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## SHAMIM NEMATI & VIBHORE KUMAR

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[HTTP://WWW.BMI.EMORY.EDU/NEMATI](http://www.bmi.emory.edu/nemati)

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### Required Skills:

Python Development, Project Management, Communications

### Preferred Team

#### Communications:

Skype, Google Drive, etc

#### Data Sources:

We will work with the GaTech FHIR server (which includes the MIMIC database).

#### Other Items:

Project has timezone flexibility. Mentors and students will determine a good time for virtual meeting.

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## A FHIR-ENABLED STREAMING SEPSIS PREDICTION SYSTEM FOR INTENSIVE CARE UNITS

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Every year, sepsis, a medical condition characterized by whole-body inflammation, strikes between 800,000 and 3.1 million Americans, killing approximately one in four patients affected. There is currently no definite treatment for sepsis in spite of many clinical trials. However, early detection of sepsis and timely initiation of interventions are widely considered as important determinants of patient survival. However, basic care tasks (such as microbiological sampling and antibiotic delivery within 1 h, fluid resuscitation, and risk stratification using serum lactate or alternative), which are known to benefit most patients, are not performed in a timely manner. Previous literature suggests that high-resolution vital signs (such as heart rate, blood pressure, respiratory rate, etc.), and other sequential measurements within the electronic medical records (EMRs), can be dynamically integrated using Machine Learning techniques to help with early detection of sepsis.

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### PROJECT OBJECTIVES

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To design a cross-platform Sepsis Prediction and Alert Application.

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### SUCCESSFUL PROJECT

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We propose a FHIR-enabled streaming analytic application that is capable of interfacing with a FHIR server, calculates the SOFA score in real-time and simultaneously for multiple patients, and provides visualization of temporal progression of SOFA and other factors related to infection-related physiological Decompensation.

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Intellectual Property: TBD