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Infusion of data science and computation into engineering curricula

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The goal of this project is to develop a curricular framework for data science education and workforce development that is transferable between diverse institutions, so STEM-related programs can "plug and play" data science lessons with existing curricula without much overhead. These lessons will be created in conjunction with community stakeholders and industry partners to ensure a focus on real-world problem solving and include student organizations in course development to promote flexible learning pathways. The proposed additions to undergraduate STEM education will provide an evidence-based blueprint for best practices in integrating data science with existing engineering curricula. Implementation across multiple engineering departments will result in a significant impact on society through the training of a diverse, globally competitive STEM workforce with high data literacy. The objectives of this project are to (1) facilitate data science education and workforce development for engineering and related topics, (2) provide opportunities for students to participate in practical experiences where they can learn new skills in a variety of environments, and (3) expand the data science talent pool by enabling the participation of undergraduate students with diverse backgrounds, experiences, skills, and technical maturity in the Data Science Corps. This work will support the Data Science Corps objective of building capacity for education and workforce development to harness the data revolution at local, state, and national levels. The institutions gathered for this project will develop training programs and curate datasets that will be made available so they can be included in undergraduate instruction nationwide. Furthermore, the training materials will be shared with industry partners, facilitating workforce development. The project team will develop a website to house data science training programs, didactic datasets, and other resources for educators. These resources are intended to reduce barrier to entry for faculty seeking to incorporate data science into their instruction, as recruiting and retaining faculty to create and teach integrated introductory courses in data science has been recognized as a significant hurdle by the National Academies.

Research

Education and Outreach

Data & Cyberinfrastructure

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