Manuel Arturo Deza Figueroa (Arturo Deza)

Contact Information

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Research Interests

Specific Interests: Visual search, bio-inspired vision models, object & scene perception.
General Interests: Computer/human vision, machine learning, computational modelling of eye-movements,Human-Computer Interaction and Hybrid Perceptual Systems.

Education

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

Ph.D. Dynamical Neuroscience **September 2013 – to date**

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

Universidad Nacional de Ingenieria (UNI), Lima, Peru

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

- Summa Cum Laude. Rank: 1/45.
- Research Advisor: Alberto Coronado.

Publications

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)*, 2017.

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

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

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., 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

Deza, A., "When the Gold Standard goes Gray" , *International Computer Vision Summer School - Computer Vision and Medicine Essay Contest*, Sicily, Italy. July 2012

Deza, A., "Feature Vector based Image Segmentation", *Machine Learning Summer School Poster Session*, West Lafayette, IN, USA. June, 2011

Achievements, Honors and Awards

UCSB President's Work Study Award $3000	2016
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
Alberto Benavides de la Quintana - Patronato UNI Research Fellowship and Award $5400 2011
Machine Learning Summer School Programming Competition (2/50) 2011
President of the Artificial Intelligence Student Research Group (GISCIA) 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
Certificate of Originality and Initiative, given by the Latin American Heads Conference 2006

Research Experience

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

Vision and Image Understanding Lab **September 2013 – (to date)**

I'm currently working with Prof. Miguel Eckstein on hybrid human-computer vision object recognition models applied to visual search in scenes.

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

Brain Sciences and Mechanical Engineering Departments **July 2014 – (to date)**

I'm currently working with Prof. Miguel Eckstein 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 **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 **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.

Professional Experience

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.

Teaching Experience

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.

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.

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.

Professional Activities

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

Weekly meetings with Sophomore's and Junior's that were interested in doing research in Computer Vision. Meetings were held at GISCIA - research lab.

Talks, 2011-2015

- *Re-evaluating the Mechatronics Engineering major in Peru, 2015*
Given at the Mechanical Engineering Departments of UNI.
- *Applying for a PhD in Vision as an international student, 2013*
Given at the Mechanical Engineering Departments of UNI.
- *How to get international research opportunities, 2012*
Given at the Physical Science and Mechanical Engineering Departments of UNI.
- *Perspectives on AI and Neuroinformatics, 2012*
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*
I give this talk twice a year to public high schools and private magnet academy's in Lima, Peru.

Media, 2012-2013

- Interview on ProUNI quarterly magazine about personal research on Computer Vision, 2012
- Interview on SanBorja Radio's science program about research on Neuroinformatics, 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 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/data-log. Most of my activity has transferred to Quora: www.quora.com/Arturo-Deza

Programming & Software

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

Professional Memberships

Vision Sciences Society(VSS). Volunteer Reviewer for NIPS, 2016. Assigned reviewer for IUI, 2017. Program Committee of the Mutual Benefits of Cognitive and Computer Vision ICCV workshop 2017. Organizer of the *Dynamical Neuroscience* Human and Machine Perception Fall 2016 Seminar.

Hobbies and Extra's

Surfing, piano, running, creative writing.

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† Required an international pre-selection process