

Neela Sawant

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Research Interests

Multimedia semantics and retrieval, Social multimedia, Statistical machine learning, Data mining

Education

- **The Pennsylvania State University (Penn State), USA**
Ph.D., Information Sciences and Technology (GPA 3.97/4.00) (2008–Expected 2013)
Thesis title: “Modeling Tagged Photos for Automatic Image Annotation”
Committee: J. Z. Wang (Advisor), J. Li, J. Carroll, C. L. Giles, R. Albert.
- **The Indian Institute of Technology Bombay, India**
M. Tech., Computer Science (CPI 8.8/10) (2004-2006)
Thesis title: “Retrieval of Images for Remote Sensing Applications”
Advisors: S. Chandran and B. K. Mohan.
- **The Sardar Patel College of Engineering, India**
B. E., Information Technology (Distinction) (2000-2004)

Relevant Courses

Image Processing, Computer Vision, Statistical Foundations of Machine Learning, Data Mining, Categorical Data Analysis, Algorithms, Artificial Intelligence, Advanced Databases.

Programming Skills

C, C++, Shell Programming, Perl, PHP, Matlab, R.

Awards and Honors

- Travel award at the ACM Multimedia conference to present in the Doctoral Symposium, 2011.
- Scholarship to attend the USA-Sino Summer School in Vision, Learning and Pattern Recognition, China, 2011.
- Accepted by the Google Workshop for Women Engineers, 2009.
- Accepted by the CRA-W Grad Cohort Workshop, 2009.
- Awarded the prestigious University Graduate Fellowship by Penn State University, 2008.
- Placed in top 0.5% of over 35000 candidates in the Computer Science Graduate Aptitude Test in Engineering conducted by the Indian Institute of Technology, 2004.
- Recipient of the National Talent Search Scholarship awarded by the Government of India, 1998.

Work Experience

- **Research Assistant, Penn State University** (Spring 2010-Fall 2011)
Under the Cyprus Digital Antiquities Repository (CyDAR) project, worked on the automatic classification of Cyprus wall-paintings of the Byzantine era.
- **Technical Intern, AT&T Labs Research** (Summer 2010)
Assisted in the development of a scalable technology for content-based video copy detection as part of the NIST’s Trec Video Retrieval Evaluation (TrecVid).
- **Teaching Assistant**
 - Theoretical Foundations of Information Science, Graduate class, Penn State (Fall 2009)
 - Multimedia Information Systems, Under-graduate class, Penn State (Fall 2009)
 - Guest lecturer for Image Processing, Graduate class, IIT Bombay (Spring 2006)
 - Principles of Programming Languages, Under-graduate class, IIT Bombay (Spring 2005)
- **Research Engineer, Yahoo! R&D India, (Now, Yahoo! Labs, Bangalore)** (2006 - 2008)
Main contributions on insertion and contextual selection of video advertisements, identification of near-duplicate web images and videos, adult image detection, features and indexing for web-scale content based image retrieval.

Refereed Publications

1. N. Sawant, G. Duan, Y-W. Chen, S. Hermon, D. Snow, J. Z. Wang, "Retrieval and Classification of Cypriot Icon Paintings using Facial Feature Characterization", IEEE Pattern Analysis and Machine Intelligence, In submission, 2012.
2. N. Sawant, J. Z. Wang, J. Li, "Large-scale Image Annotation using Machine-selected Tagged Pictures", IEEE Pattern Analysis and Machine Intelligence, In submission, 2011.
3. *G. Duan, *N. Sawant, D. Snow, J. Z. Wang, and Y.-W. Chen, "Analysis of Cypriot Icon Faces using ICA Enhanced Active Shape Model Representation", ACM Multimedia, 2011 (* equal contributions).
4. N. Sawant, "Modeling Tagged Photos for Automatic Image Annotation", Doctoral Symposium, ACM Multimedia, 2011.
5. N. Sawant, J. Li and J. Z. Wang, "Automatic Image Semantic Interpretation using Social Action and Tagging Data", Journal of Multimedia Tools and Applications, 2011.
6. N. Sawant, R. Datta, J. Li, and J. Z. Wang, "Quest for Relevant Tags using Local Interaction Networks and Visual Content", ACM Multimedia Information Retrieval, 2010.
7. S. H. Srinivasan and N. Sawant, "Finding Near-duplicate Images on the Web using Fingerprints", ACM Multimedia, 2008.
8. S. H. Srinivasan, N. Sawant, and S. Wadhwa, "vAdeo: Video Advertising System", ACM Multimedia, 2007.
9. N. Sawant, S. Chandran, and B. K. Mohan, "Retrieving Images for Remote Sensing Applications", Proc. ICVGIP, 2006.

Other Publications

1. Z. Liu, E. Zavesky, N. Sawant, and B. Shahraray, "AT&T Research at TRECVID 2010", TRECVID, 2010.
2. M. Nithya, N. Sawant, A. Parnami, S. Lignamneni, and S. Chandran, "Indian Institute of Technology, Bombay at TRECVID 2006", TRECVID, 2006.
3. M. Nithya, N. Sawant, D. Singla, and S. Chandran, "Detecting False Positives in Shot Boundary Detection", Indian Vision Showcase of ACCV, 2006.
4. M. Nithya, N. Sawant, D. Singla, and S. Chandran, "Indian Institute of Technology, Bombay at TRECVID", TRECVID, 2005.

U. S. Patents

1. I. Husseini, N. Sawant, and S. H. Srinivasan, "Cost-effective Image Metadata Creation using Near-duplicate Image Detection" (#20090208097).
2. N. Sawant and S. H. Srinivasan, "Method and System for Determining Near-duplicate Images" (#20100166321).

Research Experience

- **Modeling Tagged Photos for Automatic Image Annotation** (Ph. D. Thesis, Penn State)
Developing methods to harness social tags and user interactions for concept modeling and image annotation. Three main contributions are: a) a scalable learning framework using visual features and tags, b) incremental learning to continuously incorporate new data and concepts, and c) translation of learned concepts to personalized tags.
- **Near-duplicate Detection** (At Yahoo! R&D India)
 - **Near-duplicate Detection for Web Images and Graphic Advertisements**
Developed a compact 130 bit signature for $O(1)$ time de-duplication of web-scale image corpus.
 - **Near-duplicate Video Detection**
Developed a prototype for the de-duplication of small videos to deal with the changes in aspect ratio, frame rate and bit rate, shot reordering as well as small temporal cropping of videos.
- **Content Based Image Retrieval (CBIR)**
 - **Adult Image Detection for Safe Search** (At Yahoo! R&D India)
Worked on a color and texture based classifier for adult image detection. Also implemented a revised skin color model based on the skin distribution in faces detected in images.
 - **CBIR for Remotely Sensed and Aerial Imagery** (At IIT Bombay)
Proposed a low-complexity texton feature robust to changes in illumination, scale and orientation, and developed semantic classifiers for land cover classes.
 - **Multiple Cue Combination for Effective Image Retrieval** (At IIT Bombay)
Conducted a survey of feature combination strategies to increase image retrieval performance.
- **vAdeo : Video Ad Insertion** (At Yahoo! R&D India)
Proposed a scheme for the selection of logical scene breaks as insertion points for commercials and identified them using a scale-space analysis of audio-visual features. Matched advertisements using face recognition.

- **NIST's Trec Video Retrieval** (At IIT Bombay and AT&T Research Labs)
Using wavelet features, reduced the false shot breaks caused by jerky camera motion, lighting changes, and flashes. As part of the AT&T team, also conducted experiments on alternate features and scalable duplicate detection methods.

Reviewing Experience

IEEE Trans. Multimedia, IEEE Trans. Image Processing, Int'l J. Very Large Databases, J. Visual Communication and Image Representation, J. Mathematical Imaging and Vision, Int'l J. Computational Intelligence.

Extra-Curricular Activities

- Secretary of the student executive board at the College of IST, Penn State University, 2010-2011.
- Member of the local arrangements team for ACM MIR conference, Philadelphia, 2010.
- Student member in the Faculty Search Committee of the College of IST, 2010.
- Organizer of the *i-Symposium: The IST Graduate Symposium*, at Penn State University, 2010.
- Actor and member of the *Curtain Call* Theater Club at Penn State University, 2008-2010.
- Organizer of intercollegiate events at IIT Bombay (2006) and Sardar Patel College, 2003.

Please request references if needed.

Last updated: March 30, 2012.