CDS 490: Data Science in Practice

Fall 2020

Instructor: Dr. Dominic White
Contact: dwhite34@gmu.edu
Office hours: By appointment

Pre-reqs: None, but students are expected to be juniors or seniors in the CDS department with several years of programming courses, and/or permission of the instructor. Recommended: experience with Python or R.

Description: In this course you will participate in a program called The Opportunity Project (TOP) run by the Census Bureau. As part of TOP, you will work in teams to use open federal data to develop a data product that solves a real-world problem identified by experts in the Federal government. In the first half of the course you will learn about product design and user research. In the second half of the course you will learn how to build pipelines to deal with messy real-world data, and in the second half of the course you will

Learning Outcomes:

1. Understand the range of data products that can be created by data scientists, and how to build them.
2. Know how to conduct user research to find and validate product ideas.
3. Become familiar with the use of collaborative software development tools and methodologies such as version control and GitHub.

Schedule (tentative)

Week beginning	Class topic	TOP topic	TOP activities	Work due
Aug 24	Intro to class, TOP, and product development			
Aug 31	Working collaboratively. Data products.			
Sep 07	Problem identification & user research	TOP sprint officially begins. Slack channel launches.	Kick off call: Fri 9/11 at 1:30-3pm ET	
Sep 14	User research	Connect with user		

		advocates to conduct user research.		
Sep 21	Problem solving	Share user research, & reconnect with user advocates.	User research milestone call: Fri 9/25 1:30-3pm ET	
Sep 28	Exploratory Data Analysis	Continue user research & begin data exploration.		
Oct 05	TBD	Data dive Q&A with data stewards to answer questions on federal data sets.	Data Q&A call: Fri 10/9 at 1:30-3pm	
Oct 12	TBD	Continue data exploration and developing products.		
Oct 19	TBD	Virtual demo of in-progress work on concepts/products. Provide feedback to other teams.	Concept pitch call: Fri 10/23 at 1:30-3pm	
Oct 26	TBD	Continue building products and conduct user testing.		
Nov 02	TBD	Showcase and share feedback on more mature version of products.	Beta demos call: Fri 11/6 1:30-3pm	
Nov 09	TBD	Continue building products/prototypes.		
Nov 16	TBD	Share MVP with TOP prior to collective rollout.	MVP demos call: Date TBD	MVP due
Nov 23	Thanksgiving (no class)			
Nov 30	Continue			

	finishing up the MVP. Write report on team's project.			
Dec 07	Continue finishing up the MVP. Write report on team's project.			Team report due
Dec TBD			Present product at Demo Day	

Textbook: There is no required textbook for this course. Readings will be posted on Blackboard when relevant.

Assessment:

Sprint participation (weekly, individual): 60%

For the 12 weeks of the TOP sprint, your team will create and assign tasks. Your weekly participation grade will be based on your completion of tasks each week, as well as communication with your team members, attendance at class and attendance of the bi-weekly TOP calls.

Final product (group): 30%

This is the MVP (Minimum Viable Product) that your team will develop as part of the TOP Sprint.

Final report (group): 10%

Your team will also write a report describing your product, and the challenges you faced (and the solutions you came up with!) while building it.

Final grades for the course will be assigned using the following grade thresholds: 100-97% = A+, 97-93% = A, 93-90% = A-, 90-87% = B+, 87-83% = B,

Cheating: The work you submit is expected to be your own, and you should follow Mason's Honor Code. Violations will be reported to the Honor Code Committee and will result in sanctions.

However, you are encouraged to work collaboratively with team members to share ideas and help each other out if you get stuck. Furthermore, I expect you to make use of online resources such as Google, StackOverflow, etc., to solve programming problems that arise during the semester.

Disability Accommodations: Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit http://ds.gmu.edu/ for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474