Manuel Arturo Deza Figueroa (Arturo Deza)

Contact Information

Artificio Inc. mobile: +51 973-878-457
Current Residency: Lima, Peru. website: https://www.arturodeza.wikidot.com
Citizenship: Peruvian e-mail: deza@artificio.org
Former US Resident (AoS; Deferred): EB-1A Aliens of Extraordinary Ability Green Card.

Research Interests

Hybrid Perceptual Systems, Vision, Psychophysics, Representation Learning, Robotics.

Scientific Ventures

Artificio Inc. [For Profit], *Delaware C-Corporation. Headquarters: Lima, Peru*

Artificio's mission is to make Self-Driving cars a reality in every city in the world by licensing crowd-sourced driving and mapping data. **April 2022 – present**

- Leadership role: Co-Founder & CEO | Majority Individual Shareholder

SVRHM [Not For Profit], *International Organization*

SVRHM is an international organization that hosts its annual workshop by the same name: Shared Visual Representations in Human and Machine Intelligence. **December 2019 – December 2022**

- Leadership role: Co-Founder & Director

Academic Positions

Universidad de Ingenieria y Tecnologia (UTEC), Barranco, Lima, Peru

Assistant Professor in Computer Science **August 2023 – February 2025**

- Research: Supervision of Undegraduate students; Teaching: Introduction to Machine Learning, Introduction to Deep Learning, Advanced Topics in Artificial Intelligence & Data Science.

Massachusetts Institute Technology (MIT), Cambridge, MA, USA

PostDoctoral Associate, Center for Brains, Minds and Machines **February 2020 – September 2022**

- Research Advisor: Tomaso Poggio.

Harvard University, Cambridge, MA, USA

PostDoctoral Fellow, Department of Psychology **February 2019 – February 2020**

- Research Advisor: Talia Konkle.

Education

University of California, Santa Barbara (UCSB), Santa Barbara, CA, USA

Ph.D. Dynamical Neuroscience **September 2013 – December 2018**

- Cumulative GPA: 3.76/4.0
- Research Advisor: Miguel P. Eckstein.

Universidad Nacional de Ingenieria (UNI), Rimac, Lima, Peru

B.S. Mechatronics Engineering (Robotics) **March 2007 – December 2012**

- Summa Cum Laude. Rank: 1/45.
- Research Advisor(s): Alberto Coronado & Elizabeth Villota.

Invited Academic Reviewing

Neural Information Processing Systems (NeurIPS): 2016, 2019, 2020, 2021, 2022, 2023
International Conference on Learning Representations (ICLR): 2021, 2022, 2023, 2024
IEEE Conference on Computer Vision and Pattern Recognition (CVPR): 2019, 2020, 2021, 2022, 2023, 2024
IEEE International Conference on Computer Vision (ICCV): 2019, 2021, 2023
IEEE European Conference on Computer Vision (ECCV): 2020, 2024
International Conference of Machine Learning (ICML): 2020, 2021, 2022, 2023, 2024
Association for the Advancement of Artificial Intelligence Conference (AAAI): 2020
Neural Networks: 2021
Neural Computation: 2020, 2021
Journal of Vision (JoV): 2021
Conference of Cognitive Neuroscience (CCN): 2019
IEEE International Conference on Automation Science and Engineering (CASE): 2019
International Conference on Intelligent User Interfaces (IUI): 2017

Scientific Peer-Reviewed Publications

[17] Cusipuma, D., Ortega, D., Flores-Benites, V., **Deza, A.** "Robusto-1 Dataset: Comparing Humans and VLMs on real out-of-distribution Autonomous Driving VQA from Peru", [Scores: 7,6,7.] *Workshop on Distillation of Foundation Models for Autonomous Driving @ IEEE Proceedings of the Computer Vision and Pattern Recognition (CVPR) conference.* Nashville, Tennessee. June 2025.

[16] Chin, J., **Deza, A.** "What does an Adversarial Color look like?", [Scores: 5,9,4. First Author was in High School at time of writing the paper.] *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* New Orleans, Louisiana. December 2022.

[15] Berrios, W., **Deza, A.** "Joint rotational invariance and adversarial training of a dual-stream Transformer yields state of the art Brain-Score for Area V4", [Scores: 6,7,6. Achieved 2nd place in Brain-Score Competition.] *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* New Orleans, Louisiana. December 2022.

[14] Janini, D., Hamblin, C., **Deza, A.**, Konkle, T. "General object features account for letter perception better than specialized letter features", [*PLOS Computational Biology*, 2022].

[13] Harrington, A., **Deza A.** "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks" [Scores: 8,8,8,8 **(Spotlight; Top 1% of Submissions)** *International Conference on Learning Representations (ICLR).* Virtual. April 2022].

[12] Chen, Y.C., **Deza, A.**, Konkle, T. "How big should this object be? Perceptual influences on viewing-size preferences", [*Cognition.* March, 2022.].

[11] Wang, B., Mayo D., **Deza A.**, Barbu, A., Conwell, C. "On the use of Cortical Magnification and Saccades as Biological Proxies for Data Augmentation" [Scores: 6,8,7,7], *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* Virtual. December 2021.

[10] Gant, J., Banburski A., **Deza A.** "Evaluating the Adversarial Robustness of a Foveated Texture Transform Module in a CNN" [Scores: 7,7,8], *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* Virtual. December 2021.

[9] Li, C., **Deza A.** "What Matters in Branch Specialization? Using a Toy Task to Make Predictions" [Scores: 7,5,6,6], *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* Virtual. December 2021.

[8] Malkin, E., **Deza, A.***, Poggio, T.* "CUDA-Optimized real-time rendering of a Foveated Visual System", [First Author is an undergraduate mentee. * denotes Joint Senior Author. Scores: 9,6,6], *Shared Visual Representations in Human and Machine Intelligence (SVRHM) Workshop @ NeurIPS.* Virtual. December 2020.

[7] **Deza, A.**, Chen, Y.-C., Long, B.L., Konkle, T. "Accelerated Texforms: Alternative Methods for Generating Unrecognizable Object Images with Preserved Mid-Level Features", *Conference on Cognitive Computational Neuroscience (CCN).* Berlin, Germany. September 2019.

[6] **Deza, A.**, Surana, A., Eckstein, M.P. "Assessment of Faster-RCNN for Man-Machine Collaborative Search", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Long Beach, CA. June 2019.

[5] **Deza, A.**, Jonnalagadda, A., Eckstein, M.P. "Towards Metamerism via Foveated Style Transfer", [Scores: 8,7,7 **(Top 3% of Submissions)**], *International Conference on Learning Representations (ICLR).* New Orleans, LA. May 2019.

[4] **Deza, A.** "Peripheral Representations: From Perception to Visual Search" *University of California, Santa Barbara. PhD Thesis.* Santa Barbara, CA. December 2018.

[3] **Deza, A.**, Peters, J., Taylor, G.S., Surana, A., Eckstein, M.P. "Attention Allocation Aid for Visual Search", *ACM Conference on Human Factors in Computing Systems (CHI)*, Denver, CO. May 2017.

[2] **Deza, A.**, Eckstein, M.P. "Can Peripheral Representations Improve Clutter Metrics on Complex Scenes?", *Neural Information Processing Systems (NeurIPS)*, Barcelona, Spain, December, 2016.

[1] **Deza, A.**, Parikh, D. "Understanding Image Virality", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Boston, MA. June, 2015.

Scientific Pre-Prints & Manuscripts

[20] **Deza, A.**, Konkle, T. "Emergent Properties of Foveated Perceptual Systems", *ArXiv 2021.*

[19] Kunhardt, O., **Deza, A.***, Poggio, T*. "The Effects of Image Distribution and Task on Adversarial Robustness", [First Author is an undergraduate mentee. * denotes Joint Senior Author].

[18] **Deza, A.**, Liao, Q., Banburski, A., Poggio, T. "Hierarchically Compositional Tasks and Deep Convolutional Networks", *MIT CBMM Memo # 109.*

Blog Posts

[21] Ortega, D., Cusipuma, D., Flores, V., **Deza, A.**, 'Why has Autonomous Driving failed? Perspectives from Peru and insights from NeuroAI", *Artificio Blog Post # 1.* Lima, Peru. 2023.

Private Corporate Funding

Artificio Inc. (Pre-Seed round) Financial Responsiblity: Arturo Deza (Co-Founder & CEO). Investment from Cory Capital ($100'000) and Pareto Holdings ($100'000) for private pre-seed investment in Artificio Inc. Company valuation cap was placed at $2'000'000 in October 2022.

Academic Grants and Sponsorship

Lockheed Martin Grant: "Hardened Autonomous Perception for Surveillance and Reconnaissance". Andrzej Banburski (Co-PI), Arturo Deza (Co-PI), and Tomaso Poggio (main-PI). *Awarded Amount: $250'000 per year* 2020-2022

Sponsorship from NVIDIA, MIT's Center for Brains Minds and Machines, National Science Foundation (NSF), MIT's Quest for Intelligence, Facebook Reality Labs (Oculus) → SVRHM workshop ∼ $5'000 (Virtual workshops requires less funds) 2020

Sponsorship from DeepMind, NVIDIA, MIT's Center for Brains Minds and Machines, National Science Foundation (NSF), MIT's Quest for Intelligence, Princeton's Center for Statistics and Machine Learning, Apple and Oculus → SVRHM workshop ∼ $16'000 2019

Selected Achievements, Honors and Awards

Massachusetts Institute of Technology Brain and Cognitive Sciences Angus MacDonald Award for Excellence in Undergraduate Teaching $500 2021

Harvard University Young Scientist Travel Award $2200 2019

University of California, Santa Barbara President's Work Study Award $3000 2016

Alberto Benavides de la Quintana - Patronato UNI Research Fellowship $5400 2011

Certificate of Originality and Initiative, given by the **Latin American Heads Conference** 2006

Achievements, Honors and Awards

Invited Teaching Assistant for MIT's CBMM Summer School at Woods Hole 2021

UCSB Doctoral Student Travel Grant Award $1030 2016

NVIDIA Best Poster Award at Scene Understanding Workshop (SUNw@CVPR) 2015

CONCYTEC - Peruvian Science and Technology Research Grant $1200 2013

Invited Speaker at Peru's 4th National Neuroscience and Complex Systems Symposium, Lima 2012

Invited Speaker at Peru's International Science Forum, Ica 2012

Accepted at International Computer Vision Summer School (ICVSS), Sicily 2012

Accepted at Computer Vision and Machine Learning Summer School (CVML), Grenoble 2012

UCSB NVC Tech Start-up Competition - Finalist (2/46 Teams) $2500 2012

CONCYTEC - Peruvian Science and Technology Research Grant $800 2012

Machine Learning Summer School Programming Competition (2/50) 2011

President of the Artificial Intelligence Student Research Group (GISCIA) Lima, Peru. 2011,2012

Top 10 Mechatronics Engineering GPA of all ME Department (8/1200) 2008,2011

1st place in University Admissions exam to Mechatronics Engineering program - IB Mode 2007

Software

Deza, A., Akbas, E., Eckstein, M.P. "Piranhas Toolkit: Peripheral Architectures for Natural, Hybrid and Artificial Systems", *GitHub*. 2016.

Talks, Essays and Poster Sessions

Deza, A. "Comparing Biological & Artificial Neural Networks and the impact of NeuroAI in modern-day industries", *Sociedad Nacional de Industrias (National Society of Industries of Peru)*, Virtual. November, 2024.

Deza, A. "Comparing Biological & Artificial Neural Networks and the impact of NeuroAI in modern-day industries", *Interbank*, In-Person. November, 2024.

Deza, A. "Comparing Biological & Artificial Neural Networks and the impact of NeuroAI in modern-day industries", *Universidad de Ingenieria y Tecnologia (UTEC) Masters Opening Ceremony*, In-Person. November, 2024.

Deza, A. "Introduction to NeuroAI, and it's applications to the Mining Industry", *Mining Innovation Hub of Peru*, In-Person. September, 2024.

Deza, A. "On Adversarially Robust Models of Vision, 'Brain-Alignment', and their use for Understanding Visual Art", ***Invited talk at the Center for NeuroAesthetics at the University of Pennsylvania***, In-Person. April, 2023.

Deza, A. "On Adversarially Robust Models of Vision, 'Brain-Alignment', and their use for Understanding Visual Art", *Invited talk at the Pelli Lab at the New York University (NYU)*, In-Person. New York City, NY. March, 2023.

Deza, A. "Hybrid Perceptual Systems and their Applications in Peru", *Invited talk at the Universidad Nacional Jorge Basadre Grohmann. Department of Electric Engineering.*, Virtual. November, 2022.

Deza, A. "Developing Brain-Aligned Models of Computer Vision (and why you should care)", *Invited talk at the University of California, Santa Cruz (UCSC). Department of Computer Science*, In-Person. Santa Cruz, CA. October, 2022.

Deza, A. "Developing Brain-Aligned Models of Computer Vision (and why you should care)", *Invited talk at the Wu Tsai Center for Neuroscience at Stanford University as part of Vision Brunch*, In-Person. Palo Alto, CA. October, 2022.

Deza, A. "Developing Brain-Aligned Models of Computer Vision (and why you should care)", *Invited talk at Hongjing Lu Lab at the University of California, Los Angeles (UCLA). Department of Psychology*, Virtual. October, 2022.

Deza, A. "Developing Brain-Aligned Models of Computer Vision (and why you should care)", *Invited talk at Demba Ba Lab at the Kempner Institute for the study of Natural & Artificial Intelligence*, In-person. October, 2022.

Deza, A. "Developing Brain-Aligned Models of Computer Vision (and why you should care)", *AI Accelerator Summit*, In-Person. Boston, MA. October, 2022.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at the Center for Brain Inspire Computing (C-BRIC)***, Virtual. May, 2022.

Deza, A. 'Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at University of California, Berkeley's Redwood Center for Theoretical Neuroscience***, Berkeley, CA. February, 2022.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at Apple AI***, Virtual. February, 2022.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at the Goldsten Lab @ University of Maryland***, Virtual. February, 2022.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at Google Brain***, Virtual. February, 2022.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at Stanford University's Wu Tsai Neuroscience Institute as part of the BELONG Seminar Series***, Palo Alto, CA. December, 2021.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at Simoncelli Lab @ NYU***, Virtual. November, 2021.

Deza, A. "Finding Biological Plausibility for Adversarially Robust Features via Metameric Tasks", ***Invited talk at DiCarlo Lab @ MIT***, October, 2021.

Deza, A. "Hierarchical Tasks and Spatially-Adaptive Computations in Humans and Deep Neural Networks", ***Invited talk at Bonner Lab @ Johns Hopkins University***, Virtual. September, 2021.

Deza, A. "Hybrid Perceptual Systems", ***The Center for Brain Inspire Computing (C-BRIC)***, Virtual. April, 2021.

Deza, A. "Emergent Properties of Foveated Perceptual Systems", ***Early Career Colloquium Talk @ JHU***, Virtual. February, 2021.

Banburksi, A.*, Deza, A.*, Poggio, T.* [* : Talk split by speakers] "Hardened Autonomous Perception for Surveillance and Reconnaissance", ***Invited talk at MIT-Lockheed Martin Review Series***, Virtual. November, 2020.

Deza, A. "Perceptual Invariance in Humans and Machines", ***Invited talk at MIT 9.58 Class: Projects in the Science of Intelligence***, Virtual. October, 2020.

Deza, A. "Perceptual Invariance in Humans and Machines", ***Invited talk at MIT-CBMM Summer School***, Virtual. August, 2020.

Deza, A. "Perceptual Invariance in Humans and Machines", ***Invited talk at Facebook Reality Labs (Oculus Research)***, Virtual. August, 2020.

Deza, A. "Emergent Properties of Foveated Perceptual Systems", ***Invited talk at Boston College (Anzellotti Lab)***, Virtual. July, 2020.

Deza, A. "Emergent Properties of Foveated Perceptual Systems", ***Invited talk at MIT-BCS Cog Lunch Series***, Virtual. July, 2020.

Deza, A. "Exploring the role of Foveation in Deep Neural Networks", ***Invited talk at NVIDIA Research***, Santa Clara, CA. October, 2019.

Deza, A. "Towards Metamerism via Foveated Style Transfer", ***Invited talk at Google Brain and Machine Perception***, Mountain View, CA. January, 2019.

Deza, A. "Towards Metamerism via Foveated Style Transfer", ***Invited talk at Columbia University's Zuckerman Institute***, New York, NY. October, 2018.

Deza, A. "Peripheral Representations for Human and Machine Perception", ***Invited talk at the Vision Sciences Lab at Harvard University***, Cambridge, MA. October, 2018.

Deza, A. "Peripheral Representations for computational models of Human and Machine Perception", ***Invited talk at the Redwood Center for Theoretical Neuroscience of UC Berkeley***, Berkeley, CA. March, 2018.

Deza, A. "Peripheral Representations for Artificial Perception", ***Invited talk at the Rosenholtz Lab. Given at the Computer Science and Artificial Intelligence Laboratory (CSAIL) MIT***, Cambridge, MA. August, 2017.

Deza, A., Eckstein, M.P. "Peripheral Representations Enhance Dense Clutter Metrics in Free Search", *Vision Sciences Society (VSS) Talk*, St. Petersburg, FL. May, 2017.

Surana, A., Peters J., Deza, A., Taylor, G.S., Bertucelli, L., Leonardi, F., Eckstein, M.P. "Optimal User Attention Allocation in a Multi-tasking Environment", *American Controls Conference (ACC) Workshop Talk, 2016.*

Deza, A., Taylor, G.S., Eckstein, M.P. "The Influence of Visual Clutter on Search Guidance with Complex Scenes", *Vision Sciences Society (VSS) Talk*, St. Petersburg, FL. May, 2016

Eckstein, M.P., Deza, A., Akbas, E. "Spatial Attention with synthetic cues and real scenes", *Cosyne Talk*, Salt Lake City, Utah. February, 2016

Deza, A., Akbas, E., Eckstein, M.P. "Scene context reduces distractor set-size effects during search", *Vision Sciences Society (VSS) Poster*, St. Petersburg, FL. May, 2015

Deza, A., Jammalamadaka, A., Manjunath, B.S. "Vesselshift: A mean-shift based method for neurite tracing", *Technical Report*, 2013

Mentorship Experience

List of notable mentored undergraduate and *high-school* students:[*John Chin (High School)], [*William Berrios (UNI/MIT)], [*Raphi Kang (MIT)], Manuel Alvarez (UTEC/MIT), [* Jonathan Gant (University of Florida / MIT)], [* Anne Harrington (MIT)], [* Elian Malkin (MIT)], Ronald Alvarez (MIT), [* Owen Kunhardt (Hunter College / MIT)], Antara Pal (High School), Fenil Doshi (Harvard), Jacob Prince (Harvard / CMU), Zachary Simon (UCSB), Ashi Srivastava (UCSB), Michael LaFlamme (UCSB), Jamie Burkes (UCSB), Kelsey Strand (UCSB), Neal Cowen (UCSB), Lenet Ron (UCSB), David Paredes (UNI).

[* : Denotes the supervised *undergraduate* student has published/submitted a paper as first author. Diversity Statistics: Male-to-Female ratio 13:7, International mentees: 5/20, All mentored nationalities: (USA, Peru, Russia, Colombia, India).]

Teaching Experience

[UTEC] CS5364: Deep Learning, Lima, Peru

Main Instructor **April 2024 – July 2024**

I currently teach a Deep Learning class *in english* to non-native english students for a small group of students (24 per class max) in their senior year of undergraduate degrees for the Computer Science and Data Science majors. The class has a focus on Computer Vision and Autonomous Driving, and is exam based with assignments that are competitive programming like under a scope of Deep Learning.

[UTEC] CS3061: Machine Learning, Lima, Peru

Main Instructor **September 2023 – December 2023**

I taught a class of Machine learning for undergraduates across several majors (and between their sophomore and junior years). This class was virtual and was project based with mid term and final exams. The class had a focus in classical machine learning, linear algebra review, and towards the end a general survey of frontier methods in Machine Learning.

[MIT] 9.58: Projects in the Science of Intelligence, Cambridge, Massachusetts

Teaching Assistant & Lead Instructor **September 2020 – December 2020**

I was a TA with Yena Han for a small class of 12 undergraduate students that are part of the new Course 6-9 (Computation and Cognition) major at MIT. Students are mentored by PostDoctoral Researchers across MIT BCS & EECS departments and are expected to write a conference workshop level paper (NeurIPS/ICLR standards) and present a high quality talk at the end of the semester. Duties include organizing the class, high-level project mentorship, teaching scientific writing and communication skills, and inviting guest speakers. **Yena and I are currently TA'ing this class again in Fall 2021.**

[UCSB] Advanced Research Methods, Santa Barbara, California

Teaching Assistant **April 2017 – June 2017**

I supervised 4 groups of 5 students each during the class where the goal was to have each group present a poster at the end of the quarter about a research project they developed. Each group came up with a hypothesis, designed a study, and wrote up a paper that summarized their results.

[UCSB] Perception Lab, Santa Barbara, California

Teaching Assistant **April 2015 – June 2015**

I was a Lab TA for a Psychophysics course at UCSB for upperclassmen. I was in charge of TA'ing one section of 8 students.

[UCSB] Introduction to Statistics, Santa Barbara, California

Teaching Assistant **January 2015 – March 2015**

I was lecturing on basic principles of Inferential and Descriptive Statistics at UCSB at the undergraduate level. I was in charge of TA'ing one section of 30 students.

[UCSB] Introduction to Psychology, Santa Barbara, California

Teaching Assistant **October 2014 – December 2014**

I lectured 4 sections about basic principles in Psychology as a T.A at UCSB at the undergraduate level. The total number of students enrolled in the class was 840. I was in charge of TA'ing 120.

Research Experience

Massachusetts Institute of Technology, Cambridge, MA. United States

Center for Biological & Computational Learning (Poggio Lab) **February 2020 – September 2022**

Currently working on several projects including 1) Theoretical issues in learning in deep neural networks pertaining hierarchical structure and locality; 2) Adversarial robustness via biologically-inspired mechanisms; 3) Implementation of foveated vision in autonomous robots and virtual agents.

Harvard University, Cambridge, MA. United States

Vision Sciences Lab (Konkle Lab) **February 2019 – February 2020**

I worked with Prof. Talia Konkle on exploring the functional role of foveation in deep neural networks. In addition to the former project, we ventured on a project that increased the rendering speed and resolution of texforms (objects that have low-level information removed and mid-level information preserved).

University of California, Santa Barbara, Santa Barbara, CA, United States

Vision and Image Understanding Lab (Eckstein Lab) **September 2013 – December 2018**

I worked with Prof. Miguel Eckstein on hybrid human-computer vision object recognition and perceptual models applied to visual search in scenes.

Institute for Collaborative Biotechnologies, Santa Barbara, CA, United States

Brain Sciences and Mechanical Engineering Departments **July 2014 – December 2018**

I worked with Prof. Miguel Eckstein, Amit Surana from UTRC, and Prof. Francesco Bullo (Mechanical Engineering) on a hybrid human-computer vision object recognition system for optimizing visual search in aerial images.

Virginia Tech, Blacksburg, VA, United States

Computer Vision Lab (Parikh Lab) **January 2013 – November 2013**

I worked on image virality with Prof. Devi Parikh, this work concluded in our CVPR '15 paper. Work was started long distance from Peru. I stayed in Virginia from April-July 2013.

University of California, Santa Barbara, Santa Barbara, CA, United States

Center for Bio-Image Informatics (Manjunath Lab) **February 2012 – July 2012**

I worked on the neuron tracing problem, where I designed a new tracing algorithm dubbed "Vesselshift", that with a simple MST connectivity approach produced state-of-the-art results benchmarked with the DIADEM Challenge. Work was done under the supervision of Prof. Manjunath.

Universidad Nacional de Ingenieria, Lima, Peru

Digital Image Processing Course Project **September 2011 – December 2011**

I created a representative Google Earth satellite images database to analyze different socioeconomic regions of Lima, Peru. Different low level and mid level data was processed to estimate urban and rural development. Matlab code and image database is uploaded on personal webpage.

Industry Experience

United Technologies Research Center (UTRC), Hartford, Connecticut

Deep Learning Intern **June 2017 – September 2017**

I worked on a project using Generative Adversarial Networks and Sequence-to-Sequence learning applied to Time Series data forecasting. Work was done under supervision of Kishore Reddy.

Gifiniti - Start-up Company, Santa Barbara, California

Software Developer **January 2012 – May 2012**

I worked on front-end and back-end web development of Gifiniti : a recommendation system that fetches personal information from Facebook and Google to help you give that special person the 'right' gift. Gifiniti won 2nd place at UCSB's NVC Startup competition, receiving a $2500 prize.

Programming & Software

Python, PyTorch, Lua (Torch), MATLAB, PsychToolbox (psychophysics + Eye-tracking), C++, C♯, Linux shell scripting, OpenCV and OpenGL libraries, Microsoft XNA framework, LaTeX 2_ε, Amazon Mechanical Turk.

Diversity Outreach & Professional Activities

Outreach Talks, 2011-2020

- *Universidad Nacional de Ingenieria Alumni at Harvard and MIT, 2020. (Virtual)*
Hosted by the undergraduate student research group of Mechanical Engineering at Universidad Nacional de Ingenieria where Luis Alonso Hernandez Nunez (my friend and classmate from undergraduate!) and I shared the stage.
- *Online Research Methods Lecture, 2020. (Virtual)*
Given as part of an online class to Peruvian students on how to perform scientific research.
- *Applying to Graduate School & Artificial Perceptual Systems, 2019. Lima, Peru.*
Guest Lectures given at Pontificia Universidad Catolica del Peru (PUCP) and Universidad de Ingenieria y Tecnologia (UTEC) in Lima, Peru.
- *Artificial Perceptual Systems, 2017. Lima, Peru.*
Guest Lecture given at my alma mater Universidad Nacional de Ingenieria (UNI) in Lima, Peru.
- *Foveated Models of Clutter Perception, 2016. Lima, Peru.*
Given at the Institute for Mathematics and Applied Sciences (IMCA); at the Mechanical Engineering Deparment of UNI; at the National Institute of Telecommunications (INICTEL).
- *Re-evaluating the Mechatronics Engineering major in Peru, 2015. Lima, Peru.*
Given at the Mechanical Engineering Departments of UNI.
- *Applying for a PhD in Vision as an international student, 2013,2014. Lima, Peru.*
Given at the Mechanical Engineering Departments of UNI.
- *How to get international research opportunities, 2012. Lima, Peru.*
Given at the Physical Science and Mechanical Engineering Departments of UNI.
- *Perspectives on AI and Neuroinformatics, 2012. Lima, Peru.*
Given at the Physical Science Department of UNI & Peru's National Air and Space Research Center.
- *Why you should pursue a career in Science and Engineering, 2011-2012. Lima, Peru.*
I give this talk twice a year to public high schools and private magnet academy's in Lima, Peru.

PhD level Research Summer Schools, 2011-2012

- Machine Learning Summer School 2011, MLSS - Purdue University. Indianapolis, USA.
- Visual Recognition and Machine Learning Summer School, VRML - INRIA. Grenoble, France.
- International Computer Vision Summer School, ICVSS - University of Catania. Sicily, Italy.

Teaching and Research Mentoring, 2011-2012. Lima, Peru.

Weekly meetings with Sophomore's and Junior's that were interested in doing research in Computer Vision and Machine Learning. Meetings were held at GISCIA - research lab. This was a research lab ran purely by undergraduates at the Universidad Nacional de Ingenieria. I served as President from 2011 to 2012. Group Website and Projects: `http://giscia.github.io/people/`

Media, 2012-2013

- Interview on ProUNI quarterly magazine about personal research on Computer Vision, 2012
- Interview on San Borja Radio's science program about research on Neuroinformatics, Lima, Peru. 2012
- Fulbright article on Peru's graduate students in the spotlight, 2013
- CONCYTEC article on Peru's graduate students in the spotlight, 2013

Community Service, 2010-2012

Squad leader and captain of multiple activities at Un Techo Para Mi Pais (UTPMP), a Latinamerican NGO similar to Engineers Without Borders (EWB). My squad has built a total of 3 wooden houses for homeless families and raised $1'000 at each years fund raising rally.

International Research Outreach, 2010-2012

I post online guides, links, screencasts and ideas on how research should be conducted for undergraduates who are studying in developing countries on my research blog: www.arturodeza.wikidot.com/datalog. Most of my activity has transferred to Quora (now inactive): www.quora.com/Arturo-Deza

Hobbies and Extra's

Surfing, **painting (Show at the Somerville Open Studios 2020/2021 and Solo Show at Unaffiliate.US Gallery)**, piano, running, creative writing.

Professional Memberships

Member of Vision Sciences Society (VSS) from 2015 to 2020, and the Center for Brains, Minds and Machines from 2020 to 2022.

Major International Media Coverage

- ¿Por qué fracasan los pilotos automáticos? Porque no han sido entrenados en Perú, según un estudio, December 2023
- Tráfico de Lima es ideal para entrenar autos autónomos, según investigación, December 2023
-Conducción autónoma debe ser probada en el tráfico de Lima, propone estudio, December 2023
-Tráfico de Lima es ideal para entrenar autos autónomos, según investigación, December 2023
-Vehículos autónomos "aprenden" del tráfico peruano: así se entrenan para adaptarse al caos, December 2023
- *Mi Ultima Neurona (LatinAmerican podcast): Interview of Arturo Deza*, March 2022
- *SciTech Daily: Adversarially Robust: The Benefits of Peripheral Vision for Machines* , March 2022
- *TechiLive: The Benefits of Peripheral Vision for Machines* , March 2022
- *MIT News Article: The Benefit of "Peripheral Vision" for Machines*, February 2022
- Quanta News Article on *Breakthroughs in Artificial Intelligence lead by Neuroscientists*, 2021
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