

ACADEMIC INTERESTS

My general research interests are in Computer Vision, Machine Learning, Signal and Image Processing. My current research is focused on developing biologically inspired solutions to computer vision problems, particularly saliency and object recognition.

EDUCATION

University of California San Diego (Fall 2008 - present)
PhD in Intelligent Systems, Robotics and Control (ISRC)
Department of Electrical and Computer Engineering
Advisor: Nuno Vasconcelos

Indian Institute of Technology Guwahati (2004 - 2008)
Bachelor of Technology in Electronics and Communication Engineering
Thesis: Designing new feature extraction methods for automatic speaker recognition

RESEARCH PROJECTS

Saliency as a dataset collection mechanism for the automated design of cascade classifiers (Summer 2010-present)
(with Mohammad Saberian) Prof Nuno Vasconcelos, Statistical Visual Computing Laboratory, UC San Diego, USA
(*Finalist at the Qualcomm innovation fellowship, 2010*)

Connections between Scale Invariant Feature Transform (SIFT) and Biological Vision (Spring 2009-present)
Prof Nuno Vasconcelos, Statistical Visual Computing Laboratory, UC San Diego, USA
(*Poster presented at COSYNE 2010, Abstract published in Frontiers of Systems Neuroscience*)

Biologically Inspired Architecture for Object Recognition (Spring 2009 - present)
Prof Nuno Vasconcelos, Statistical Visual Computing Laboratory, UC San Diego, USA
(*Paper accepted for oral spotlight presentation at NIPS 2010*)

Sparse Complex Features For Discriminant Saliency-Based Object Recognition : Convex Methods(Winter 2008 - Spring 2009)
Prof Gert Lankriet, Prof Nuno Vasconcelos, UC San Diego, USA

Design And Implementation Of A Real-Time Speaker Diarization System(Winter 2008)
Prof Mohan Trivedi, Center for Computer Vision and Robotics Research, UC San Diego, USA

Exploration Of New Feature Extraction Methods For Automatic Speaker Recognition (*Bachelors Dissertation*)
Prof S R M Prasanna, Indian Institute of Technology Guwahati, India

Development Of A Speech Data Acquisition And Analysis System(Fall 2006)
Prof S R M Prasanna, Indian Institute of Technology Guwahati, India

Algorithms For Automatic Speech Recognition In A Closed Noisy Environment(Summer 2007)
Prof Andre Goalic, Telecom Bretagne, France

Algorithms For The Design And Implementation Of An Indoor Passive Sonar System(Summer 2006)
Prof Nitin Chandrachoodan, Indian Institute of Technology Madras, India

WORK EXPERIENCE

Research Assistant, Statistical Visual Computing Laboratory, UC San Diego (Winter 2008 – present)
Prof Nuno Vasconcelos

Teaching Assistant, (ECE-161C, Applications of Digital Signal Processing), **UC San Diego** (Spring 2010)

Research Intern, Telecom Bretagne, Brest, France (Summer 2007)
Prof Andre Goalic

Research Intern, Indian Institute of Technology Madras, India (Summer 2006)
Prof Nitin Chandrachoodan

PUBLICATIONS

On the connections between SIFT and Biological Vision.

Kritika Muralidharan and Nuno Vasconcelos

Frontiers in Systems Neuroscience, March 2010. *(Poster presented at COSYNE 2010)*

A biologically plausible network for the Computation of Orientation Dominance.

Kritika Muralidharan and Nuno Vasconcelos

Proc. Neural Information Processing Systems (NIPS), 2010 *(spotlight presentation)*.

Orientation Dominance: Biological plausibility, psychophysical verification and implications for biological and computer vision.

Kritika Muralidharan and Nuno Vasconcelos

To be submitted to Vision Research

HONORS

- Finalist – Qualcomm Innovation Fellowship, 2010.
- Departmental Fellowship – University of California San Diego, 2008.
- Top 5% of graduating class, IIT Guwahati, 2008.
- Incentive Scholarship recipient from the Embassy of France, 2007.
- President's award for top 0.1% students in the country in AISSCE, 2004.
- National 2nd in the All India Secondary School Certificate Examination, 2004.

RELEVANT COURSES

Statistical Learning – I and II
Parameter Estimation – I and II
Computer Vision and Multimodal Signal Processing
Artificial Intelligence II
Advanced Statistics – I and II
Convex Optimization

Random Processes
Image Processing
Biomedical Signal Processing
Speech Processing
Queueing Systems and Performance Analysis

REFERENCES

Nuno Vasconcelos, Associate Professor

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SRM Prasanna, Associate Professor

Department of Electronics and Communication Engineering, Indian Institute of Technology Guwahati

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(More on request)