LAURA BRAVO-SÁNCHEZ

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EDUCATION

PhD., Biomedical Data Science, Stanford University *2021 - 2026*

MSc., Biomedical Engineering, Universidad de los Andes *2017 - 2019*

BSc., Biomedical Engineering, Universidad de los Andes *2013 - 2017*
Minor in French Language and Culture

RESEARCH EXPERIENCE

PhD. Research - Stanford Medical AI and Computer Vision Lab, Stanford University *2022 - Present*
- Designing computer vision approaches for understanding 3D scenes and human interaction.
- Building artificial intelligence systems for scaling parent-child interaction analysis.
  Advisor: Serena Yeung-Levy

Researcher - Universidad de los Andes *2019 - 2021*
- Project leader of scene understanding of laparoscopic and robotic-assisted surgery videos.
- Developed a machine learning approach for efficient COVID-19 testing.
  Supervisor: Pablo Arbeláez

Research Scientist - Tecnología y Gerencia S.A.S *Feb 2019 - May 2019*
- Designed and implemented the experimental methodology for automatic recommendation of financial loans.
  Supervisor: Carlos E. Pérez

MSc. Research - Universidad de los Andes *2017 - 2019*
- Created computer vision methods for disambiguating surgical instruments with natural language descriptions.
- Collected and designed a dataset for fine-grained object localization based on four-leaf clover identification.
  Advisor: Pablo Arbeláez

SELECTED PUBLICATIONS

- **Ask, pose, unite: Scaling data acquisition for close interactions with vision language models.**
  L. Bravo-Sánchez, J. Heo, Z. Weng, K.C. Wang, S. Yeung-Levy
  Arxiv preprint (2024)
- **HARMONI: AI-powered 3D analysis of video-based caregiver-child interactions.**
  Z. Weng, L. Bravo-Sánchez, et al.
  Under revision at Science Advances.
- **Diffusion-HPC: Synthetic data generation for human mesh recovery in challenging domains.**
  Z. Weng, L. Bravo-Sánchez, & S. Yeung-Levy
  International Conference on 3D Vision (2024)
- **Smart pooling: AI-powered COVID-19 informative group testing.**
  M. Escobar, G. Jeanneret, L. Bravo-Sánchez, et al.
  Scientific Reports (2022)
- **Surgical instrument grounding for robot-assisted interventions.**
  C. González[*], L. Bravo-Sánchez[*], & P. Arbeláez
  Computer Methods in Biomechanics and Biomedical Engineering: Imaging (2022)
- **ISINet: An Instance-Based Approach for Surgical Instrument Segmentation.**
  C. González[*], L. Bravo-Sánchez[*], & P. Arbeláez
  Medical Image Computing and Computer Assisted Intervention (2020)
- **Finding Four-Leaf Clovers: A Benchmark for Fine-Grained Object Localization.**
  L. Bravo-Sánchez[*], A. Pardo[*], G. Perez[*], P. Arbeláez
  Sixth Workshop on Fine-Grained Visual Categorization, CVPR (2019).

[*] denotes equal contribution.

AWARDS AND TALKS

- "How can Computer Vision guide the understanding of parent-child interactions?". Technical talk at the 2024 WiDS Worldwide conference.
- Fulbright Colombia Minciencias Scholarship recipient 2021 Cohort (3 % acceptance, $80.000 USD).
- Leader of Team Uniandes in the MISAW challenge part of MICCAI 2020. Won first place in the Activity Recognition task.
- Leader of Team Uniandes. We won 5 awards at the Robust Endoscopic Instrument Segmentation Challenge 2019 part of MICCAI 2019.
- "Totæ Lacrimæ: automatic recognition of human emotions based on micrographs of tear crystals". Art exhibition (2019).

TEACHING EXPERIENCE

Graduate Teaching Assistant - Stanford University   *Spring 2023, 2024*
- Part of the teaching team for the Computational Methods for Biomedical Image Analysis course

Graduate Teaching Assistant - Universidad de los Andes   *Fall 2017*
- Instructed students in the laboratory sections of the Biomedical Image Analysis course.

Undergraduate Teaching Assistant - Universidad de los Andes   *Fall 2016 - Spring 2017*
- Assisted in the Scientific Programming and Biomedical Image Analysis courses.

SKILLS

Programming: Python, PyTorch, Matlab and (some) Caffe

Languages: Spanish (native), English (C1), French (B1).

Other: Statistical analysis, 3D printing and design (MeshLab, AutoDesk Inventor).

SERVICE AND OUTREACH

- **Volunteer interpreter** - Immigrants' Rights Clinic, Stanford University   *2024*
- **Student Representative** - Department of Biomedical Data Science, Stanford University   *2023 - 2024*
- **Financial Officer** - Colombian Association, Stanford University   *2023 - 2024*
- **Mentor** - Visible Hands Corporation   *2015, 2020*
  Mentor of healthcare projects from the Innovation Girls 4.0 program, an education initiative for afrocolombian minorities from Chocó's School of Robotics (*in Spanish: Escuela de Robótica del Chocó*).
- **Volunteer Teacher** - ColombiaCrece   *2018*
  Second grade mathematics teacher for older adults. Guided students in learning addition and subtraction.
- **Volunteer** - Techo Colombia   *2012 - 2014*
  Raised funds and built emergency houses for underprivileged families in Bogotá