

SAGNIK BANERJEE

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EDUCATION

PhD in Bioinformatics and Computational Biology 2016-2021(expected)

Iowa State University, Ames, USA

Major Advisor: Dr. Roger Wise

Co-Major Advisor: Dr. Karin Dorman

Current GPA: 3.53/4

ME in Computer Science and Engineering 2012-2014

Jadavpur University, Kolkata, India

Thesis Advisor: Dr. Mita Nasipuri

GPA: 9.22/10

BTech in Computer Science and Engineering 2008-2012

Institute of Engineering and Management, Kolkata, India

Project Advisor: Dr. Tamal Chakrabarti

GPA: 9.02/10

PROFESSIONAL EXPERIENCE

Graduate Teaching Assistant Aug 2017 - Present

Department of Genetics, Developmental and Cell Biology

Iowa State University, Ames, USA

Conducting laboratory classes instructing Human Anatomy

Graduate Research Assistant May 2017 – Aug 2017

Department of English

Iowa State University, Ames, USA

Used machine learning algorithms to predict a writer's native language from essay samples written in English

Graduate Research Assistant May 2017 – Aug 2017

Department of Plant Pathology and Microbiology

Iowa State University, Ames, USA

Investigated transcription factors involved in gene regulation for combating Blumeria-induced infection in barley

Discover novel barley protein candidate interactors of blumeria effectors in barley-blumeria infectome

Graduate Research Assistant Aug 2016 – May 2017

Bioinformatics and Computational Biology Program

Iowa State University, Ames, USA

Correlated eight biological replicates of ATAC-seq across two time points.

Designed a software to debias gene ontology annotations.

Investigated protein-protein interaction between barley and blumeria proteins from Y2H-seq data.

Assistant Professor

Jul 2015 – Jul 2016

*Department of Electronics and Communication Engineering
Institute of Engineering and Management, Kolkata, India*

Taught Data Structures and Database Management Systems to undergraduate students and conducted lab sessions
Handled Neural Networks classes for master's students
Investigated Post Translational Modification (Glycosylation) and Protein-Protein Interaction

Assistant Professor

Jan 2015 – Jul 2015

*Department of Computer Science and Engineering
Techno India – Batanagar, Kolkata, India*

Taught C and Java to undergraduate students and conducted lab work
Undertook research work on Protein Domain Prediction

Researcher

Jul 2014 – Jan 2015

CMATER Lab

Department of Computer Science and Engineering, Jadavpur University, Kolkata, India

Completed project titled "Computational Proteomics"
Carried out research on Post Translational Modification (Phosphorylation)

Teaching Assistant

Jul 2013 – Jun 2014

*Department of Computer Science and Engineering
Jadavpur University, Kolkata, India*

Assisted professors in carrying out lab work for Object Oriented Programming lab and Numerical Methods lab.
Assisted professors to carry out daily teaching activities in class.

AWARDS & ACHIEVEMENTS

- Outstanding Reviewer (December 2015) and Recognized Reviewer (May 2015) by Elsevier publishing for reviewing manuscripts for Applied Soft Computing Journal, May 2015
- Program Chair for IEMCON-2015, Vancouver, Canada, October 2015
- Certificate of Merit in Chemistry for being among the top 0.1% of successful candidates, India, 2008
- Central Sector Scholarship, for exceptional performance in class XII exams, India, 2008

ACADEMIC PROJECTS

Native Language Identification shared task project

May 2017 – Aug 2017

Iowa State University, Ames, USA

- Improved the performance of native language identification using an ensemble of machine learning classifiers

A consensus based approach towards Protein Secondary Structure Prediction

Jan 2013 - May 2014

Jadavpur University, Kolkata, India

- Designed an ensemble classifier comprising of multiple Support Vector Machines and augmented it with other existing protein secondary structure predictors to further improve prediction.

An optimized pattern matching algorithm

Jul 2011 - May 2012

Institute of Engineering and Management, Kolkata, India

- Designed an algorithm which could perform faster string search on compressed data
- Compressed both the text and the pattern using Huffman's algorithm, where the dictionary used for compressing pattern was same as that of the text

- Rewrote Knuth-Morris-Pratt algorithm (KMP) and Boyre Moore (BM) algorithm such that they could match text and patterns represented in the form of bits

Learner's Management System

Jul 2011 - May 2012

Institute of Engineering and Management, Kolkata, India

- Designed a website which would cater to the daily needs of academia
- Designed an online whiteboard, using HTML5, which could be used for communication between teachers and students
- Added of a module which could check a program against a set of previously provided inputs and outputs thereby eliminating the need for manual inspection

Creation of a calculator using 8051 microcontrollers

Jun 2011 - Jul 2011

ICEE Design Technologies, Kolkata, India

Team size: Individual

- Created a basic calculator using 8051 microcontrollers
- Improved the calculator by programming it to solve quadratic equations

PUBLICATIONS

Vajjala, S., & **Banerjee, S.** (2017). A study of N-gram and Embedding Representations for Native Language Identification. *Bronze Sponsors*, 240.

Banerjee, S., Ghosh, D., Basu, S., & Nasipuri, M. (2016). JUPred_SVM: Prediction of Phosphorylation Sites Using a Consensus of SVM Classifiers. In *Proceedings of Fifth International Conference on Soft Computing for Problem Solving* (pp. 553–560). Springer.

Banerjee, S., Ghosh, D., Basu, S., & Nasipuri, M. (2016). JUPred_MLP: Prediction of Phosphorylation Sites Using a Consensus of MLP Classifiers. In *Proceedings of the 4th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA)*. Springer.

Banerjee, S., Guha, S., Dutta, A., & Dutta, S. (2015). Improvement of protein disorder prediction by brainstorming consensus. In *Computing and Communication (IEMCON), 2015 International Conference and Workshop on* (pp. 1–7). IEEE.

Banerjee, S., Mitra, B., Chatterjee, A., Santra, A., & Chatterjee, B. (2015). Identification of relevant physico chemical properties of amino acids with respect to protein glycosylation prediction. In *Computing and Communication (IEMCON), 2015 International Conference and Workshop on* (pp. 1–7). IEEE.

Banerjee, S., Basu, S., Ghosh, D., & Nasipuri, M. (2015). PhospredRF: Prediction of protein phosphorylation sites using a consensus of random forest classifiers. In *Computing and Communication (IEMCON), 2015 International Conference and Workshop on* (pp. 1–7). IEEE.

Banerjee, S., Nag, S., Tapadar, S., Ghosh, S., Guha, S., & Bakshi, S. (2015). Improving protein protein interaction prediction by choosing appropriate physiochemical properties of amino acids. In *Computing and Communication (IEMCON), 2015 International Conference and Workshop on* (pp. 1–8). IEEE.

Banerjee, S., Basu, S., & Nasipuri, M. (2015). Big Data Analytics and Its Prospects in Computational Proteomics. In *Information Systems Design and Intelligent Applications* (pp. 591–598). Springer.

Banerjee, S., Chakrabarti, T., & Sinha, D. (2013). A Faster Fitness Calculation Method for Genetic Algorithm Based Multiple Protein Sequence Alignment, *4*(7), 768–772.

Banerjee, S., Chakrabarti, T., & Sinha, D. (2013). Finding all Occurrences of a Pattern by a Genetic Algorithm based Divide-and-Conquer Method. *International Journal of Computer Applications*, *64*(18).

Banerjee, S., Chakrabarti, T., & Sinha, D. (2012). A Genetic Algorithm Based Pattern Matcher.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

2017-Present. American Association for the Advancement of Science (AAAS)

TECHNICAL SKILLS

Programming Languages: C, Java, Python

Operating Systems: Windows, UNIX and Mac

Microsoft Office Package: Word, Excel, PowerPoint

Databases: Oracle, MySQL

SERVICE

Currently serving as the Vice President of Bioinformatics and Computational Biology Graduate Student Organization (BCBGSO)

HOBBIES AND INTERESTS

I have a great interest in singing. I have received basic training in Indian Classical music and Rabindrasangeet. I also love reading books.