Indian Institute of Science
Centre for BioSystems Science and Engineering
BSSE Seminar

20th February 2019, 4:00 PM, MRDG Seminar Hall, 1st floor, Biological Sciences Building.

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

Speaker: **Ganesh Bagler**
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Technical Summary:

Cooking forms the core of our cultural identity other than being the basis of nutrition and health. Starting with a seemingly simple question, 'Why do we eat what we eat?', data-driven research conducted in our lab have led to interesting explorations of patterns in traditional recipes, their flavor composition, and health associations. Our investigations have revealed 'culinary fingerprints' of regional cuisines across the world, starting with the case study of Indian cuisine. Increasing availability of culinary data and the advent of computational methods for their scrutiny is dramatically changing the artistic outlook towards gastronomy. Application of data-driven strategies for investigating the gastronomic data (such as traditional recipes, molecular constituents of ingredients, percepts of flavor compounds, and health associations of food) has opened up exciting avenues giving rise to an all-new field of 'Computational Gastronomy'. This emerging interdisciplinary science asks questions of culinary origin to seek their answers via compilation of culinary data and their analysis using methods of statistics, machine learning, natural language processing, pattern mining, and chemo-informatics. Along with complementary experimental studies, it has the potential to transform the food landscape by effectively leveraging data-driven food innovations for better health and nutrition. This talk will provide an overview of computational gastronomy research from our lab (Complex Systems Laboratory, IIIT-Delhi) involving food pairing, the molecular basis of taste, health impacts of food, novel-recipe-generation algorithms, and models of culinary evolution.

Non-Technical/Popular Summary:

Have you ever wondered why do we combine ingredients in our recipes the way we do? Or for that matter, could we find scientific ways for altering diet to improve health? Our data-driven investigations aimed at probing the patterns in traditional recipes, in response to the first question, have led us to the 'culinary fingerprints' of regional cuisines. Our studies have also revealed the key role of spices as the molecular fulcrum of Indian recipes and their implications for broad-spectrum health benefits. Such data-centric investigations of food have given birth to a new science of Computational Gastronomy and opened ways for a wide range of culinary applications. By scientific investigations of food within the sociocultural context, this exciting data science aims to develop tools with a promise for better nutrition and health.

Profile:

Ganesh Bagler is a computational biology researcher with training in physics and computational techniques. Pioneering 'Computational Gastronomy' research from his lab has helped establish foundations of this emerging data science that deals with food, their flavors, and association with health. His lab has contributed to this niche area with the studies in food pairing, culinary fingerprints, taste prediction and health impacts of food, other than creating keystone data repositories and applications. He is actively engaged in fundamental as well as applied research in Computational Gastronomy with a vision of transforming the food landscape via data-driven innovations.