HENRY ALONSO RUIZ GUZMAN

Research Associate / Data Scientist

Department of Soil & Crop Sciences, Texas A&M University

College Station, Tx

+19792185914

henry.ruiz@tamu.edu

https://github.com/haruiz

https://haruiz.github.io

www.linkedin.com/in/haruiz

Research interests:

Artificial Intelligence, Computer Vision, Machine Learning, Pattern recognition, Images processing, Deep learning, Remote Sensing, Ground Penetrating Radar (GPR), Data Science& High-Performance Computing (HPC), Python, C++

A. EXPERIENCE

- **Research Associate/Data Scientist,** 09/11/2018 – present, Department of Soil and Crop Sciences, Texas A&M University.
  - Currently implementing ML, DL, and signal analysis pipelines to extract features from GPR (Ground-penetrating radar) data that correlate with root biomass in tuber crops.
- **Research Assistant/Data Scientist,** 02/2017 – 06/2018 – CIAT (International center of tropical agriculture). - computer vision and software development.
  - **Projects:**
    - **Pollen Viability Evaluation Tool:** in the collaboration with the staff of the Andean Bean Program, this software created with OpenCV and Accord.Net is used to automatically evaluate the pollen viability in images taken with microscope.
    - **PhenoBox: E**mbedded system for automatic bean seed counting (Raspberry pi, deep learning, python).
- **Research Internship:** 07/2016 – 12/2017, Texas A&M University, Department of Soil and Crop Sciences, Texas A&M University. - computer vision and software development

- **Projects:**
  - **Scorpion:** In an attempt to combat the high cost of entry into the fields of 3D phenotyping and crop analysis we combined low cost and readily available parts to produce a field ready 3D imaging tool. This platform consists of 3 Microsoft Kinect V2 sensors, 3 Latte Panda single board computers (SBC), a router, smartphone, and a battery with inverter (react.js, C#, Latte Panda, IoT)**.**

- **Research Internship**: 10/2016 – 11/2016, Sugar beet and Bean Research Unit of the U.S. Department of Agriculture, Agriculture Research Service and Michigan State University. - computer vision and software development
  - **Projects:**
    - **Prediction Tool for appearance and color in canned beans:** Using a trained model based on the opinion of 5 experts, and a set of images of about 1000 for each class, the software infers the appearance and color of the bean seeds using a 1-5 defined scaled. This project was developed with the support of CIAT and Michigan state university.

- **Senior software Developer,** 02/2011 – 06/2015 – CIAT (International center of tropical agriculture).
  - **Projects:**
    - **Bean cooking machine: E**mbedded system for automatic monitoring of cooking time in bean seed (raspberry pi, node.js, real-time, IoT).

B. EDUCATION

- **B.S. in Computer Sciences**, UNIAJC, Cali, Colombia – 2013
- **M.Sc. in Science and Engineering (AI),** UABC, Mexicali, Mexico – 2017
- **Deep Learning Nanodegree,** Udacity 2020
- **Intel® Edge AI for IoT Developers Nanodegree,** Udacity - 2020
- **TensorFlow in Practice Specialization,** Coursera – 2020

C. OPEN-SOURCE CONTRIBUTIONS

- CV-Studio. Git code (2019). https://github.com/haruiz/CvStudio
- FalconCV. Git code (2020). https://github.com/haruiz/FhalconCV
- Riggingjs. Git Code (2020). https://github.com/haruiz/RiggingJs

D. SYNERGISTIC ACTIVITIES

Awards and achievements

- Master's Degree Fellowship, Mexico, CONACYT
- Master's Internship Fellowship, Mexico, CONACY
- Udacity: Bertelsmann Tech Scholarship, Deep Learning nanodegree
- Udacity: Intel ® Edge AI Scholarship nanodegree
- Microsoft Student Partner
- Microsoft Community Specialist
- Qualcomm® Artificial Intelligence Contest winner (https://bit.ly/2RzpHJr)
- Qualcomm® Developer of the month (https://bit.ly/341DOL1)
- Meritorious recognition thesis (master's degree) – **A Machine learning platform for training, validating and running machine learning models.**
- Meritorious recognition thesis (B.A. degree) - **Sign Language Interpreter for hearing impaired communication using image processing.**
- Meritorious recognition thesis(congress) - **A video game that helps students improve their skill of programming.**
- Best oral presentation Award, International Banana conference, 2020, India for the paper *"AI-powered banana diseases and pest detection".*

Certificates

- ***Microsoft***
  - Microsoft certified Professional
  - Microsoft Certified Technology Specialist in Programming in HTML5 with JavaScript and CSS3
  - Microsoft Certified Technology Specialist in Microsoft SharePoint 2010, Application Development
- ***Coursera***
  - Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
  - Convolutional Neural Networks in TensorFlow
  - Natural Language Processing in TensorFlow
  - Sequences, Time Series and Prediction

Teaching

1. Software programming (3 semester of engineering)
2. Programming of mobile devices with Android (2 semester of engineering)
3. Programming of web applications (1 semester of engineering)

E. PRODUCTS

Selected Publications

1. Michael Gomez Selvaraj, Manuel Valderrama, Diego Guzman, Milton Valencia, Henry Ruiz, Animesh Acherjee. **Machine learning for high-throughput field phenotyping and image processing provides insight into the association of above and below-ground traits in cassava (Manihot esculenta Crantz)**. Plant methods. https://doi.org/10.1186/s13007-020-00625-1
2. Selvaraj, M.G., Vergara, A., Ruiz, H. et al**. AI-powered banana diseases and pest detection**. Plant Methods 15, 92 (2019). https://doi.org/10.1186/s13007-019-0475-z
3. H. A. R. Guzman, F. F. González-Navarro, M. Selvaraj-Gomez, M. Valencia and A. Delgado, "Field Phenomics: **A Web Based Image Analysis Platform Using Open Source Tools**," *2015 International Conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, NV, 2015, pp. 851-852. https://doi.org/10.1109/CSCI.2015.157
4. Henry Ruiz, William Díaz, Jaime Alberto Parra Plaza. “Revista de Investigaciones - Universidad del Quindío”, **Sign Language Interpreter for hearing impaired communication using image processing**, https://bit.ly/2RxzvUa.
5. Prakash, Edmond C., Rao, Madhusudan. **Transforming Learning and IT Management Through Gamification,** https://doi.org/10.1007/978-3-319-18699-3 , As collaborator.