NJIT@JerseyCity - Spring 2020 Courses

IS 650 Data Visualization and Interpretation (Aritra Dasgupta)

"We're not just fighting an epidemic; we're fighting an infodemic" - The WHO has observed that we are currently facing unprecedented challenges due to data-driven misinformation about the ongoing pandemic which can have severe consequences. The key contributors to this "infodemic" are often poorly designed visual charts, which can disinform or misinform, and do so, at scale. The need to learn the basics of visualization design and interpretation, both as a data consumer and a data practitioner, is more relevant and consequential *now* than ever before. Visualization techniques, when designed effectively, have emerged as a game-changer in data science, business Intelligence, and journalism domains for communicating data-driven insights. In this course you will learn the theory and application of visual design and how to reason about what makes a visualization good or bad. You will learn how to employ principles imbibed from computer science, human perception, cognition and information design to make your charts error-free, effective, and actionable. You will learn why visualization is needed in the data science pipeline, how it can be used to solve real-world problems, and how to distinguish between "good", "bad", or "misleading" visualizations. You will gain hands-on experience in building interactive visual interfaces and dashboards using Python, Tableau and Javascript.

CS 636 – Data Analytics with R Programming (Shen Yao)

This course will teach how to program in R and how to use R for effective data analysis. Students will learn how to install and configure R necessary for an analytics programming environment and gain basic analytic skills via this high-level analytical language. The course covers fundamental knowledge in R programming. Popular R packages for data science will be introduced as working examples. It will familiarize you with the commonly used analytical techniques in data science and develop the way of data science thinking: learn how to preprocess, explore and interpret real data and learn how to model real problems using computational techniques. The format of the course will include lectures by the instructor, computing labs, class discussion, directed reading and student presentation or project.

CS 675 - Intro to Machine Learning (Ioannis Koutis)

Machine Learning develops computer programs that can improve their performance by tapping into existing data and taking feedback from the environment. Systems based on ML have already exceeded human performance in several tasks, including image medical image classification and games like Chess and Go. ML has also made leaps in even more complicated tasks, like Natural Language Processing or self-driving vehicles, and it has even produced art that imitates the style of human artists! This course offers an intense introduction to the fundamental ML concepts and algorithms that constitute the core of these spectacular developments. It takes you on a tour from the basic mathematical notions and algorithms to some of the recent developments, e.g. Deep Networks or Recurrent Networks. You will gain exposure to cutting-edge ML development tools such as Scikit-learn and TensorFlow via hands-on assignments and projects that instill a working and immediately applicable knowledge of ML methods and will prepare you for more advanced ML courses.

IS 665 Data Analysis for Information Systems (Lin Lin)

This graduate level course introduces students to the world of data analytics from an information systems perspective, focusing on the application of various data analysis techniques in business practices. We cover a wide spectrum of topics ranging from fundamental statistics to database, data warehouse, data visualization, and data mining. Being an introductory course, our approach is “shallow and wide”, emphasizing on giving students a complete view of the data analytics profession, covering as many different sub-areas as time allows while not diving too deep into any one specific domain. The goal is to serve as a “guided tour” for students to gain knowledge about the different sub-areas of data analytics and understanding of which area is a best fit for their personal developments. More in-depth materials and discussion for each sub-area will be provided upon students’ requests. Course topics include the rudiments of probability and random variables, data visualization, data warehousing and OLAP analysis, dashboard, scorecard, data mining algorithms, optimization techniques, DSS and knowledge systems.