

COMPUTER VISION · COMPUTATIONAL IMAGING · DEEP LEARNING

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### Education

#### Universidad Industrial de Santander

Bucaramanga, Colombia

PH.D (c) IN COMPUTER SCIENCE

Aug 2018 - Dec 2021 (Expected)

• GPA: 4.58/5.0

Universidad Industrial de Santander

Bucaramanga, Colombia

MASTER OF SCIENCE IN COMPUTER AND SYSTEM ENGINEERING

Feb. 2016 - Apr. 2018

• GPA: 4.57/5.0

Universidad Industrial de Santander

Bucaramanga, Colombia

BACHELOR OF SYSTEM ENGINEERING AND INFORMATICS

Apr. 2011 - Dec. 2015

• GPA: 4.33/5.0

### **Research Work Experience**

#### Universidad Industrial de Santander (UIS) - Ecopetrol

Bucaramanga, Colombia

RESEARCH ENGINEER

January 2019 - February 2020

- Designed an algorithm for the conversion of 3D RMS time velocities to 3D interval velocities in depth using Image rays.
- Implemented the designed algorithm using the NVIDIA Cuda parallel computing platform.
- Validated the algorithm using 3D real seismic image datasets.

**MinCiencias** Bucaramanga, Colombia

RESEARCHER

May 2017 - May 2018

- · Determined the distribution of pixels in a coded aperture responsible for saturation of a multispectral sensor and to analyze how these saturated compressed measures affect the reconstruction of the multispectral image.
- Identified the pixels of the coded aperture responsible for saturation in each of the pixels of the sensor used by analyzing the mathematical model of a compressive acquisition system of multispectral images.
- Designed and implemented an adaptive computational algorithm capable of generating grayscale coded apertures to reduce the saturation in the sensor of a compression acquisition system of multispectral images.
- · Validated, the grayscale coded apertures generated by the developed algorithm, to analyze its impact on the dynamic range of multispectral image reconstructions.
- Disseminated the results of the research developed by developing a publishable article that exposes the problem addressed, and the algorithm developed to solve it.

#### **HDSP Research Group | UIS - Ecopetrol**

Bucaramanga, Colombia

RESEARCHER

March 2016 - March 2017

- Implemented the image ray method as a module for the DecisionSpace (DSG) software using the JAVA language.
- Designed and implemented an algorithm based on the fast marching method for time to depth conversion of seismic images.
- Implemented a full seismic images' time to depth conversion module for the SeisSpace ProMAX software.

#### CPS Research Group | UIS - Ecopetrol

Bucaramanga, Colombia

RESEARCHER

April 2016 - August 2016

· Researched on acquisition, design, modeling, and processing issues that support the 2D and 3D Seismic programs in the Ecopetrol research programs.

### **CPS Research Group**

Bucaramanga, Colombia November 2014 - December 2015

RESEARCH ASSISTANT

- · Designed and implemented an algorithm for detecting and eliminating Ground Roll noise in Seismic Images using the Curvelet transform.
- Developed a module, in C/C++ programming language, for the SeisSpace ProMAX software that implements the developed algorithm.

### **Publications**.

#### JOURNAL ARTICLES [6]

Hyperspectral image segmentation using 3D regularized subspace clustering model Carlos A. Hinojosa, Fernando Rojas, Sergio Castillo, Henry Arguello Journal of Applied Remote Sensing 15.1 (2021) pp. 1-17. SPIE DOI: 10.1117/1.JRS.15.016508

2021

Supervised spatio-spectral classification of fused images using superpixels  Karen Sanchez, Carlos Hinojosa, Henry Arguello Apol. (pp. 587, Max. 2018) B9-518. CSA  ooi: 10.1364/AD. 88. 000080  Coded Aperture Design for Compressive Spectral Subspace Clustering  Carlos Hinojosa, Jorge Bacca, Henry Arguello  IEEE Journal of Selected Topics in Signal Processing 12.6 (2018) pp. 1589-1600  Jori 10. 1109/JST879. 2018. 28782933  Multiple snapshot colored compressive spectral imager  Claudia V. Correa, Carlos A. A. Hinojosa, Gonzalo R. Arce, Henry Arguello Sr.  Ophical Engineering 56.4 (2016) pp. 1-10. SPE  DOI: 10. 1117/1.10. B6.4. 041309  CONFERENCE PROCEEDINGS [8]  Subspace-based Domain Adaptation Using Similarity Constraints for Pneumonia Diagnosis within a Small Chest X-ray Image Dataset  Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab  2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI)  DOI: 10. 1.109/ISBI/18211. 2021. 9434173  Single-Pixel Camera Sensing Matrix Design for Hierarchical Compressed Spectral Clustering  Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello  2019 IEEE 18th Immentational Workshop on Mochine Learning for Sympat Processing (MLSP)  DOI: 10. 1.109/ILBS 2019. 8918866  2019 Spectral-Spatial Classification from Multi-Sensor Compressive Measurements Using Superpixels  Carlos A. Hinojosa, Juan Marcos Ramirez, Henry Arguello  2019 IEEE International Conference on Image Processing (ICIP)  DOI: 10. 1.109/ICIP. 2019. 8803266  Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer  Carlos A. Hinojosa, Jorge Bacca, Henry Arguello  Imaging and Applied Optics 2018 (30, A0, A0), COSI, DH, IS, LACSEA, LSEC, MATH, pcAOP)  DOI: 10. 1304/ANATI. 2018. ISIES. 7  Supervised Classification of Hyperspectral Images using Side Information  Karen Sanchez, Carlos Hinojosa, Henry Arguello  Imaging and Applied Optics 2018 (30, A0, A0), COSI, DH, IS, LACSEA, LSEC, MATH, pcAOP)  DOI: 10. 1304/ANA	Efficient subspace clustering of hyperspectral images using similarity-constrained sampling  Jhon Lopez, Carlos Hinojosa, Henry Arguello  Journal of Applied Remote Sensing 15.3 (2021) pp. 1–16. SPIE  DDI: 10.1117/1.JRS.15.036507	2021
Karen Sanchez, Carlos Hinojosa, Henry Arguello Appl Opt. 587, Max. 2019; Be-Dils OSA DOI: 10.1364/A0.58.0000B9 Coded Aperture Design for Compressive Spectral Subspace Clustering Carlos Hinojosa, Jorge Bacca, Henry Arguello IEEE, Journal of Selected Optics in Signal Processing 12.6 (2018) pp. 1589–1600 DOI: 10.1109/JSTSP.2018.28782B3 2018 Multiple snapshot colored compressive spectral imager Claudia V. Correa, Carlos A. A. Hinojosa, Gonzalo R. Arce, Henry Arguello Sr. Optical Engineemp 56.4 (2016) pp. 1–10. SPIE DOI: 10.1117/1.0E.56.4.041309  CONFERENCE PROCEEDINGS [8] Subspace-based Domain Adaptation Using Similarity Constraints for Pneumonia Diagnosis within a Small Chest X-ray Image Dataset Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab 2021/EEE Eith International Symposium on Biomadoral Imaging (ISB0) DID: 10.1109/JSB148211.2021.9434173 Single-Pixel Camera Sensing Matrix Design for Hierarchical Compressed Spectral Clustering Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019/EEE 29th International Workshop on Machine Learning for Signal Processing (MLSP) DID: 10.1109/JSB2.2019.8818866  Spectral Spatial Classification from Multi-Sensor Compressive Measurements Using Superpixels Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019/EEE international Conference on Image Processing (IUE) DID: 10.1109/JCIP.2019.880328 Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (20. A), A(I.O. COS), DH. IS, LACSEA LS&C, MATH, pcAOP) DID: 10.1109/ICIP.2019.880328 Spectral Imaging Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (20. A), A(I.O. COS), DH. IS, LACSEA LS&C, MATH, pcAOP) DID: 10.1109/ICIP.2019.400000000000000000000000000000000000	Nelson Diaz, Carlos Hinojosa, Henry Arguello Optics & Laser Technology 117 (2019) pp. 147–157	2019
Carlos Hinojosa, Jorge Bacca, Henry Arguello LEE Lournal of Selected Tolgics in Signal Processing 12.6 (2018) pp. 1589–1600  DOI: 10.1109/JSTSP.2018.2878293  2018 Multiple snapshot colored compressive spectral imager Claudia V. Correa, Carlos A. Hinojosa, Gonzalo R. Arce, Henry Arguello Sr. Optical Engineering 56.4 (2016) pp. 1–10. SPIE DOI: 10.1117/1.0E.56.4.041309  2016  CONFERENCE PROCEEDINGS [8]  Subspace-based Domain Adaptation Using Similarity Constraints for Pneumonia Diagnosis within a Small Chest X-ray Image Dataset Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab 2021/EEE 18th International Symposium on Biomedical Imaging (ISBI) DOI: 10.1109/JSB148211.2021.9434173  202 Single-Pixel Camera Sensing Matrix Design for Hierarchical Compressed Spectral Clustering Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019/EEE 2019 International Workshop on Machine Learning for Signal Processing (MLSP) DOI: 10.1109/MLSP.2019.8918856  Spectral-Spatial Classification from Multi-Sensor Compressive Measurements Using Superpixels Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019/EEE International Conference on Image Processing (ICIP) DOI: 10.1109/JTCIP.2019.8803266  Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (2D, AO, AIO, COS), DH, IS, LACSEA LS&C, MATH, pcAOP) DOI: 10.11084/3D.2019.3WSE.7  2018  Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (2D, AO, AIO, COS), DH, IS, LACSEA LS&C, MATH, pcAOP) DOI: 10.11084/ABI.2017. YRTN4C.5  2018  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COS), DH, IS, LACSEA LS&C, MATH, pcAOP) DOI: 10.11084/MATH.2017. YRTN4C.5  2018  Compressive spectral Imaging using multiple snapshot colored-mosaic de	Karen Sanchez, Carlos Hinojosa, Henry Arguello Appl. Opt. 58.7 (Mar. 2019) B9–B18. OSA	2019
Claudia V. Correa, Carlos A. A. Hinojosa, Gonzalo R. Arce, Henry Arguello Sr. Optical Engineering 56.4 (2016) pp. 1–10. SPIE DOI: 10.1117/1.0B. 56.4 (2016) pp. 1–10. SPIE DOI: 10.1109/ISBI48211. 2021. 9434173 DOI: 10.1109/ISBI48211. 2021. 9818856 DOI: 10.1109/ISBI48211. 2021. 9818566 DOI: 10.1109/ISBI48211. 2021. 9818856 DOI: 10.1109/ISBI4821. 2021. 9818856 DOI: 10.1109/ISBI48211. 2021. 9818856 DOI: 10.1109	Carlos Hinojosa, Jorge Bacca, Henry Arguello IEEE Journal of Selected Topics in Signal Processing 12.6 (2018) pp. 1589–1600	2018
Subspace-based Domain Adaptation Using Similarity Constraints for Pneumonia Diagnosis within a Small Chest X-ray Image Dataset Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab 2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI) poi: 10. 1 109/TSB148211. 2021. 9434173  202  Single-Pixel Camera Sensing Matrix Design for Hierarchical Compressed Spectral Clustering Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019 IEEE 29th International Workshop on Machine Learning for Signal Processing (MLSP) 2019. 8918856  Spectral-Spatial Classification from Multi-Sensor Compressive Measurements Using Superpixels Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019 IEEE International Conference on Image Processing (ICIP) 2019: 10.1109/TCIP. 2019. 8803266  Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer Carlos A, Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AVO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) 2010. 10.1364/3D. 2018. JVBE. 7  Supervised Classification of Hyperspectral Images using Side Information Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AVO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) 2010. 10.1564/3D. 2018. JVBE. 7  Supervised Classification of Hyperspectral Images using Side Information Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AVO, COSI, DH, IS, IACSEA, LS&C, MATH, pcAOP) 2010. 10.164/3D. 2017. JVWW. osapublishing. org/abstract. cfm?VRIP.=COSI-2018-JVBE. 5  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A, Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP) 2010. 10.64/MATH. 2017. MTM4C. 5  Compressive spectral imaging using multiple snapshot colored-mosaic detector measurements Carlos A, Hinojosa, Claudia V. Correa, Henry Arguello, Gonza	Claudia V. Correa, Carlos A. A. Hinojosa, Gonzalo R. Arce, Henry Arguello Sr.  Optical Engineering 56.4 (2016) pp. 1–10. SPIE	2016
Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab 2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI) 2011. 0.1 10.1 109 /TBSH 2811. 2021. 9434173 2025 Single-Pixel Camera Sensing Matrix Design for Hierarchical Compressed Spectral Clustering Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019 IEEE 29th International Workshop on Machine Learning for Signal Processing (MLSP) 2019. 00: 10. 1109 /MLSP. 2019. 8918856 2019 2019. 10: 10. 10109 /MLSP. 2019. 8918856 2019 2019 SetEe International Conference on Image Processing (ICIP) 2019. IEEE International Conference on Image Processing (ICIP) 2019. 10: 10. 1109 /ICIP. 2019. 8803266 2019 2019 IEEE International Conference on Image Processing (ICIP) 2019. 10: 10. 1109 /ICIP. 2019. 8803266 2019 2019 IEEE International Conference on Image Processing (ICIP) 2019. 10: 10. 1364/3D. 2018. 3WBE. 7 2018 2018 (ICIP) 2019. 10: 10. 1364/3D. 2018. 3WBE. 7 2018 2018 (ICIP) 2019	Conference Proceedings [8]	
Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019 IEEE 29th International Workshop on Machine Learning for Signal Processing (MLSP) DDI: 10.1109/MLSP.2019.8918856  Spectral-Spatial Classification from Multi-Sensor Compressive Measurements Using Superpixels Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019 IEEE International Conference on Image Processing (ICIP) DDI: 10.1109/TCIP.2019.8803266  Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) DDI: 10.1364/3D.2018.JW5E.7  Supervised Classification of Hyperspectral Images using Side Information Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) URL: http://www.osapublishing.org/abstract.ofm?URI=COSI-2018-JW5E.5  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP) DDI: 10.1364/MTH. 2017. MTu4C.5  Computational Imaging URL: https://doi.org/10.1117/12.2224369	Karen Sanchez, Carlos Hinojosa, Henry Arguello, Simon Freiss, Nicolas Sans, Denis Kouamé, Olivier Meyrignac, Adrian Basarab 2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI)	2021
Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019 IEEE International Conference on Image Processing (ICIP) DOI: 10.1109/TCTP.2019.8803266  Spectral Imaging Subspace Clustering with 3-D Spatial Regularizer Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) DOI: 10.1364/3D.2018.JW5E.7  Supervised Classification of Hyperspectral Images using Side Information Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) URL: http://www.osapublishing.org/abstract.cfm?URI=COSI-2018-JW5E.5  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP) DOI: 10.1364/MATH.2017.MTu4C.5  Compressive spectral imaging using multiple snapshot colored-mosaic detector measurements Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce Computational Imaging URL: https://doi.org/10.1117/12.2224369	Carlos Hinojosa, Jorge Bacca, Edwin Vargas, Sergio Castillo, Henry Arguello 2019 IEEE 29th International Workshop on Machine Learning for Signal Processing (MLSP)	2019
Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) DOI: 10.1364/3D.2018. JW5E.7  Supervised Classification of Hyperspectral Images using Side Information Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP) URL: http://www.osapublishing.org/abstract.cfm?URI=COSI-2018-JW5E.5  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP) DOI: 10.1364/MATH.2017. MTu4C.5  Compressive spectral imaging using multiple snapshot colored-mosaic detector measurements Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce Computational Imaging URL: https://doi.org/10.1117/12.2224369	Carlos Hinojosa, Juan Marcos Ramirez, Henry Arguello 2019 IEEE International Conference on Image Processing (ICIP)	2019
Karen Sanchez, Carlos Hinojosa, Henry Arguello  Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP)  URL: http://www.osapublishing.org/abstract.cfm?URI=COSI-2018-JW5E.5  Kernel Sparse Subspace Clustering with Total Variation Denoising for Hyperspectral Remote Sensing Images  Jorge Bacca, Carlos A. Hinojosa, Henry Arguello  Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP)  DOI: 10.1364/MATH.2017.MTu4C.5  Compressive spectral imaging using multiple snapshot colored-mosaic detector measurements  Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce  Computational Imaging  URL: https://doi.org/10.1117/12.2224369	Carlos A. Hinojosa, Jorge Bacca, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP)	2018
Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP) DOI: 10.1364/MATH.2017.MTu4C.5  Compressive spectral imaging using multiple snapshot colored-mosaic detector measurements Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce Computational Imaging URL: https://doi.org/10.1117/12.2224369	Karen Sanchez, Carlos Hinojosa, Henry Arguello Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LS&C, MATH, pcAOP)	2018
Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce  Computational Imaging  URL: https://doi.org/10.1117/12.2224369	Jorge Bacca, Carlos A. Hinojosa, Henry Arguello Imaging and Applied Optics 2017 (3D, AIO, COSI, IS, MATH, pcAOP)	2017
	Carlos A. Hinojosa, Claudia V. Correa, Henry Arguello, Gonzalo R. Arce  Computational Imaging	2016
Henry Arguello Fuentes, Hoover Rueda Chacón, Carlos Alberto Hinojosa Montero 2015 20th Symposium on Signal Processing, Images and Computer Vision (STSIVA)	Analysis of Matrix Completion algorithms for spectral image estimation from compressive coded projections  Henry Arguello Fuentes, Hoover Rueda Chacón, Carlos Alberto Hinojosa Montero  2015 20th Symposium on Signal Processing, Images and Computer Vision (STSIVA)	2015
Manuscripts and Pre-Prints (Unpublished) [1]		

A fast and Accurate Similarity-constrained Subspace Clustering Framework for Unsupervised Hyperspectral Image Classification Carlos Hinojosa, Esteban Vera, Henry Arguello 2021

# **Teaching Experience**

### Universidad Industrial de Santander (UIS)

Bucaramanga, Colombia

ASSISTANT PROFESSOR

July 2016 - September 2016

- Taught computer programming using C and C++ languages.
- Single instructor. I taught 50 students distributed in two groups.

## **Engineering Work Experience**

TIP - CISLAB

Bucaramanga, Colombia

SOFTWARE ENGINEER January 2021 - April 2021

- Implemented the image-ray-based 3D conversion algorithm in the DSG software using the development kit (SDK).
- Implemented the image-ray-based algorithm for converting RMS 3D velocities in the time domain to 3D interval velocities in depth using the SDK of DSG.

TIP - CISLAB

Bucaramanga, Colombia

SOFTWARE ENGINEER

October 2020 - December 2020

- Developed user tests for the time-to-depth conversion (ImageRayTZ 2D) and interactive picking (IPickingTZ 2D) modules for DecisionSpace Geoscience (DSG).
- Developed a training workshop for Ecopetrol S.A users on geophysics concepts and software development for the DSG software using the software development kit (SDK).
- Tested the 3D time-to-depth conversion algorithm in a production environment.

#### Universidad Industrial de Santander (UIS)

Bucaramanga, Colombia

Consultant

March 2020 - May 2020

Designed and developed an algorithm for converting RMS 3D velocities in the time domain to 3D interval velocities in depth using the image-ray
method

TIP - CISLAB

Bucaramanga, Colombia

SOFTWARE ENGINEER

June 2018 - December 2018

- Developed a plugin in the Halliburton software DecisionSpace Geosciences (DSG) for 2D interactive picking in time and depth domains.
- Developed unit test cases for the 2D interactive picking plug-in in DecisionSpace Geoscience and elaborated a report.
- Developed a training workshop on the plug-in tool for Ecopetrol S.A users.
- Developed a technical document of the productive version of the 2D interactive picking plug-in.

### Mentorship\_

2018-2019 Jhon Lopez, Undergraduate thesis, Universidad Industrial de Santander

Bucaramanga, Colombia

### **Honors & Awards**

2021 ICCV2021 Oral, For the paper titled "Learning Privacy-preserving Optics for Human Pose Estimation", awarded to top (3%) 201 papers out of 6236 submissions.

Young Researcher, Winner of the young researchers and innovators scholarship 2016, awarded by the administrative department of science, technology, and innovation (MinCiencias).

\*\*Colombia\*\*

\*\*Colombia\*\*

2016 Academic Excellence as a Researcher, Disctintion awarded by the high dimensional signal processing group (HDSP) of the Industrial University of Santander.

Bucaramanga,

### **Technical Skills**

Machine Learning Libraries Tensorflow, Keras, Pytorch, Tensorlayer, PyTorch Lightning, OpenCV, Scipy, Scikit-learn, Pandas, MXNet

**Programming Languages** Python, C/C++, C#, Java, MATLAB, R, Javascript (JS), Typescript, Bash **Cloud Computing Platform** Google Cloud, Amazon Web Services (AWS), Microsoft Azure

Parallel Computing Libraries CUDA, OpenMP, OpenCL

Web & Hybrid Mobile Development Angular JS, Ionic Framework, PhoneGAP, Cordova, Node JS, HTML, PHP

**OS Platform** Windows, Linux

**Speciallized Softwares** Halliburton DecisionSpace Geoscience (DSG)

Other Tools/Libraries MFX

# Academic Services

Reviewer: TPAMI, CVPR, TIP, STSIVA.

Thesis committee member (evaluator) of two undergraduate thesis at Universidad Industrial de Santander