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## A Learning Ecosystem for Teaching High School Students Machine Learning Concepts and Data Science Skills in Healthcare and Medicine

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Project Overview: We will develop a unique community-based ecosystem for teaching high school students about how the intersection between rapidly developing technologies such as data science and machine learning impact critical healthcare decisions. Students will learn and apply technological skills valued for high-paying jobs within our workforce and proving the importance of diversity.

Unintentional bias within the datasets and computer programs used for Machine Learning (ML) creates healthcare outcomes which benefit some people more than others. Our goal is to introduce diverse students to the tools of data scientists and ML programmers so they 1) are better prepared for related jobs and careers, 2) understand how bias can occur, and 3) consider pursuing careers in AI and Data Science to improve the equity of machine predictions, especially in healthcare.

### Lessons Learned & Insights Gained

- *Understand that just because something is challenging does not mean it is impossible. By including students, teachers, and community members early in design we can better scale and scaffold the curriculum.*
- *Be transparent with stakeholders that we are at the beginning and exploring. We need our hive of stakeholders help, particularly teachers and students, to create the accessible program we envision.*
- *Better understand how to measure student learning based on implementation as well as the impact of participating in a datathon.*

### Equity

- *We illuminate the emerging socio-technological landscape by educating high school students about how unintentional bias within data sets and algorithms can lead to mistakes in a machine's ability to predict outcomes. This is especially important for life and death decisions like those made in critical healthcare.*
- *By linking technological advances to real-life situations of interest to diverse students, we will increase students' skill sets needed for high paying jobs in data science and computer programming. This fosters lifelong and pervasive learning with technology.*
- *The interdisciplinary nature of our program (data science, ML, and healthcare) catalyzes how co-evolving science and technology methods are taught simultaneously for diverse high school students of varied prior knowledge with the goal of making the course and program accessible to all students.*
- *We harness the data revolution to build upon and merge successful ideas and tools (e.g., datathons, which educate college students and professionals), with culturally responsive methods and strategies known to encourage high school student participation. In so doing, we bring innovative tools used by experts in these fields to diverse groups of high school students.*

### New Challenges & Next Steps

- *Recognize that teaching about bias is difficult and teachers need support and a diverse set of mentors to create an authentic curriculum.*
- *Reconsider how we ask for and receive feedback at initial stages of development.*
- *Creatively overcome schools' concerns with fitting this into their curriculum and being accessible to two student populations, those with and those without prior statistics and computer programming experience.*
- *Validate an assessment and survey to best measure the impact of the curriculum and datathon.*