RASPBERRY PI **Los Angeles, CA**
Hobbyist *May 2015-July 2015*
- Built and tested robot using Python and Raspberry Pi
- Implemented user control functionality by running device via keyboard and mobile device

PROFESSIONAL EXPERIENCE

HARRIS CORPORATION, GEOSPATIAL SYSTEMS **Clifton, NJ**
Software Systems Engineer *April 2017 – April 2018*
- Developed test data generation scripts and SoapUI mock web service responses to verify display software for GPS OCX (Global Positioning System Next Generation Operation Control System)
- Wrote Gherkin-based human readable test procedures and associated Python code under a BDD (Behavior-driven development) framework to facilitate implementation of automated test procedures
- Led 6 software engineers in successful completion of integration and test phase under tight schedule; assisted with debugging in the Front-End (User Interface) and Back-End (server/database)
- Wrote portable Python program to parse metric data log dates dynamically, measure plot times, and analyze statistics to verify a critical display software performance requirement

BOEING SATELLITE SYSTEMS **El Segundo, CA**
Lead Systems Engineer, Integration and Test Engineer *January 2014 – April 2018*
- Awarded for leading team of approximately 30 multi-discipline engineers to execute a Technical Design Review within schedule and budget for a closed area program
- Monitored critical Intelsat 29e spacecraft commanding test conducted from Mission-Control
- Executed and debugged critical software-driven payload in-orbit and ground system tests for Mexsat-Morelos 3 satellite
- Tested various Mexsat terminal-types in fast-paced, on the field and testbed environments at customer sites in Mexico
- Developed communications link budgets and worst-case analyses for Inmarsat and Intelsat satellites

L-3, MISSION INTEGRATION DIVISION **Greenville, TX**
Co-op Electrical Design Engineer *January 2012 – August 2012*
- Collaborated with a team of eight engineers to design the lighting system of a special mission aircraft

HONORS

- Sawyer, The Artist awarded first place in Northwestern robot manipulation competition *December 2018*
- Boeing NSP Recognition Award for Successful ECP-086 Technical Design Review *January 2017*
- Boeing NSP Recognition Award for Quick Turnaround of System Test Updates for Upcoming Critical Milestone *January 2017*
- Boeing Recognition Program Certificate for Spacecraft Redundancy Management *February 2016*

ACTIVITIES/INTERNATIONAL EXPERIENCE

- Led Robotics team in demoing Sawyer, The Artist project to high school and middle school girls at Northwestern Career Day for Girls on February 23, 2019
- **New York/Chicago Cares:** Delivered meals to homeless/disabled, motivated children to prepare for Special Olympics, entertained homeless children of battered mothers seeking employment
- **The Green Program in Icelend:** Collaborated with diverse capstone team to design autonomous control system that would decrease the risk of electrocution from solar panels
- Writing poetry/performing at open mics, playing piano and accordion