

The Cardiovascular Research Grid

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The Cardiovascular Research Grid (CVRG) Project is an R24 resource supporting the informatics needs of the cardiovascular (CV) research community. The CVRG Project has developed and deployed unique core technology for management and analysis of CV data that is being used in a broad range of Driving Biomedical Projects (DBFs). This includes: a) tools for storing and managing different types of biomedical data; b) methods for securing the data; c) tools for querying combinations of these data so that users may mine their data for new knowledge; d) new statistical learning methods for biomarker discovery; e) novel tools that analyze image data on heart shape and motion to discover biomarkers that are indicative of disease; f) tools for managing, analyzing, and annotating ECG data. All of these tools are documented and freely available from the CVRG website and Wiki. In this renewal, we propose a set of new projects that will enhance the capability of our users to explore and analyze their data to understand the cause and treatment of heart disease. Each project is motivated directly by the needs of one or more of our DBFs. Project 1 will develop and apply new algorithms for discovering changes in heart shape and motion that can predict the early presence of developing heart disease in time for therapeutic intervention. Project 2 will create data management systems for storing CV image data collected in large, multi-center clinical research studies, and for performing quality control operations that assure the integrity of that data. Project 3 will develop a complete infrastructure for managing and analyzing ECG data. Project 4 will develop a comprehensive clinical informatics system that allows clinical information to be linked with biomedical data collected from subjects. Project 5 will develop tools by which non-expert users can quickly assemble new procedures for analyzing their data. Project 6 will put in place a project management structure that will assure successful operation of the CVRG.

PUBLIC HEALTH RELEVANCE: RELEVANCE: The Cardiovascular Research Grid (CVRG) Project is a national resource providing the capability to store, manage, and analyze data on the structure and function of the cardiovascular system in health and disease. The CVRG Project has developed and deployed unique technology that is now being used in a broad range of studies. In this renewal, we propose to develop new tools that will enhance the ability of researchers to explore and analyze their data to understand the cause and treatment of heart disease.