

Transforming Data Science Curriculum Through Design Thinking

Authors : Samar Swaid

Abstract : Today, corporates are moving toward the adoption of Design-Thinking techniques to develop products and services, putting their consumer as the heart of the development process. One of the leading companies in Design-Thinking, IDEO (Innovation, Design, Engineering Organization), defines Design-Thinking as an approach to problem-solving that relies on a set of multi-layered skills, processes, and mindsets that help people generate novel solutions to problems. Design thinking may result in new ideas, narratives, objects or systems. It is about redesigning systems, organizations, infrastructures, processes, and solutions in an innovative fashion based on the users' feedback. Tim Brown, president and CEO of IDEO, sees design thinking as a human-centered approach that draws from the designer's toolkit to integrate people's needs, innovative technologies, and business requirements. The application of design thinking has been witnessed to be the road to developing innovative applications, interactive systems, scientific software, healthcare application, and even to utilizing Design-Thinking to re-think business operations, as in the case of Airbnb. Recently, there has been a movement to apply design thinking to machine learning and artificial intelligence to ensure creating the "wow" effect on consumers. The Association of Computing Machinery task force on Data Science program states that "Data scientists should be able to implement and understand algorithms for data collection and analysis. They should understand the time and space considerations of algorithms. They should follow good design principles developing software, understanding the importance of those principles for testability and maintainability" However, this definition hides the user behind the machine who works on data preparation, algorithm selection and model interpretation. Thus, the Data Science program includes design thinking to ensure meeting the user demands, generating more usable machine learning tools, and developing ways of framing computational thinking. Here, describe the fundamentals of Design-Thinking and teaching modules for data science programs.

Keywords : data science, design thinking, AI, curriculum, transformation

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