

Plaban Kumar Bhowmick

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EDUCATION

- **Indian Institute of Technology**, Kharagpur, India
(January 2006 - August 2010)
Degree: Doctor of Philosophy.
Department: Department of Computer Science and Engineering
Status: Thesis submitted on 23th of August, 2010.
Thesis Title: Studies on Multi-Label Classification of Emotions Evoked from Text Data.
- **Indian Institute of Technology**, Kharagpur, India
(2002 - 2005)
Degree: Master of Science.
Department: Department of Computer Science and Engineering
CGPA: 9.39/10
Thesis Title: User modeling for personalized information access.
- **University of Calcutta**, Kolkata, India
(September 1999 - June 2002)
Degree: B.Tech. in Computer Science and Engineering
Department: Department of Computer Science and Engineering
Percentage: 79.67
Status: Ranked 3rd in the department.
- **University of Calcutta**, Kolkata, India
(August 1996 - July 1999)
Degree: B.Sc. in Physics
College: R.K. Mission Vidyamandira, Belur Math
Percentage: 68.38
Status: Placed among top 20 in the University.

TEACHING EXPERIENCE

- Appointed as an Assistant Professor in the Department of Computer Science & Engineering, Birla Institute of Technology Mesra from April, 2010. Subjects undertaken are *Soft Computing, Artificial Intelligence, C & Unix Programming, Java Programming*.
- Teaching Assistant, Indian Institute of Technology, Kharagpur.
 - Programming and Data Structures Laboratory (Spring 2002).
 - Programming and Data Structures Laboratory (Spring 2003).
 - Design and Analysis of Algorithms (Autumn 2004).
 - Programming and Data Structures Laboratory (Autumn 2005).
 - Programming and Data Structures Laboratory (Autumn 2006).
 - Artificial Intelligence (Autumn 2007).

- **Text Emotion Analysis:** With the popularity of interactive platforms in Web communication (chat, blog, social networks etc.), the state-of-the-art information retrieval research is directed towards analyzing text in social and humanistic dimensions on top of topic based access. Emotion is a very important aspect of human behavior that shapes the way people communicate. Specific objective of this work is to perform reader perspective emotion analysis in natural language text. News sentences have been selected as data source in this work. For automatic classification of news sentences into different emotion dimensions, features and methods suitable for emotion analysis have been investigated.
- **Alternative & Augmentative Communication:** The objective of this project is to develop a icon based communication system, Sanyog, to provide the physically challenged people (like cerebral palsy) a communication aid. The users select some objects represented through standardized icons and actions over the icons. The system generates natural language sentences out of the selected icons. Finally, the generated sentence may be spoken out through a text to speech system. Currently, the tool supports three languages: Bengali, Hindi and English.
- **Ontology Management:** In this work, we have proposed a knowledge structure which is effective in capturing the structure of the learning materials of school level subjects. We have analyzed different aspects of manual ontology engineering in developing application specific domain ontology. The domain of our interest is the education domain where we are interested in retrieving relevant web documents for the curriculum related requirements of school students. We identify an effective way of structuring the knowledge about these domains, which allows us to clearly demarcate the roles of topics, concepts, and actual words. We have developed a tool, Sahayika, in order to develop knowledge structures in education domain.
- **Personalized Information Retrieval:** User modeling is an integral part of any personalized information retrieval system. The user model should be adaptable in order to capture the change in information needs of the users. In this work, we have addressed an ontology based user modeling strategy in the context of personalized information access. We have adopted a hybrid approach by capitalizing on the features of static and dynamic user profiling strategies. The dynamic user profiling strategy makes use of the data sources like usage log and mouse operations that are performed by the users during the browsing sessions.
- **Offline Internet Access:** In this work, we look to find a cost effective method for enabling the school students to access learning materials available in the Internet. We have developed a system Samvidha that allows the students to access the school curriculum related documents in an offline mode.
- **Computer Based Education:** In this work, we have developed different computer based education systems that have been deployed in different organizations. The Child Education tool provides an easy to use interface to manage multimedia based educational contents in a hierarchical fashion. The tool also provides an interactive testing interface. Another tool, called Shikshak, is a intelligent tutoring system authoring tool which provides the teachers a framework for designing coursewares and testwares. The system is intelligent in the sense that it customizes learning path for individual student through some artificial intelligence techniques.
- **Other Works:** Lexical Resource Development Tool, Bengali Text Editor, Packing Optimization using Simulated Annealing.

- **Ontology Engineering:** Manual ontology engineering, Ontology learning.
- **Personalized Information Retrieval:** User modeling for filtering information in a personalized manner.
- **Computer Aided Education:** Adaptive learning environment.
- **Natural Language Processing:** Text emotion recognition.

FELLOWSHIP AND
AWARDS

- Media Lab Asia Research Fellowship (August 2002 - July 2004)
- National Scholarship Scheme of Government of India for result in secondary examination under W.B.B.S.E.
- National Scholarship Scheme of Government of India for result in B.Sc. examination under University of Calcutta.

JOURNAL PAPERS

P. K. Bhowmick, A. Basu and P. Mitra (2010). “Do we agree? Measuring agreement on the human judgements in emotion annotation of news sentences”, *Journal of Cybernetics and Systems*, vol. 41, no. 7, pp 469–488.

P. K. Bhowmick, A. Basu, P. Mitra and A. Prasad (2010). “Sentence level news emotion analysis in fuzzy multi-label classification framework”, *Special issue on Natural Language Processing and its Applications: Research in Computing Science*, vol. 46, pp. 143–154.

P. K. Bhowmick, S. Sarkar and A. Basu (2010). “Ontology based user modeling for personalized information access”, *Special issue on Web Semantics & Ontology, International Journal of Computer Science & Applications*, vol. 8, no. 1, pp 1–22.

P. K. Bhowmick, D. Roy, S. Sarkar and A. Basu (2010). “A framework for manual ontology engineering for management of learning material repository”, *Special issue on Web Semantics & Ontology, International Journal of Computer Science & Applications*, vol. 7, no. 2, pp. 30–51.

T. Dasgupta, A. basu, P. K. Bhowmick and P. Mitra (2010) “A framework for the automatic generation of Indian Sign Language”, *Journal Of Intelligent Systems*, vol. 19, no. 2.

P. K. Bhowmick, A. Basu and P. Mitra (2009). “Reader perspective emotion analysis in text through ensemble based multi-label classification framework”, *Computer and Information Science*, Vol. 2, No. 4, 64–74.

CONFERENCE
PAPERS

P. K. Bhowmick, A. Basu, P. Mitra (2010) “Determining reliability of subjective and multi-label emotion annotation through novel fuzzy agreement measure”, *Proceedings of the seventh international conference on Language Resources and Evaluation (LREC-2010)*, Valletta, Malta, May, pp. 1095–1100.

P. K. Bhowmick, A. Basu, P. Mitra and A. Prasad (2010) “Sentence level news emotion analysis in fuzzy multi-label classification framework”, *Proceedings of the 11th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing-2010)*, Iasi, Romania, March.

S. Chakraborty, D. Roy, P. K. Bhowmick and A. Basu (2010). “An authoring system for developing Intelligent Tutoring System”, *Proceedings of IEEE TechSym 10*, Kharagpur, India, pp. 196–205.

P. K. Bhowmick, A. Basu, P. Mitra and A. Prasad (2009). “Multi-label text classification approach for sentence level news emotion analysis”, *Proceedings of the third International Conference on Pattern Recognition and Machine Intelligence (PReMI'09)*, LNCS, pp. 261–266, Delhi.

T. Dasgupta, A. Basu, P. K. Bhowmick, P. Mitra (2009). “English to Indian Sign Language machine translation: A structure transfer framework”, *Proceedings of Indian International Conference on Artificial Intelligence (IICAI)*, Bangalore, pp. 2055–2070.

P. K. Bhowmick, A. Mukherjee, A. Banik, P. Mitra and A. Basu (2008). “A comparative study of the properties of emotional and non-emotional words in Wordnet: A complex network approach”, *Proceedings of 6th International Conference on Natural Language Processing, ICON 2008*, Pune, December.

P. K. Bhowmick, A. Basu and P. Mitra (2008). "An agreement measure for determining inter-annotator reliability of human judgements on affective text", *Proceedings of Workshop on Human Judgements in Computational Linguistics, COLING 2008*, Manchester, August, pp. 58–65.

S. Chakraborty, T. Bhattacharya, P. K. Bhowmick, A. Basu and S. Sarkar (2007). "Shikshak: an intelligent tutoring system authoring tool for rural education", *Proceedings of the 2nd IEEE/ACM International Conference on Information and Communication Technologies and Development, ICTD 2007*, Bangalore, December 15–16.

P. K. Bhowmick, S. Sarkar, S. Chakraborty, S. Sarkar and A. Basu (2007). "Samvidha: A ICT system for personalized offline Internet access for rural schools", *Proceedings of the 2nd IEEE/ACM International Conference on Information and Communication Technologies and Development, ICTD 2007*, Bangalore, December 15–16.

P. K. Bhowmick, S. Bhowmick, D. Roy, S. Sarkar and A. Basu (2007). "Sahayika: A framework for participatory authoring of knowledge structures for education domain", *Proceedings of the 2nd IEEE/ACM International Conference on Information and Communication Technologies and Development, ICTD 2007*, Bangalore, December 15–16.

P. K. Bhowmick, S. Sarkar, S. Sarkar and A. Basu (2004). "Acquisition of user profile for domain-specific personalized access," *Proceedings of the 7th International Conference on Information Technology, CIT 2004*, Hyderabad, December.

S. Sarkar, P. K. Bhowmick, S. Sarkar and A. Basu (2004). "A System for offline Internet access for education in schools," *Proceedings of the 7th International Conference on Information Technology, CIT 2004*, Hyderabad, December.

S. Sarkar, P. K. Bhowmick, D. Roy, S. Sarkar, A. Basu and S. Ghose (2003). "A system for personalized information retrieval based on domain knowledge," *Proceedings of National Conference on Trends in Computational Mathematics*, March 18-19, 2003.

ACADEMIC ACTIVITIES

- Member of paper review committee of IEEE conference, TechSym-2011.
- Member of paper review committee of IEEE conference, TechSym-2010.
- Invited speaker in the First Indo-Japan Conference on Science and Technology of Facial Expression Analysis, 2009, C-DAC, Kolkata, India. Topic: *Emotion Recognition for Human Computer Interaction*.
- Invited speaker in Summer School on Natural Language Processing and Text Mining, 2008, IIT Kharagpur, India. Topic: *Challenges in Emotion Detection in Text Data*.
- Delivered lecture on *WordNet: A Large Lexical Database* in Natural Language Processing Course at Dept of CSE, IIT Kharagpur, March 2005.
- Organizing member of 2nd Symposium on Indian Morphology, Phonology and Language Engineering (SIMPLE'05), Kharagpur, 2005.
- Organizing member of 1st Symposium on Indian Morphology, Phonology and Language Engineering (SIMPLE'04), Kharagpur, 2004.

SKILLS

- C, Java.
- SQL, Java Servlet.
- tex, HTML, XML.

PERSONAL
INFORMATION

- Date of Birth: 5th of January, 1978
- Nationality: Indian
- Marital Status: Married
- Sex: Male

REFERENCE

- Prof. Anupam Basu (Dept of CSE, IIT Kharagpur)(M.S. co-advisor and current PhD supervisor)
E-mail: *anupambas@gmail.com*
- Dr. Pabitra Mitra (Dept of CSE, IIT Kharagpur)(PhD supervisor)
E-mail: *pabitra@cse.iitkgp.ernet.in*
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Contact information available on request.

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