Duncan Hall 3098 Homepage: https://paolacascante.com Contact Information Rice University ⊠ E-mail:pc51@rice.edu Houston, TX **T**Google Scholar Computer Vision, Natural Language Processing, Machine Learning. RESEARCH Multi-modal Learning, Zero/few-shot/semi-supervised Learning. Interests Synthetic Data Generation for Compositionality and Privacy Protection. Rice University, Houston, TX 2024 (expected) EDUCATION Ph.D. in Computer Science. GPA: 4.0. Advisor: Vicente Ordonez. University of Virginia, Charlottesville, VA 2021 Master of Computer Science, GPA: 4.0. Advisor: Vicente Ordonez. Tecnologico de Costa Rica (TEC), Cartago, Costa Rica. 2018 B.Sc., Computer Engineering. 2023 Rising Stars in EECS Honors & AWARDS ICCV Doctoral Consortium & DEI Travel Award 2023 Future Faculty Fellow (FFF) in Rice's George R. Brown School of Engineering 2023 Outstanding Reviewer for CVPR (top $\sim 3.3\%$) 2023The Ken Kennedy Institute SLB Graduate Fellowship 2022 Microsoft Research PhD Fellowship Nomination 2022 Conference on Neural Information Processing Systems Travel Award 2019 University of Virginia Computer Science Fellowship 2018 Mitsubishi Electric Research Laboratories (MERL). May 2023 - August 2023 Research Cambridge, Massachusetts Work Research Intern in the Computer Vision Group. EXPERIENCE Working on Few-shot Action Recognition. Digital Humans, Human Object Interaction (HOI) & Physics-enabled 3D Simulators. Host: Anoop Cherian. IBM Research, Cambridge, Massachusetts. May 2022 - March 2023 Research Intern in the Vision Group at the MIT-IBM Watson AI Lab. Leveraging synthetic data for visio-linguistic (VL) compositional reasoning, Exploring Large Language Models (LLMs) as text expanders, VL & lifelong/continual learning. Mentor: Leonid Karlinsky. Manager: Rogerio Feris.

IBM Research, Cambridge, Massachusetts.

May 2021 - Aug 2021

Research Intern in the Vision Group at the MIT-IBM Watson AI Lab. Exploring simulated environments for Visual Question Answering (VQA).

Mentor: Hui Wu. Manager: Rogerio Feris.

Rice University, Houston, TX

2022 - Present

Graduate Research Assistant at the Vision, Language, and Learning Lab.

Advised by Professor Vicente Ordonez and also worked with Professor Yanjun Qi.

University of Virginia, Charlottesville, VA

2018 - 2021

Graduate Research Assistant at the Vision, Language, and Learning Lab.

Advised by Professor Vicente Ordonez and also worked with Professor Yanjun Qi.

Engineering Work

N3 Results, Heredia, Costa Rica. Senior Software Engineer/Tech Lead.

EXPERIENCE

Manager: Gibran Uribe.

Growth Acceleration Partners, San Jose, Costa Rica. February 2010 - October 2012 Mid Software Engineer.

Intel, Heredia, Costa Rica. Software Engineer - Contractor. November 2009 - February 2010

December 2012 - July 2018

PUBLICATIONS & Preprints

Learning from Models and Data for Visual Grounding.

Ruozhen He, Paola Cascante-Bonilla, Ziyan Yang, Alexander C. Berg, Vicente Ordonez. [preprint] - [project page]. March 2024.

PropTest: Automatic Property Testing for Improved Visual Programming. Jaywon Koo, Ziyan Yang, Paola Cascante-Bonilla, Baishakhi Ray, and Vicente Ordonez. [preprint] - [project page]. March 2024.

Grounding Language Models for Visual Entity Recognition.

Zilin Xiao, Ming Gong, Paola Cascante-Bonilla, Xingyao Zhang, Jie Wu, and Vicente Ordonez. [preprint] - [code]. February 2024.

Improved Visual Grounding through Self-Consistent Explanations.

Ruozhen He, Paola Cascante-Bonilla, Ziyan Yang, Alexander C. Berg, Vicente Ordonez. 35th IEEE Conference on Computer Vision and Pattern Recognition. CVPR 2024.

Dense and Aligned Captions (DAC) Promote Compositional Reasoning in VL Models. Sivan Doveh, Assaf Arbelle, Sivan Harary, Roei Herzig, Donghyun Kim, Paola Cascante-Bonilla, Amit Alfassy, Rameswar Panda, Raja Giryes, Rogerio Feris, Shimon Ullman, Leonid Karlinsky. The 37th Conference on Neural Information Processing Systems. NeurIPS 2023.

Going Beyond Nouns With Vision & Language Models Using Synthetic Data.

Paola Cascante-Bonilla, Khaled Shehada, James Seale Smith, Sivan Doveh, Donghyun Kim, Rameswar Panda, Gül Varol, Aude Oliva, Vicente Ordonez, Rogerio Feris, Leonid Karlinsky. The 19th International Conference on Computer Vision. ICCV 2023.

ConStruct-VL: Data-Free Continual Structured VL Concepts Learning. James Seale Smith, Paola Cascante-Bonilla, Assaf Arbelle, Donghyun Kim, Rameswar Panda, David Cox, Diyi Yang, Zsolt Kira, Rogerio Feris, Leonid Karlinsky. 34th IEEE Conference on Computer Vision and Pattern Recognition. CVPR 2023.

CODA-Prompt: COntinual Decomposed Attention-based Prompting for Rehearsal-Free Continual Learning.

James Seale Smith, Leonid Karlinsky, Vyshnavi Gutta, Paola Cascante-Bonilla, Donghyun Kim, Assaf Arbelle, Rameswar Panda, Rogerio Feris, Zsolt Kira. 34th IEEE Conference on Computer Vision and Pattern Recognition. CVPR 2023.

SimVQA: Exploring Simulated Environments for Visual Question Answering. Paola Cascante-Bonilla, Hui Wu, Letao Wang, Rogerio Feris, Vicente Ordonez. 33th IEEE Conference on Computer Vision and Pattern Recognition. CVPR 2022.

On the Transferability of Visual Features in Generalized Zero-Shot Learning. Paola Cascante-Bonilla, Leonid Karlinsky, James Seale Smith, Yanjun Qi, Vicente Ordonez. [preprint] - [code]. November 2022.

Evolving Image Compositions for Feature Representation Learning. Paola Cascante-Bonilla, Arshdeep Sekhon, Yanjun Qi, Vicente Ordonez. The 32nd British Machine Vision Conference. BMVC 2021.

Curriculum Labeling: Revisiting Pseudo-Labeling for Semi-Supervised Learning.

Paola Cascante-Bonilla, Fuwen Tan, Yanjun Qi, Vicente Ordonez.

The 35th AAAI Conference on Artificial Intelligence. AAAI 2021.

Drill-down: Interactive Retrieval of Complex Scenes using Natural Language Queries.

Fuwen Tan, Paola Cascante-Bonilla, Xiaoxiao Guo, Hui Wu, Song Feng, Vicente Ordonez.

Conf. on Neural Information Processing Systems. NeurIPS 2019.

Vancouver, Canada. December 2019.

Moviescope: Large-scale Analysis of Movies using Multiple Modalities.

Paola Cascante-Bonilla, Kalpathy Sitaraman, Mengjia Luo, Vicente Ordonez.

[preprint] - [project page] - [media coverage]. August 2019.

Chat-crowd: A Dialog-based Platform for Visual Layout Composition.

Paola Cascante-Bonilla, Xuwang Yin, Vicente Ordonez, Song Feng.

North American Chapter of the Association for Computational Linguistics. NAACL 2019.

System Demonstrations. Minneapolis, Minnesota. June 2019.

Talks Going Beyond Nouns for Vision & Language.

AI Safety Seminar.

University of California, Los Angeles - Virtual. February 2024.

Generalized Zero-Shot Learning via Normalizing Flows [video].

2021 Ken Kennedy AI and Data Science Workshop 2021.

Rice University. Ken Kennedy Institute. October 2021.

Artificial Intelligence, a Bridge Between Innovation and Communities [video].

Calderos: Mujeres, Ciencia, Tecnología e Innovación 2021.

University of Costa Rica. CICOM - Virtual. June 2021.

Attention! The Rise of the Transformers [video].

International Meeting on Artificial Intelligence and its Applications (RIIAA 2020).

Mexico. Mexico City - Virtual Event. August 2020.

Media Coverage The era of Artificial Intelligence: Do we have a place in it?

Telemundo Houston. Special Report. Nov. 8, 2023 [link].

Rice CS PhD student introduces 1M-scale synthetic dataset in Paris.

Rice CS News. Nov. 1, 2023 [link].

Helping computer vision and language models understand what they see.

MIT News. Sept. 13, 2023 [link].

Teaching Computers to Answer Questions about Images.

Rice CS - News. Jun. 24, 2022 [link].

A safer, lower-cost alternative to real data for pretraining computer vision models.

IBM Research Blog. Jun 23, 2022 [link].

Outstanding Talent. Red de Talento Costarricense en el Extranjero.

Academia Nacional de Ciencias, Costa Rica. May 2021. [link][link].

Investigating the best features for predicting a movie's genre and estimated budget.

Tech Xplore. August 30, 2019 [link].

Teaching

Teaching Assistant

EXPERIENCE CS 6501-4501: Vision & Language. University of Virginia

Fall 2020

CS 6501-003: Deep Learning for Visual Recognition. University of Virginia

Spring 2020

CS 4501-008: Introduction to Computer Vision. University of Virginia

Fall 2019

Guest Lecturer

CS 4501-008: Introduction to Computer Vision. University of Virginia

Fall 2019

MENTORING Ruozhen He (Graduate @ Rice)

Aug 2023 - Present

Project: Visual Grounding through Textual Relations.

Jaywon Koo (Graduate @ Rice)

Aug 2023 - Present

Project: Visio-linguistic (VL) Compositional Reasoning.

Kevin Ivey (Undergraduate @ UVA)

Feb 2023 - May 2023

Project: Probing Visio-linguistic (VL) Capabilities of Large Language Models.

Jinbiao Wei (Undergraduate @ Rice)

Feb 2023 - May 2023

Project: Probing Visio-linguistic (VL) Capabilities of Large Language Models.

Khaled Shehada (Graduate @ MIT)

Sept 2022 - March 2023

Project: Leveraging Synthetic Data for Visio-linguistic (VL) Compositional Reasoning.

Letao Wang (Undergraduate @ UVA)

April 2021 - April 2022

Project: Exploring Simulated Environments for Visual Question Answering.

Mengjia Luo (Undergraduate @ UVA)

Sept 2018 - May 2019

Project: Large-scale Analysis of Movies using Multiple Modalities.

Professional Service

Organizer

2nd What is Next in Multimodal Foundation Models? (MMFM) Workshop at CVPR 2024. 1st What is Next in Multimodal Foundation Models? (MMFM) Workshop at ICCV 2023.

Women in Computer Vision (WiCV) Workshop at ICCV 2023.

LatinX in Computer Vision (LXCV) Workshop at CVPR 2022 & 2021.

LatinX in Computer Vision (LXCV) Workshop at ICCV 2021.

LatinX in AI (LXAI) Workshop at ICML 2021.

Reviewer

18th European Conference on Computer Vision - ECCV 2024.

41st International Conference on Machine Learning - ICML 2024.

35th IEEE Conference on Computer Vision and Pattern Recognition - CVPR 2024.

12th International Conference on Learning Representations - ICLR 2024.

38th AAAI Conference on Artificial Intelligence - AAAI 2024.

The IEEE Winter Conference on Applications of Computer Vision - WACV 2024.

37th Conference on Neural Information Processing - NeurIPS 2023.

The 19th International Conference on Computer Vision - ICCV 2023.

Workshop and Challenge on Vision and Language Algorithmic Reasoning - wICCV 2023.

34th IEEE Conference on Computer Vision and Pattern Recognition - CVPR 2023.

 $37\mathrm{th}$ AAAI Conference on Artificial Intelligence – AAAI 2023.

30th ACM International Conference on Multimedia - ACM-MM 2022 Industry Track.

 $36\mathrm{th}$ Conference on Neural Information Processing - NeurIPS 2022 D&B Track.

17th European Conference on Computer Vision - ECCV 2022.

1st LatinX in Computer Vision Research Workshop - CVPR 2022-2023.

33th IEEE Conference on Computer Vision and Pattern Recognition - CVPR 2022.

36th AAAI Conference on Artificial Intelligence - AAAI 2022.

The 32nd British Machine Vision Conference – BMVC 2021.

LatinX in Computer Vision Research Workshops - LXCV 2022-2023.

Diversity and Inclusion

Chair of the Mentoring Program for LatinX in AI

Spring 2021 - Fall 2022

Mentor for the Hackaton "Justicia para los desaparecidos" at RIIAA 4.0

August 2021

Workshop on Transformers at RIIAA 3.0

August 2020

Academic Interest Groups Co-Organizer

Imaging & Vision Seminar Series. Rice University Computer Vision Reading Group. Rice University Spring 2023

Computer Vision Reading Group. Rice University
Computer Vision Reading Group. University of Virginia

Spring 2022 Fall 2019 - Spring 2021