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Major: Computer Science

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Research Area: Computational Sciences and Engineering

ORNL has developed and patented technology for nonlinear analysis of time serial data to detect condition change in biomedical and machine data. Examples include forewarning of epileptic seizures from scalp brain waves (SeizAlert); forewarning of heart attacks from heart waves (electrocardiogram, ECG); forewarning of fainting from ECG; detection of septic shock onset from ECG; detection of increasing breathing difficulty from chest sounds; and forewarning of failures in motors and motor-driven components from motor current, voltage, power, and vibration. The student will develop research-class software, as follows. First, a Java wrapper will be fully interoperable with the existing FORTRAN code. Second, the FORTRAN code will be minimally modified to interoperate with the Java code. Finally, the Java wrapper will provide the infrastructure to start and run each instantiation of the FORTRAN code on a separate node of the WhiteOak cluster computer, and return all of the results in a single output file.

Research Mentors:

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