The main interface provides users with a menu of tools to manage features or patient data. SQL Server and use it to provide doctors with a web-based query tool to access the data. Research into the effectiveness and usefulness of each technique at cancer screening and the determination of malignancy. We propose to create and store this database called Archimedes (an ARCHIve of MEDical imagES) using SQL Server and use it to provide doctors with a web-based query tool to access the data. Use of such a tool will allow doctors to improve the effectiveness of CAD and prescreening systems by building and testing better diagnosis criteria. Doctors will be able to compare the effectiveness of various medical imaging technologies on the database with images from multiple technologies like mammograms, MRI, and ultrasound will also enable research into the effectiveness and usefulness of each technique at cancer screening and the determination of malignancy. We propose to create and store this database called Archimedes (an ARCHIve of MEDical imagES) using SQL Server and use it to provide doctors with a web-based query tool to access the data. The distance search capability of Archimedes enables users to determine the distance between two shapes within an image. The user can either use pre-defined shapes for this search, or create a user-defined shape that will be added to the list of pre-defined shapes. Doctors can use this function to determine the relative spatial positions of shapes or tumors on a patient and use that information as reference in diagnosing current patients.

Spatial Search
The spatial search capability of Archimedes provides users with the ability to determine the relative positions between shapes on an image. The user can either use pre-defined shapes for this search, or create a user-defined shape that will be added to the list of pre-defined shapes. Doctors can use this function to determine the relative spatial positions of shapes or tumors on a patient and use that information as reference in diagnosing current patients.

Annotate Images
The user is given the ability to associate plain text notes with a particular image. By clicking on the image, the user can use a full-screen view of the image. Below the full-size image, the editable text box allows users to write notes pertaining to (i.e., annotations) that particular image. Multiple users are allowed to annotate the same image at the same time because they each make changes on a new overlay. If the user wishes to clear annotations, this is possible by clicking on the Clear Notes button located below the Save Notes button.

Textual Search
The user can perform a textual search on annotated images. The bottom portion of the Search Options screen enables the user to enter text into a text field that is then used to query all existing annotated images. Queries return images as the result of the search.

Overlay Image Features
Overlay Image Features provides the user a virtual marker to highlight selected regions in an image. This tool allows the user to annotate a portion of the image to be highlighted with vectors and parcel tools. On the overlay, the user can enter her or his annotations and use a save button to associate the annotations with the highlighted regions.

The user interface of Archimedes is arranged into four major sub frames: Search Results, Select Image, User Interface and Search. The graphical user interface is arranged into four major sub frames: Search Results, Search, Find, and Data. Search Results displays the image results by thumbnail and associated data as determined from the patient key. It also displays the patient’s name and age as well as the number of images in the associated set and a quantitative measure of the effectiveness of the match. Notes: The text field which returns the patient information specific to the image being viewed. It allows the doctor the ability to make and save notes (textual annotation) specific to the image for future reference.

Search: Contains all the search options available to the user. Currently, the user may search by one of two different methods: 1) Shape-based search, where the user can search by a pre-defined shape. 2) Text search of the patient information or image metadata. Additional search capabilities are still in development.

View Image: Shows the currently active image as well as associated patient data. Patient data is only available to authorized doctors, while image can be made public. Users can use thumbnails of the previous and next images in the set and move through the images associated with a patient by set archive image.

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