Manuel Arturo Deza Figueroa

Contact Information

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Research Interests

Image saliency, scene understanding, bio-image analysis, computer vision, machine learning, cognitive science, neuroinformatics.

Education

Universidad Nacional de Ingenieria, Lima, Peru

Bachelor of Science — **March 2007 – December 2012 (expected)**

- Major: Mechatronics Engineering. Summa Cum Laude.
- Research Advisors: Alberto Coronado(UNI) and Bangalore Manjunath(UCSB).

Achievements, Honors and Awards

Invited Speaker at Peru's 4th National Neuroscience and Complex Systems Symposium, Lima	2012
Invited Speaker at Peru's International Science Forum, Ica	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
SAT Mathematics Level 2 and Physics Subject Tests Scores (800/800)	2008
1st place in University Admissions exam to Mechatronics Engineering program - IB Mode	2007
International Baccalaureate Diploma	2006
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

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. Our paper is currently in press for the IEEE-International Symposium of BioMedical Imaging 2013. 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.

Intelligent Video Game Design Course Project — **September 2011 – December 2011**

Worked on an Evolutionary Algorithm (EA) that optimized an A* search problem for a Cat, Cheese & Mouse problem scenario. Microsoft XNA Framework, MATLAB code and project paper are uploaded on personal webpage.

Computer Vision Research — **January 2011 – June 2011**

Worked on the Image Segmentation problem coding a weighted K-means segmentation algorithm that included parametric cluster merging. Results were accepted at the Machine Learning Summer School - Purdue University 2011 Poster Presentation.

RTAI-Linux Shell Scripting Research — **September 2010 – December 2010**

Wrote a manual for RTAI: RealTime Application Interface for Linux 3.8 installation on Ubuntu 9.10. Installation for those specifications were inexistent at the time. Some Kernel processing and speed tests are detailed in the manual. Available for download at the 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.

CTIC - Research Lab, Lima, Peru

Computer Vision programmer **January 2011 – April 2011**

I coded a mean-shift segmentation algorithm in OpenCV applied to satellite images for future use on the Unmanned Aerial Vehicle project. Additionally identifying regions of interest: roads, water, cities.

Publications, Essays and Poster Sessions*

Deza, A., Jammalamadaka, A., Manjunath, B.S. "Vesselshift: A mean-shift based method for neurite tracing", *(submitted) IEEE International Symposium on BioMedical Imaging* (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

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 are interested in doing research in Computer Vision. Meetings are held at GISCIA - research lab. We've started a project on Large Database Image Memorability from the Cloud.

Talks, 2011-2012

- *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.
- *Perspectives on AI and Neuroinformatics, 2012*
Given at the Physical Science Department of UNI & Peru's National Air and Space Research Center.
- *How to get international research opportunities, 2012*
Given at the Physical Science and Mechanical Engineering Departments of UNI.

Media, 2012

- Interview on ProUNI quarterly magazine about personal research on Computer Vision, 16th Edition
- Interview on SanBorja Radio's science program about research on Neuroinformatics

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(EWO). My squad has in total built 3 wooden houses and raised $5'000 at each years fund raising rally.

International Research Outreach, 2010-2012

I post online guides, links 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

Programming

Matlab, Python, C++, C♯, Linux shell scripting, OpenCV and OpenGL libraries, Microsoft XNA framework, LaTeX 2_ε

Hobbies and Extra's

Research Blogging, piano, painting, kung-fu, swimming. My paintings and piano melodies can be seen on my website: http://arturodeza.wikidot.com/art

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† Required an international pre-selection process

* Link to my talks, interviews, papers and other materials can be found at: http://arturodeza.wikidot.com/files