Center for Data Science in Emergency Medicine Data Science Internship

Position Summary: We are seeking an enthusiastic data science intern who is interested in the application of mathematical and computational techniques to solve real-world problems in healthcare. This internship is a collaboration between the Whiting School of Engineering, the Department of Emergency Medicine at Johns Hopkins School of Medicine, and the Capacity Command Center at Johns Hopkins Health System (JHHS). The student is expected to work collaboratively with JHHS operations leadership and faculty and staff within the Center for Data Science in Emergency Medicine (CDEM cdem.jh.edu). CDEM is focused on the improvement of healthcare delivery using data-driven methods that include large-scale electronic health record (EHR) data extraction, EHR data wrangling, research database building, machine learning, optimization modeling and advanced data visualization techniques. Current projects include the Perioperative Throughput Optimization Initiative, which seeks to leverage data and systems to forecast hospital occupancy and optimize surgical schedules. The data science intern will be directly engaged with the data science pipeline (from EHR data extraction to modeling to decision support) used to support and drive this initiative. Their work will be critical to the success of the team.

The student can expect an experience similar to a lab rotation, as well as exposure to operational and clinical workflows relevant to translational medical research. Before arrival, each data science intern will receive multiple papers related to their assigned project. The goal of the student's project and its relationship to other work in the area will be discussed. The student will be provided detailed guidance needed to conduct data analysis and will work under the supervision of experienced engineers at CDEM.

The internship will start as soon as possible and is expected to last 16 weeks. There is a possibility of extension depending on performance of the student.

Benefits for the Student: This internship is ideally suited to students with strong analytic skills and an interest in pursuing a medically oriented career in industry or academia. Interns will acquire theoretical and practical training in advancing the practice of medicine and healthcare delivery using data science and systems engineering – with a particular focus on EHR data. The data science intern will be embedded within CDEM, a Center that includes experts from the fields of biomedical engineering, operations research, and mathematical ecology – all focused on the common goal of improving care delivery for emergency department patients. Their team has created important cross-disciplinary partnerships and developed novel tools that enhance the practice of emergency medicine, including through an improved approach to emergency department triage, more accurate identification of risk factors for acute kidney injury and better risk-stratification of patients with infectious disease. Experiences gained will be highly informative and advantageous to students who plan to pursue further training (Masters, PhD or MD) or work in this arena after graduation.

Compensation: $15/h up to $5,000 depending on student availability and project needs

Required Education: Undergraduate or master students in biomedical engineering, systems engineering, computer science, applied mathematics and statistics, management sciences, or relevant fields. No previous research/industry experience required.

Desired knowledge, skills, and abilities:
- High-level communication skills
- Strong critical thinking and analytical reasoning skills
- Proficiency with multiple programming languages (including R, Python and SQL)
- Proficiency in data mining (regression and classification) or survival analysis or mathematical programming
- Ability to execute assigned project tasks within established schedule
- Sound documentation skills (writes and communicates clearly and concisely)
- Prior experience in healthcare-oriented research desired but not necessary

Application Process: Send your resume, one-page cover letter (describing relevant course work, research experience, and/or future plans about industry/research career) and one letter of recommendation/professional reference contact info. Email applications to Tracy Marshall at tmarshall@jhu.edu with subject line "MCEH Internship application"

Application deadline: March 15, 2021

Anticipated start date: As soon as possible/negotiable (duration approx. 16 weeks)