

Accessible Databases: Standardizing Patient Data In Adolescent Depression fMRI Studies



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Introduction:

Structuring patient and subject databases both in medical care as well as scientific research are vitally important to the quality of research. However in handling various data types in our functional Magnetic Resonance Imaging (fMRI) research with depressed adolescents there are several obstacles that we encountered in structuring our data and thus we ran into issues with data processing and research results. Having an efficient and accessible database is thus very vital to the quality of research.

The Problem:

Currently our data processing system relies on a very unstructured database in which data such as fMRI images, behavioral results, physiological data as well as confidential personal subject info are all individually pulled off the server. This un-standardized system slows down our data processing. Thus to and leaves room for errors to occur. To solve this problem we need to structure a database that is compatible with our analytical software program, is standardized, and easy to access.



Fig 1 Data Collection

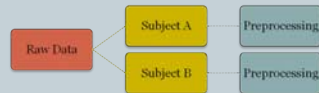


Fig 2 Data Processing

Our Hypothesis:

Based on the various types of data we are collecting and our already implemented system of linking data on a subject through a subject ID number the relational model is probably the best model for our research purposes.

The Research Plan:

Design a database structure based on three fundamental database models

- Relational
- Network
- Hierarchical

Create prototypes in various programs such as Excel, SQL, and Access

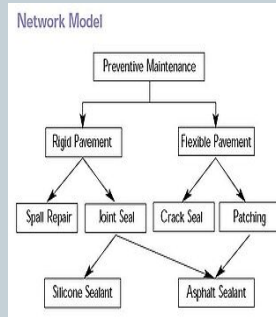


Fig 3 Network Model

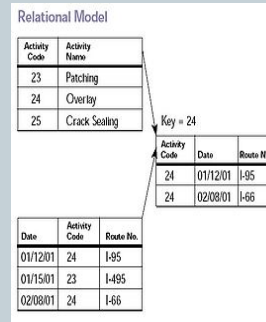


Fig 4 Relational Model

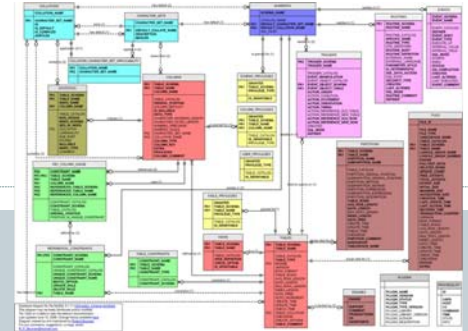


Fig 5 mySQL databases

Our Results:

Our database design models reinforced our hypothesis that a database based on a relational model was the best for our data processing needs. We created a working database in mySQL and managed to have an efficient database that responded to queries on subject number and data queries. Converting all subject data into mySQL will be an ongoing component of this research project.

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