Abstract:
Proactive personalized medicine is expected to bring fundamental changes, offering recommendations of lifestyle adjustments and treatments to avoid diseases a patient has high risk for developing in the future. Due to common genetic, molecular, environmental, and lifestyle-based individual risk factors, most diseases do not occur in isolation. No matter how unique our medical experiences, chances are that other patients among millions have experienced genetic and environmental risk factors that closely mirror ours. I will present our work called CARE (Collaborative Assessment and Recommendation Engine) that not only engages and empowers the physicians with a comprehensive view of a patient but also provides a person with the tools to actively engage in his/her own health, resulting in an improved health value. CARE can facilitate a profound and potentially disruptive change in medical care: allowing the patient to be an active participant in shaping his or her future health. I will also present our work on multi-relational representation of disease networks using both genetic knowledge, based on previously discovered gene-disease associations and phenotypic data from patient histories.

Bio:
Nitesh Chawla, PhD is an Associate Professor in the Department of Computer Science and Engineering, Director of the Interdisciplinary Center for Network Science and Applications (iCeNSA) and Director of Data Inference Analysis and Learning Lab (DIAL), and . He started his tenure-track position at Notre Dame in 2007, and was promoted and tenured in 2011. Prior to Notre Dame, he was a Senior Risk Modeling Manager at CIBC. His research is focused on machine learning, data mining, and network science. He is at the frontier of interdisciplinary applications with innovative work in healthcare informatics, social networks, analytics, and climate/ environmental sciences. He is the recipient of multiple awards for research and teaching innovation including outstanding teacher awards (2008 and 2011), National Academy of Engineers New Faculty Fellowship, and number of best paper awards and nominations. He has published over a 130 papers and serves as PI/Co-PI on over $8.5 Million Dollars in research funding. He is the chair of the IEEE CIS Data Mining Technical Committee. He is Associate Editor for IEEE Transactions on Systems, Man and Cybernetics (Part B) and Pattern Recognition Letters.