

Loveleena Bansal

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2342 15th Street Apt. 1F, Troy, NY 12180

EDUCATION

- PhD, Chemical Engineering**, GPA: 3.88/4.0 Expected: 2014
Texas A&M University (TAMU), College Station, TX
- Bachelor of Technology, Chemical Engineering**, GPA: 8.39/10 May 2009
Indian Institute of Technology (IIT), Delhi, India

RESEARCH EXPERIENCE

Rensselaer Polytechnic Institute (RPI), Troy, NY
Center for Biotechnology and Interdisciplinary Studies

Visiting Researcher Aug 2012 – Present
Advisor: Dr. Juergen Hahn (*my adviser moved from TAMU to RPI*)

Multiscale Modeling and Simulation

- Working on developing a multiscale cell population balance model, solution of the resulting integro-PDE equation and estimation of its unknown parameters using flow cytometry data.

Texas A&M University, Department of Chemical Engineering

Graduate Assistant Aug 2009 - Present
Advisor: Dr. Juergen Hahn

PhD Thesis: ***Quantitative Modeling and Estimation in Systems Biology, including Regularization techniques to solve ill-posed estimation problems***

- Developed a general method to solve an ill-conditioned linear inverse problem of estimating transcription factor dynamics using sparse and noisy data from Green Fluorescent Protein (GFP) reporter systems.
- Investigating techniques for sensitivity analysis and selection of an identifiable subset of parameters of complex biochemical signaling pathways for reliable parameter estimation.

Optimal Experimental Design

- Investigated techniques for optimal design of experiments involving multiple fluorescent reporters.

PUBLICATIONS

- L. Bansal, Y. Chu, C. Laird, and J. Hahn, "Regularization of Inverse Problem to Determine Transcription Factor Profiles from Fluorescent Reporter Systems," *AICHE Journal*, vol. 58, pp. 3751-3762 (2012)
- L. Bansal, E. Yang, R. Nelson, A. Jayaraman and J. Hahn, "Experimental Design of Systems Involving Multiple Fluorescent Reporters", submitted to *Chemical Engineering Science*

Conference Proceedings:

- L. Bansal, Y. Chu, C. Laird, and J. Hahn, "Determining Transcription Factor Profiles from Fluorescent Reporter Systems Involving Regularization of Inverse Problems," *Proceedings of the 2012 American Control Conference (ACC 2012), Montréal, Canada*, pp. 2725-2730 (2012)

SELECTED CONFERENCE PRESENTATIONS

(Excluding presentations at conferences with proceedings)

- L. Bansal, S. Maiti, A. Jayaraman, C. Laird, and J. Hahn, "Modeling of Fluorescent Protein-Labeled Cell Populations to Analyze Transcriptional and Division Effects on Fluorescent Intensity Distributions," *Foundations of Systems Biology in Engineering 2012, Tsuruoka, Japan* (2012)
- S. Maiti, L. Bansal, R. Alaniz, J. Hahn, and A. Jayaraman, "Modeling Intra- and Inter-Kingdom Signaling through NF- κ B Pathway in Dendritic Cells," *AICHE Annual Meeting 2012, Pittsburgh, Pennsylvania* (2012)
- L. Bansal, A. Jayaraman, and J. Hahn, "Computational Techniques for Modeling and Analysis of Fluorescent Protein labeled Cell Populations," *BMES Annual Meeting 2012, Atlanta, Georgia* (2012)
- L. Bansal, E. Yang, R. Nelson, A. Jayaraman, and J. Hahn, "Experimental Design of Systems Involving Multiple Fluorescent Reporters," *AICHE Annual Meeting 2011, Minneapolis, Minnesota* (2011)
- Z. Huang, Y. Chu, L. Bansal, and J. Hahn, "Derivation of Transcription Factor Distribution Profiles from Green Fluorescent Protein Reporter Data," *AICHE Annual Meeting 2010, Salt Lake City, Utah* (2010) **Invited Presentation**

EXPERTISE & SKILLS

Expertise: Mathematical Modeling, Parameter Identification, Statistical Analysis

Software: MATLAB, AMPL, COMSOL Multiphysics, Aspen

Programming Language(s): C/C++

TEACHING EXPERIENCE

Chemical Engineering Dept., Texas A&M University

Mentoring the Undergraduate Students

- Supervised and trained 2 undergraduate students in their research, Fall 2010 and Summer 2011
- The work resulted in a co-authored conference presentation with one of the undergraduate students

Teaching Assistant

- Assisted with 'Chemical Engineering Plant Design' course for about 80 students, Spring 2011
- Evaluated student performance and assigned grades for the course projects

Related Professional Seminar: Graduate Teaching Academy (GTA) Fellows Certificate Program, 2010