JUAN CAMILO PÉREZ

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PROFILE

Ph.D. student in Computer Vision at *KAUST* (Saudi Arabia) and *Universidad de los Andes* (Colombia), under the supervision of Professors Bernard Ghanem and Pablo Arbeláez. My research focuses on the robustness of Deep Learning-based Computer Vision systems. In particular, I am interested in the vulnerabilities of these systems: understanding and fixing them, and pondering on how to leverage these vulnerabilities for other purposes. Recently, I have studied how generative models inherently learn semantics, and how we can exploit the representations learnt by generative models to understand more complex systems.

EXPERIENCE

Undergraduate Course Assistant; Universidad de los Andes — Aug'2014-May'2017

With Professors Jaebum Son (*Biomechanics* and *Scientific Programming*), Mario Valderrama (*Scientific Programming*), Julián Moreno and Darwin Martínez (*Object-Oriented Programming*), Juan Pablo Hernández (*Differential Calculus*) and Fabio Villamil (*Linear Algebra*).

Graduate Research Assistant; Universidad de los Andes — Aug'2017-Jul'2019

Research on enhancing the diagnosis and attention provided to strokes in Colombia, sponsored by a *Colciencias*' grant. Worked on data handling and web development. Under the supervision of Professor Antonio Salazar.

Graduate Research Assistant; Universidad de los Andes — Aug'2019-Jun'2020

Research on harnessing Deep Learning for *(1)* image segmentation based on natural language, and *(2)* adversarial robustness. Under the supervision of Professor Pablo Arbeláez.

Machine Learning Engineer; Tecnología y Gerencia SAS — Jul'2017-Jan'2020

Leading engineer in charge of the design and implementation of a Machine Learning system for one of Colombia's largest banks.

EDUCATION

Universidad de los Andes — B.Sc. *Cum Laude* in Biomedical Eng., 2017.
Universidad de los Andes — M.Sc. Biomedical Eng., 2019.

LANGUAGES

— Spanish (native)
— English (112/120 TOEFL iBT score)

ACADEMIC ACHIEVEMENTS

— Two-times winner of the Academic Excellence Scholarship offered by *Uniandinos* (*Universidad de los Andes*' Alumni Association): 2016 and 2017.
— Best *Saber Pro* Country-wide test score in Engineering in 2016.
— Outstanding reviewer: CVPR 2019, CVPR 2020, NeurIPS 2020, CVPR 2021, ICCV 2021.

PUBLICATIONS

— Dynamic Multimodal Instance Segmentation Guided by Natural Language Queries. **ECCV 2018**, Munich, Germany.
— Design of a Telestroke System to Optimize Healthcare Delivery for Cerebrovascular Diseases in Colombia. **eTELEMED 2019,** Athens, Greece.
— Gabor Layers Enhance Network Robustness. **ECCV 2020**, Glasgow, United Kingdom (virtual).
— Comprehensive telestroke network to optimize health care delivery for cerebrovascular diseases: Algorithm development. **JMIR 2020.**
— Towards Robust General Medical Image Segmentation. **MICCAI 2021**, Strasbourg, France (virtual).
— A Hierarchical Assessment of Adversarial Severity. **ICCV Workshop 2021**, Montreal, Canada (virtual). *Best paper award*.
— Enhancing Adversarial Robustness via Test-time Transformation Ensembling. **ICCV Workshop 2021**, Montreal, Canada (virtual).
— Generalized Real-World Super-Resolution through Adversarial Robustness. **ICCV Workshop 2021**, Montreal, Canada (virtual).
— Rethinking Clustering for Robustness. **BMVC 2021**, virtual.
— Combating Adversaries with Anti-Adversaries. **AAAI 2022**, Vancouver, Canada (virtual).