

## Anurag Bhardwaj

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### CONTACT INFORMATION

Center for Unified Biometrics And Sensors  
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### RESEARCH INTERESTS

Machine Learning, Information Retrieval and Document Analysis.

### JOURNAL PUBLICATIONS

1. Robert Milewski, Venu Govindaraju and Anurag Bhardwaj, "Automatic Recognition of Handwritten Medical Forms for Search Engines", *International Journal on Document Analysis and Recognition*.
2. Huaigu Cao, Anurag Bhardwaj and Venu Govindaraju, "A Probabilistic method for Keyword Retrieval in Handwritten Document Images", *Pattern Recognition*.
3. Faisal Farooq, Anurag Bhardwaj and Venu Govindaraju, "Using Topic Models for OCR Correction", *International Journal on Document Analysis and Recognition*.

### BOOK CHAPTERS / DISCLOSURES

1. Anurag Bhardwaj, Srirangaraj Setlur and Venu Govindaraju, "Keyword Spotting Techniques for Sanskrit Documents", To appear in *Topics in Sanskrit Computational Linguistics*, LNCS Springer, 2009.
2. Anurag Bhardwaj, Srirangaraj Setlur and Venu Govindaraju, "Facilitating Information Retrieval from Indic Scripts using Keyword Spotting", To appear in *OCR for Indic Scripts*, LNCS Springer, 2009.
3. Anurag Bhardwaj and Sunil Saggar, "A Parametric Method for Estimation of Software Reliability at High Stress", Technical Disclosure, IBM India Pvt. Ltd., June 2007.

### CONFERENCE PUBLICATIONS

1. Venu Govindaraju, Huaigu Cao and Anurag Bhardwaj, "Handwritten Document Retrieval Strategies", *Proceedings of ICDAR workshop on Noisy Text Analytics (AND)*, Spain, 2009.
2. Prem Natarajan, Krishna Subramaniam, Anurag Bhardwaj and Huaigu Cao, "Stochastic Segment Modeling for Offline Handwriting Recognition", *Proceedings of X International Conference on Document Analysis and Recognition (ICDAR)*, Spain, July. 2009.
3. Anurag Bhardwaj, Huaigu Cao and Venu Govindaraju, "Script Identification for Handwritten Word Images", To Appear in *Proceedings of XVI Document Recognition and Retrieval*, San Jose, Jan. 2009.
4. Anurag Bhardwaj, Faisal Farooq, Huaigu Cao and Venu Govindaraju, "Topic Based Language Model for OCR Correction", *Proceedings of SIGIR workshop on Noisy Text Analytics (AND)*, Singapore, 2008.
5. Huaigu Cao, Anurag Bhardwaj and Venu Govindaraju, "A Probabilistic method for Keyword Retrieval in Handwritten Document Images", *International Conference on Frontiers in Handwriting Recognition*, 2008.
6. Anurag Bhardwaj, S. Kompalli, S. Setlur, Venu Govindaraju, "An OCR Based Approach for Word Spotting in Devanagari Documents", *Proceedings of XV Document Recognition and Retrieval*, San Jose, Jan. 2008.
7. Damien Jose, Anurag Bhardwaj, Venu Govindaraju, "Transcript Mapping for Handwritten English Documents", *Proceedings of XV Document Recognition and Retrieval*, San Jose, Jan. 2008.

8. Anurag Bhardwaj, Damien Jose and Venu Govindaraju, "Script Independent Word Spotting for Multilingual Documents", *Proceedings of Workshop on Cross Lingual Information Access - IJCNLP*, Hyderabad, Jan. 2008.
9. Anurag Bhardwaj, A. Singh, H. Srinivasan, S. Srihari, "On Lexeme Features of Handwritten Documents", *Proceedings of IX International Conference on Document Analysis and Recognition (ICDAR)*, Brazil, Sept. 2007.

RELATED WORK  
EXPERIENCE

**BBN Technologies**, Cambridge, MA USA  
*Summer Intern* **May, 2009 - August, 2009**  
Worked on Automatic Document Classification and Translation of Handwritten Arabic Documents.

**BBN Technologies**, Cambridge, MA USA  
*Summer Intern* **June, 2008 - August, 2008**  
Worked on Automatic Document Classification and Translation of Handwritten Arabic Documents.

**Center For Unified Biometrics And Sensors**, Amherst, NY USA  
*Research Assistant* **January, 2007 - present**  
Current research on Information Retrieval from Handwritten Documents, Keyword Spotting techniques for multilingual Scripts.

**KYOS Systems Inc.**, Burlington, MA USA  
*Summer Intern* **June, 2007 - August, 2007**  
Worked on Handwritten Medical Form recognition and retrieval.

**Center of Excellence for Document Analysis and Recognition**, Amherst, NY USA  
*Senior Research Project Assistant* **October, 2006 - December, 2006**  
Worked on the Writer Verification project. The primary task involved were designing and implementing content-specific features for determining originality of a given handwritten document.

ACADEMIC  
PROJECTS

- Bayesian neural network classifier for detecting e-mail spam.
- Query retrieval system (search engine) for document corpus.
- X-Ray fiber detection system to detect broken fibers.
- Receiver centric TCP in NS-2.
- Simulation of circuit switching and packet switching networks using OPNET.
- S & M Pursuit Software for Lead generation and Tracking for InterGlobe Technologies Gurgaon.

EDUCATION

**University At Buffalo**, Amherst, NY USA  
PhD. Candidate, Computer Science and Engineering, August 2006 -

**National Institute of Technology**, Kurukshetra, India  
B.Tech., Computer Engineering, May, 2005.

OTHER WORK  
EXPERIENCE

**IBM Systems and Technology Lab**, Bangalore, India  
*Software Engineer* **July, 2005 - July, 2006**

- Functional Verification of AIX Virtual IO Server and AIX Storage Device Drivers.

#### COMPUTER SKILLS

- Languages: C, C++, MATLAB, JAVA, VB, Unix Shell Scripting, Perl Scripting, HTML, Overview of CSS.
- Databases: MS Access, SQL Server, MySQL and DB2.
- Tools: L<sup>A</sup>T<sub>E</sub>X, OPNET, NS-2, MS Office, Dreamweaver, FrontPage.
- Operating Systems: Windows, Linux, AIX, UNIX, MS/DOS.

#### HONORS AND AWARDS

- Microsoft Student Ambassador Asia Pacific, 2005.
- Merit Scholar NITK (First Semester and Fifth Semester).