André Filgueiras de Araujo

afaraujo@stanford.edu
http://stanford.edu/~afaraujo

Education

Ph.D. Candidate, Electrical Engineering (GPA: 4.04/4.00)	Sept 2010 – Jun 2016
Stanford University – Stanford, California	(expected)
Advisor: Prof. Bernd Girod	
Dissertation title: Large-Scale Video Retrieval Using Image Queries (defended)	
B.Sc. and **M.Sc., Electrical Engineering**	Feb 2003 – Jul 2010
University of Campinas – Campinas, Brazil	
B.Sc., Electrical Engineering (Honor student)	Sept 2005 – Aug 2007
Institut National des Sciences Appliquées – Lyon, France	
Student in a double-degree program (Brazil/France)	

Skills Summary

Research & Development: Solid problem solving skills, very creative in developing innovative solutions, strong background in project development and algorithm benchmarking

Machine Learning: Extensive hands-on experiences in image/video retrieval, classification, and compression

Technical Documentation & Presentation: 15+ peer-reviewed publications, sound technical presentation skills

Programming: C++, Python, Matlab, R

Operating Systems: Linux, Mac OS, Microsoft Windows

Languages: English (fluent), Portuguese (native), French (fluent), Spanish (intermediate)

Relevant Research & Work Experience

Stanford University – Stanford, California — Sept 2010 – Present

Research Assistant (Image, Video and Multimedia Systems group – Dept. of Electrical Engineering)
- Created state-of-the-art algorithms for searching video databases using image queries, with new image-to-video similarity techniques (10X more efficient than standard baseline in large-scale datasets)
- Developed asymmetric similarity techniques for Fisher vectors (25% improvement over standard Fisher vectors in asymmetric image retrieval applications)
- Implemented real-time query-by-image video retrieval system (http://videosearch.stanford.edu)
- Invented entropy-constrained dictionary learning for image compression

Google – Mountain View, California — Jun 2013 – Sept 2013

Software Engineering Intern (Machine Perception team)
- Developed Deep Learning algorithms to learn embedding for multiple object views
- Compared proposed method to feature-based matching in image retrieval task, using in-house dataset

Technicolor – Palo Alto, California — Jun 2012 – Sept 2012 / Jun 2011 – Sept 2011

Research Intern (Research & Innovation division)
- Led team in TRECVID'12 Semantic Indexing challenge (company's first participation): top 25% results
- Developed real-time video classification system with fast descriptor extraction, Bag-of-Words and SVM
- Investigated scene classification algorithms based on object detection and random filters

Other Internships
- Telecommunications Research & Development Center (CPqD) – Campinas, Brazil — Feb 2008 – Dec 2008
  Developed electronic devices for optical communications systems
- Arcelor Research – Maizières-lès-Metz, France — Mar 2007 – Aug 2007
  Developed signal processing algorithm to enhance steel quality
- Citélum – Paris, France — Jul 2006 – Sept 2006
  Studied the Luxicom Smart Lighting System based on commercial and technical aspects

Awards & Honors

Paper Awards	Kodak Ph.D. Fellowship, 2012	Honor Student, 2007
• Best student paper – Data Compression Conference, 2014 • Top 10% paper – IEEE Workshop on Multimedia Signal Processing, 2011	Scholarship for Ph.D. studies sponsored by Kodak	Institut National des Sciences Appliquées – Lyon, France Top-ranked in 2007 class (105 students)
Accel Innovation Scholarship, 2013 Program that prepares Stanford Ph.D. students to become entrepreneurial leaders	**Fulbright Science & Technology Scholarship, 2010** Scholarship for Ph.D. studies sponsored by U.S. Department of State	**Brafitec Scholarship (Double-Degree French-Brazilian Program), 2005** Selected among top 2 students

Teaching Experience

Teaching Assistant	Aug 2004 – Dec 2004
University of Campinas – Campinas, Brazil	Feb 2004 – July 2004

Courses: *Electrical Circuits* and *General Physics I*

Technical Coursework (completed at Stanford University)

✓ Machine Learning	✓ Information Retrieval	✓ Digital Photography	✓ Probabilistic Graphical Models
✓ Statistical Learning	✓ Image Processing	✓ Image/Video Compression	✓ Statistical Signal Processing
✓ Computer Vision	✓ Convex Optimization	✓ Design/Analysis of Algorithms	✓ Information Theory

Leadership & Community

Brazil Engineering & Technology Study Tour – Stanford University, 2015
Led first study-tour from Stanford Engineering to Brazil
Researched/presented the country to students, and organized meetings with 15+ leading companies in Brazil

The Global Scientist Online Magazine (http://theglobalscientist.com) – 2013-14
Co-founder and first co-editor of the magazine, featuring S&T articles by Fulbright fellows

Leadership Courses and Workshops – Stanford University, 2013-15

✓ Public Speaking	✓ Voice and Articulation	✓ Emotional Intelligence	✓ Management Matters

Handimanagement Project – Institut National des Sciences Appliquées, 2007
Social project aiming to integrate disabled people to the work market

IEEE Student Branch – University of Campinas, 2005
Treasurer of the student branch, overseeing financial accounts and reports

Additional Courses

Vision & Sports Summer School – Prague (Czech Republic), 2012
One-week length, with lectures from experts in Computer Vision and Machine Learning

Service as Peer Reviewer

IEEE TCSVT, IEEE TMM, DCC, among others

Selected Publications (full list of publications available at http://stanford.edu/~afaraujo/research.html)

1. **A. Araujo**, J. Chaves, H. Lakshman, R. Angst and B. Girod, "Large-Scale Query-by-Image Video Retrieval Using Bloom Filters," arXiv:1604.07939, 2016.
2. **A. Araujo**, H. Lakshman, R. Angst and B. Girod, "Modeling the Impact of Keypoint Detection Errors on Local Descriptor Similarity," Proc. International Conference on Image Processing (ICIP), Sept. 2016. (to appear)
3. **A. Araujo**, J. Chaves, R. Angst and B. Girod, "Temporal Aggregation for Large-Scale Query-by-Image Video Retrieval," Proc. International Conference on Image Processing (ICIP), Sept. 2015.
4. **A. Araujo**, J. Chaves, D. Chen, R. Angst and B. Girod, "Stanford I2V: A News Video Dataset for Query-by-Image Experiments," Proc. ACM Multimedia Systems (MMSys), Mar. 2015.
5. **A. Araujo**, D. Chen, P. Vajda and B. Girod, "Real-time Query-by-Image Video Search System," Proc. ACM Multimedia (MM), Nov. 2014.
6. **A. Araujo**, M. Makar, V. Chandrasekhar, D. Chen, S. Tsai, H. Chen, R. Angst and B. Girod, "Efficient Video Search Using Image Queries," Proc. International Conference on Image Processing (ICIP), Oct. 2014.
7. D. Chen, M. Makar, **A. Araujo** and B. Girod, "Interframe Coding of Global Image Signatures for Mobile Augmented Reality," Proc. Data Compression Conference (DCC), Mar. 2014. (*Best Student Paper Award*)
8. M. Yu, P. Vajda, D. Chen, M. Daneshi, S. Tsai, **A. Araujo**, H. Chen and B. Girod, "EigenNews: A Personalized News Delivery Video Platform," Proc. ACM Multimedia (MM), Oct. 2013.
9. D. Chen, P. Vajda, S. Tsai, M. Daneshi, M. Yu, H. Chen, **A. Araujo** and B. Girod, "Analysis of Visual Similarity in News Videos with Robust and Memory-Efficient Image Retrieval," Proc. IEEE Workshop on Media Fragment Creation and Remixing (MMIX), Jul. 2013.
10. M. Daneshi, P. Vajda, D. Chen, S. Tsai, M. Yu, H. Chen, **A. Araujo** and B. Girod, "EigenNews: Generating and Delivering Personalized News Videos," Proc. IEEE Workshop on Broadcast and User-Generated Content Recognition and Analysis (BRUREC), Jul. 2013.
11. **A. Araujo**, F. Silveira, H. Lakshman, J. Zepeda, A. Sheth, P. Pérez and B. Girod, "The Stanford/Technicolor/Fraunhofer HHI Video Semantic Indexing System", Proc. TRECVID Workshop, Nov. 2012.
12. **A. Araujo**, P. Weinzaepfel, P. Pérez, C. Diot, "Object Bank-based Scene Classification," Technicolor Technical Report, Sept. 2011.
13. M. Makar, Y-C. Lin, **A. Araujo** and B. Girod, "Compression of VQM Features for Low Bit-Rate Video Quality Monitoring," Proc. IEEE Workshop on Multimedia Signal Processing (MMSP), Oct. 2011. (*Top 10% Paper Award*)
14. **A. Araujo**, M. Daneshi, R. Peng, "Entropy Constrained Overcomplete-based Coding of Natural Images," Technical Report, Mar. 2011.