DATA SCIENCE

Digitization has transformed almost every human and many natural activities into generators of data. This flood of ‘big data’ has the potential to yield cures for disease, better functioning democracies, smarter public policies, more effective pedagogies, improved public health, and better functioning markets. The practices of extracting information and knowledge from data are not new, but increased availability of data and computing power has led in recent years to their convergence in a new field called ‘data science.’

Data science is an inherently interdisciplinary field. The core analytical skills come from mathematics, statistics, computer science (including algorithms, data structures, data management, and machine learning), and economics, while the communication and visualization skills rely on graphic design, art, and psychology. Since data are everywhere, this already interdisciplinary field can be applied to study virtually anything, from polling data to climate change, consumer purchases to baseball, online dating to healthcare; the possibilities are endless.

The underlying skill set in data science has its roots in mathematics, statistics, and computer science. These analytical tools are complemented by communication and visual skills drawn from graphic design, art, and the psychology of perception. The applications of data science are built on frameworks developed primarily in the social and natural sciences but also in the humanities under the category of ‘the digital humanities.’

The program teaches students how to combine training in statistics, computing, communication, and substantive areas to analyze and solve real-world problems. The range of substantive applications is incredibly broad. The data science major makes sense for students interested in either a career in industry or the public sector—Internet startups, finance, manufacturing, publishing, medicine, engineering, government, advocacy, marketing, law—or for those who wish to pursue more graduate study in data science, business, social science, or related fields.

Learning Outcomes

• Collect and manage data to devise solutions to data science tasks.
• Select, apply, and evaluate models to devise solutions to data science tasks.
• Develop capacity to learn new analysis methods and tools.
• Interpret data analysis outcomes.
• Effectively communicate data science-related information to a variety of audiences.

Major

Data Science Major—BA (https://catalog.mills.edu/undergraduate/majors-minors/data-science/data-science-ba/)