



DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

Invited talk

Name of the speaker: Dr. Ganesh Bagler Centre for Computational Biology, IIIT-Delhi

Title: Computational Gastronomy: The emerging data science of food, flavours and health.

Venue: Bioinformatics Seminar Hall

Date and time: 22nd February 2018 at 14:30 Hrs.

Brief Profile of the speaker:

Assistant Professor (Computational Biology), at Indraprasta Institute of Information Technology, New Delhi.

PhD in Computational Biology from CSIR-Centre for Cellular and Molecular Biology

Ganesh Bagler is an interdisciplinary researcher with training in physics, computational techniques and computational biology. He has masters degree in physics (Pune University), MTech in computational techniques (University of Hyderabad), and PhD in computational biology (CSIR-Centre for Cellular and Molecular Biology). Ganesh received his postdoctoral training from NCBS (Bangalore) and MPI-MG (Berlin). He has been working on biological complex systems modeling, and has investigated protein structures and complex diseases from graph theoretical perspectives. He is credited with the observation of assortative mixing in residue interaction graph models of protein structures as well as discovery of exceptional 'negative food pairing' in Indian cuisine. His research involves questions on the interface of biology, medicine and computational sciences. For more details: <http://faculty.iiitd.ac.in/~bagler/>



Issuing Authority:

Dr. Prathap Kumar Shetty, Professor and Head, Department of Food Science and Technology, Pondicherry University.

ALL ARE WELCOME

Prathap Kumar Shetty

Signature

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Computational Gastronomy: The emerging data science of food, flavors and health

Ganesh Bagler

Center for Computational Biology, IIIT-Delhi

Cooking is a creative endeavor that forms the core of human identity. Gastronomy represents various culinary dimensions encompassing food, culture, cooking, aroma, taste, and health. The advent of computational approaches has dramatically changed the artistic outlook with which these have been pursued hitherto. Application of data-driven strategies for investigating the gastronomic data (traditional recipes, molecular constituents of ingredients, percepts of flavor compounds, health associations of food, and such) has opened up exciting avenues giving rise to a new field of ‘Computational Gastronomy’.

The [‘Complex Systems Laboratory’ at IIIT-Delhi \(Dr. Ganesh Bagler\)](#) has been on the forefront of this emerging data science and has contributed to its foundation via pioneering integrative studies in food pairing, culinary fingerprints, flavor percepts and health impacts of food, other than creating data repositories for flavor molecules ([FlavorDB](#)), food-disease associations ([SpiceRx](#)) and recipes from across the world regions.

I would present an overview of this emerging interdisciplinary area which overlaps food science, computer science, chemistry and computational biology. ‘Computational Gastronomy’ has the potential to transform the landscape of food and can be effectively leveraged for better health and nutrition through an array of culinary applications (food design, food-beverage pairing, discovering unseen flavor combinations, novel recipe generation etc.), apart from providing valuable insights into the principles of culinary sciences.

Key words: food, flavor, health, information retrieval, data analytics, machine learning, natural language processing and pattern mining.

Highlights of Computational Gastronomy research from our lab:

- [Worldwide Media Coverage for our discovery](#)
- **News Highlights:** [MIT Technology Review](#), [Washington Post](#), [The Hindu](#), [Times of India](#)
- [TEDx Talk Video](#): Data-driven approaches to leveraging food for better health
- [TEDx Talk Blog](#): Leveraging food for better health through data-driven approaches
- **Data Repositories from the lab:** [FlavorDB](#), [SpiceRx](#), CulinaryDB

Research Articles:

- [Spices for the basis of food pairing in Indian cuisine, arXiv:1502.03815](#)
- [FlavorDB: A database of flavor molecules, Nucleic Acids Research \(2017\)](#)
- [Analysis of Food Pairing in Regional Cuisines of India, PLoS ONE \(2015\)](#)
- [Culinary evolution models for Indian cuisines, Physica A \(accepted\) arXiv:1505:00155](#)

❖ [Symposium on Computational Gastronomy](#), 17th March 2018 at IIIT-Delhi.