Donnelly Seminar Series
"(Cancer) Genomics via (Sub)Optical Mapping"

Bud Mishra, PhD
Prof of CS, Math, Eng and Cell Biology,
Courant Inst.,
Tandon School & NYU SoM
NYU

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Donnelly Centre Red Seminar Room

The dream of a powerful integrated computational framework, only hinted at in Ibn Sina's Canon, can now be fulfilled at a global scale as a result of many recent advances: foundational advances in statistical inference; hypothesis-driven experiment design and high resolution single-molecule-single cell technologies. We will focus on an application centered on cancer - "the emperor of all maladies." The topics this talk will cover include: Probabilistic causation, Causal analysis of Cancer genome data, Kernel based methods for survival analysis, Improved single-cell/single-molecule data via SubOptical Mapping, CHA (Cancer Hybrid Automa-ta) and Therapy design, Immuno-therapy, etc.

Professor Bud Mishra is a professor of computer science and mathematics at NYU's Courant Institute of Mathematical Sciences, professor of computer science and engineering at NYU's Tandon School of Engineering, professor of human genetics at Mt. Sinai School of Medicine, and a professor of cell biology at NYU School of Medicine. He founded the NYU/Courant Bioinformatics Group, a multi-disciplinary group working on research at the interface of computer science, applied mathematics, biology, biomedicine and bio/nano-technologies. Prof. Mishra has a degree in Physics from Utkal University, in Electronics and Communication Engineering from IIT, Kharagpur, and MS and PhD degrees in Computer Science from Carnegie-Mellon University. He has industrial experience in Computer and Data Science (Pypestream, brainiad, Genesis Media, Tartan Laboratories, and AT-TAP), Finance (Instadat, Tudor Investment and PRF, LLC), Robotics and Bio- and Nanotechnologies (InSilico, Seqster, Abraxis, OpGen, and Bioarrays). He is the author of a textbook on algorithmic algebra and more than two hundred archived publications. He has advised and mentored more than 35 graduate students and post-docs in the areas of computer science, robotics and control engineering, ap-plied mathematics, finance, biology and medicine. He is an inventor of Optical Mapping and Sequencing (SMASH), Array Mapping, Copy-Number Variation Mapping, Model Checker for circuit verification, Robot Grasping and Fixturing devices and algorithms, Reactive Robotics, and Nanotechnology for DNA profiling. He is a fellow of IEEE, ACM and AAAS, a Distinguished Alumnus of IIT-Kharagpur, and a NYSTAR Distinguished Professor. From 2003-2006, he held adjunct professorship at Tata Institute of Fundamental Research in Mumbai, India. From 2001-04, he was a professor at the Watson School of Biological Sciences, Cold Spring Harbor Lab; currently he is a QB visiting scholar at Simons Center for Quantitative Biology, Cold Spring Harbor Lab.

Host: Dr. Gary Bader