UNIVERSITY OF MARYLAND

COMPUTER SCIENCE
UNIVERSITY OF MARYLAND

GRADUATE CERTIFICATE IN DATA SCIENCE

WHY BECOME A 'DATA SCIENTIST'?

Data Science is an emerging field encapsulating interdisciplinary activities used to create data-centric products, applications or programs that address specific scientific, socio- political, or business questions. Data Science is also commonly referred to as big data analytics, predictive analytics, advanced analytics, or data mining. It is making deep inroads in industry, government, health, and journalism, and many other disciplines. Data scientist has been called the "sexiest job of the 21st century", and due to the growing need for data science, there is a signify cant shortage of trained data scientists. Offered by the nationally ranked Department of Computer Science, the University of Maryland's Graduate Certificate in Professional Studies in Data Science provides a broad introduction to the field of Data Science, including how to extract and clean data, how to store and manage large volumes of data, and how to analyze such data and extract insights from it.

This 12-credit certificate program consists of four evening courses, offered over two semesters, and will start in Fall 2016.

FOUR FOUNDATIONAL COURSES

Principles of Data Science   Big Data Systems
Machine Learning & Data Mining
Algorithms for Data Science

LEARN:

- Different components of the data science pipeline, and how to go from unstructured, messy data to actionable insights

- How to "prepare" data through cleaning, wrangling, entity resolution, NLP, and integration

- How to choose an appropriate data model and an appropriate data management system for a given big data application

- A variety of machine learning techniques, when to apply them, and how to implement them

- How to decide which algorithms are applicable to a given big data application

- How to use a variety of statistical toolkits, software packages, and machine learning systems for processing and extracting insights from large volumes of data

Academic Director: Prof. Amol Deshpande, Department of Computer Science
Email: amol@cs.umd.edu | Website: https://www.cs.umd.edu/data-science-cert

FOUR FOUNDATIONAL COURSES

CMSC641: PRINCIPLES OF DATA SCIENCE
An introduction to the data science pipeline, i.e., the end-to-end process of going from unstructured, messy data to knowledge and actionable insights. Provides a broad overview of what data science means and systems and tools commonly used for data science, and illustrates the principles of data science through several case studies.

CMSC642: BIG DATA SYSTEMS
An overview of data management systems for performing data science on large volumes of data, including relational databases, and NoSQL systems. The topics covered include: different types of data management systems, their pros and cons, how and when to use those systems, and best practices for data modeling.

CMSC643: MACHINE LEARNING AND DATA MINING
Provides a broad overview of key machine learning and data mining algorithms, and how to apply those to very large datasets. Topics covered include linear models, classification techniques, Bayesian analysis, recommendation systems, and systems for large-scale machine learning.

CMSC644: ALGORITHMS FOR DATA SCIENCE
Provides an in-depth understanding of some of the key data structures and algorithms essential for advanced data science. Topics include random sampling, graph algorithms, network science, data streams, and optimization.

ADMISSIONS AND REQUIREMENTS

General Requirements: Statement of Purpose, Resume/CV, Transcript(s), Letters of Recommendation (2)

Program-Specific Requirements: Prior coursework establishing quantitative ability (i.e. calculus, linear algebra, basic statistics, etc.); Proficiency in programming languages, demonstrated either through prior programming coursework or substantial software development experience.

Application Deadline (Tentative): July 28 (Exceptions will be considered for the first offering)

Program Tuition (per course): 2016-17: $4,000

Apply at: http://oes.umd.edu/professional-programs/data-science

For more information, contact Prof. Amol Deshpande, or visit our website at:
https://www.cs.umd.edu/data-science-cert