

SUBHABRATA BHATTACHARYA

113 Jeremy Court, Edison, NJ, 08817, USA

EDUCATION

- **PhD in Computer Engineering (Computer Vision)**, Aug 2008 - July 2013,
University of Central Florida, Orlando, FL, USA
Advisor(s): Prof. Mubarak Shah, Dr. Rahul Sukthankar
Dissertation: Recognition of Complex Events in Open-Source Webscale Videos: Features, Intermediate Representations and their Temporal Interactions
 - **Bachelor of Engineering with honors (Computer Science)**, June 2003
University of Burdwan (Asansol Engineering College), West Bengal, India
Advisor: Prof. Bhabatosh Chanda
Undergraduate Thesis: Study of Image Compression Algorithms
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HONORS/AWARDS

- **Best paper Award** in **ACM Intl. Conf. in Multimedia Retrieval**, Glasgow, UK, 2014.
 - **2nd prize** in **ACM Multimedia Grand Challenge**, Barcelona, ES, 2013.
 - **Graduate Research Excellence (UCF) Award - 2013** in Engineering & Simulations, Orlando, US, 2013.
 - **TRECVID Multimedia Event Detection (MED) 2010 Best Submission**, Gaithersberg, US, 2011.
 - **Best paper Nominee** in **ACM Multimedia**, Florence, IT, 2010.
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PROFESSIONAL EXPERIENCE

1. **Post Doctoral Research Scientist** at **Columbia University**, NY City, NY [08/2013 – Present]
Exploring research directions in **multimodal affect analysis** and **aesthetic understanding** of unstructured multimedia content, leading research effort for **IARPA ALADDIN** program in collaboration with IBM research.
2. **Research Intern** at **Microsoft Research**, Redmond, WA [05/2012 – 08/2012]
Perceptive Video Quality Enhancement by fusion of multispectral images: Proposed a patch based method to reconstruct well-lit RGB video, from poorly lit input obtained from RGB and Near Infra-Red channels.
3. **Research Assistant** at **Computer Vision Lab (UCF)**, Orlando, FL [08/2008–07/2013]
Independent research on broad areas of computer vision including:
Video Event Detection: Lead UCF's research efforts as a sub contractor to **SRI Sarnoff** under **IARPA ALADDIN** program. The effort **resulted in 4 publications**.
Action/Gesture Recognition: Manifold learning, Maximum Likelihood based approaches to recognize human actions, approach performed within top 20 submissions in **Microsoft/NSF One-shot Gesture Learning Challenge, 2012**.
Computational Photo-Aesthetics: Introduced a smart photo-recomposition tool for aesthetic image enhancement, effort nominated for **Best Paper** in **ACM Multimedia, 2010**.
Aerial Video analysis: Worked on persistent tracking of objects from aerial surveillance platforms, Implemented a computationally efficient system to track ground targets in aerial videos as part of **DARPA Video and Image Retrieval and Analysis Tool (VIRAT)** program.
4. **Research Intern** at **Intel Research**, Pittsburgh, PA [05/2010 – 09/2010]
Proposed a solution to detect and track honey-bees to monitor typical colonies, Demonstrated working prototype in **Intel's OpenHouse 2010**.
5. **Staff Software Engineer** at **IBM Systems & Technology Labs**, Bangalore, India [06/2006 – 08/2008]
Programmed device drivers for High Speed Network adapters/switches under **DARPA High Productivity Computing Systems** program, Developed Fortran 90 modules support, function call trace, and thread security in IBM's Parallel Environment (MPI library); Involved in Campus Recruitment and University Relations.
6. **Member Research Staff** at **SETLabs, Infosys (MNC)**, Bangalore, India, [02/2004 – 05/2006]
Investigated several cloud computing based research areas, including: **System Virtualization, Video on demand** and **Application Migration into clusters**, Efforts **resulted in 2 publications** in international conferences, and was **awarded a patent** from US Patent and Trademark Office.

7. Held research/engineering positions in **CMC Ltd.** (12/2003 – 02/2004), **Softnet Solutions** (06/2003 – 12/2003), and **Indian Statistical Institute**, (08/2002 – 05/2003) and developed software for various domains including CRM, e-governance, and document processing.
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PATENT

Video on demand system and methods thereof, US 8522290 B2, Filed on Oct 2006, Granted on Aug 2013.

TEACHING

- **September 2006 – January 2007, Visiting Lecturer**
Mount Carmel College (Bangalore), Dept. of Computer Science, **Data and Communication networks (CS-502)**.
 - **June 2006 – August 2006, Guest Faculty**
PG Studies (KAS College, Erode), **Distributed Computing (CS-821)**.
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SELECTED PUBLICATIONS [Full list available in **Google Scholar** Profile (<http://goo.gl/yTYLP2>)]

1. **S. Bhattacharya**, M. Kaleyeh, R. Sukthankar, and M. Shah, *Recognition of Complex Events exploiting Temporal Dynamics between Underlying Concepts*, IEEE Intl. Conf. on Computer Vision and Pattern Recognition (CVPR) (**Oral**), Columbus, 2014.
 2. **S. Bhattacharya**, F. Yu, and S-F. Chang, *Minimally Needed Evidence for Complex Event Recognition in Unconstrained Videos*, ACM Intl. Conf. on Multimedia Retrieval (ICMR) (**Best Paper Award**), Glasgow, UK, Apr.1-4, 2014.
 3. **S. Bhattacharya**, R. Mehran, R. Sukthankar, and M. Shah, *Cinematographic Shot Classification using Lie Algebra and its Application to Complex Event Recognition*, IEEE Trans. on Multimedia, DOI 10.1109/TMM.2014.2300833, Jan, 2014.
 4. **S. Bhattacharya**, B. Nojavan, D. Liu, T. Chen, S-F. Chang and M. Shah, *Towards a Comprehensive Computational Model for Aesthetic Assessment of Videos*, ACM Intl. Conf. in Multimedia (MM), Barcelona, 2013. (**Grand Challenge 2nd Prize winner**)
 5. **S. Bhattacharya**, *Recognition of Complex Events in Open-Source Web-Scale Videos: A Bottom up approach*, ACM Intl. Conf. in Multimedia (MM), Barcelona, 2013.
 6. Y. Jiang, **S. Bhattacharya**, M. Shah, and S-F Chang, *High-Level Event Recognition in Unconstrained Videos*, International Journal of Multimedia Information Retrieval (IJMIR), Nov 2012.
 7. **S. Bhattacharya**, R. Sukthankar, and M. Shah, *A holistic approach to aesthetic enhancement of photographs*, ACM Trans. of Multimedia Computing, Communication & Applications, Sep 2011.
 8. **S. Bhattacharya**, R. Sukthankar, R. Jin, and M. Shah, *A Probabilistic Representation for Efficient Large Scale Visual Recognition Tasks*, IEEE Intl. Conf. on Computer Vision and Pattern Recognition (CVPR), Colorado Springs, 2011.
 9. **S. Bhattacharya**, R. Sukthankar, and M. Shah, *A Framework for Photo-Quality Assessment and Enhancement based on Visual Aesthetics*, ACM Int. Conf. on Multimedia (MM), Florence, 2010. (**Best paper nominee**)
 10. **S. Bhattacharya**, A. Chakrabarti and S. Sengupta, *Scalable and Distributed Mechanisms for Integrated Scheduling and Replication in Data Grids*, IEEE CCGRID 2005.
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GRANT WRITING EXPERIENCE

- Have been awarded a funding opportunity of \$30,000 from **HBO/NYC Media Lab** in capacity of a **co Principal Investigator** on behalf of Columbia University, for proposing a project on quantitative evaluation of video viewing experience on small screen devices.
 - Involved in writing of 5 grant and project proposals mostly as subcontractor, to agencies including **NSF, DARPA, IARPA, Harris, Google**. Responsibilities included identification of UCF's relevant expertise and areas of strength, writing of statements of work, technical input to primary contractors, and distribution of tasks for members in the Lab.
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SERVICE

- **Program Committee Member** in **IEEE CVPR 2014, ACM ICMR 2014**.
 - Area Chair, **2nd International Workshop on Cloud Computing Applications**, Bangalore, India, 2013.
 - Program Chair, **First National Conference on Human Computer Interface**, Erode, India, Feb. 2007.
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INVITED TALKS

- Recognition of Complex Events: Two perspectives, Yahoo! Labs, New York City, NY, Mar. 2013.
 - Complex Event Recognition: A bottom up approach, AT&T Research, Princeton, NJ, Apr. 2013.
 - Photographic Quality Assessment and Enhancement, ACM MM, Florence, Italy, Oct. 2010.
 - Survey on Open-source Systems Virtualization Technologies, IBM Tech Ed, Bangalore, India, Dec. 2006.
 - Virtualization and Grid Computing, Free and Open-Source Software in India (FOSS.IN), Bangalore, India, Dec. 2005.
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SKILLS

Proficient programmer in C/MATLAB/Unix Shell Scripting, 12+ years experience in Unix Environments