

1-2018

Introduction to Data Science: Executive Summary

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Recommended Citation

Wang, Liming. Introduction to Data Science for Transportation Researchers, Planners, and Engineers. Project Brief NITC-ED-854. Portland, OR: Transportation Research and Education Center (TREC), 2018.

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NITC

NATIONAL INSTITUTE
for TRANSPORTATION
and COMMUNITIES

DEVELOPING A CURRICULUM FOR DATA SCIENCE

With almost every aspect of transportation research and practice driven to utilize complex computer software and innovative data sources, researchers and professionals increasingly face the computing challenges that have plagued other science and engineering disciplines. Most students of science, engineering, and planning are never taught to build, use, validate, and share software well. As a result, many spend hours or days doing things badly that could be done well in just a few minutes. The goal of this course is to change that, so that students can spend less time wrestling with software and more time doing useful research.

To help students and professionals in transportation research cope with these challenges, this project will apply lessons from similar programs in other disciplines and aims to equip them with proper scientific computing skills. The direct outcomes of this project are a course plan and materials for training transportation students and professionals in basic data science. The course materials are open source under the Creative Commons license and publicly available online. Any school or instructor can replicate the course. The course would also be helpful to transportation practitioners who may use it for self-instruction.

This data science course exposes students in transportation research and practice to the best practices in data science through hands-on lab sessions, and aims to help students tackle the challenge of “drinking from a hose” when dealing with overwhelming amounts of data that is increasingly common in transportation research and practice.

This education project created the curriculum for a new course: Introduction to Data Science for Planners, Engineers, and Scientists. The course helps students and professionals tackle the challenges of processing high volumes of data.

PROJECT TITLE
Introduction to Scientific Computing for Planners, Engineers, and Scientists (#2017-854)

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This study was funded by the National Institute for Transportation and Communities (NITC). NITC is one of five U.S. Department of Transportation national university transportation centers. Housed at Portland State University, NITC is a program of the Transportation Research and Education Center (TREC). This Portland State-led research partnership includes the University of Oregon, Oregon Institute of Technology, University of Utah and new partners University of Arizona and University of Texas at Arlington.