Application for QIBA Project Funding

Title of Proposal: Digital Reference Object for DCE-MRI Analysis Software Verification		
QIBA Committee/Subgroup: Perfusion, diffusion and flow		
NIBIB SOW Objective which this project addresses: Task 3		
Project Coordinator or Lead Investigator Information:		
Last Name: Obuchowski	First Name: Nancy	Degree(s): PhD
e-mail:	Tel #:	
Institution/Company: Cleveland Clinic Foundation		
Amount Requested:		

Project Description

This application is to provide statistic analysis, advice and support for deliverable 3 for Dr. Barboriak's project entitled: Digital Reference Object for DCE-MRI Analysis Software Verification 2. This project is designed to continue and expand the previously initiated QIBA DCE-MRI Digital Reference Object (DRO) project (Project 8a) and is described in Dr. Barboriak's concept form.

Primary Goals and Objectives

Deliverable 3 of the project reads as follows:
Comparison of aggregated and disaggregated approaches to software evaluation.
By using DROs to evaluate software, bias in results (deviation from a gold standard) and lack of precision (spread of data around a mean) can be evaluated separately. This disaggregated approach is used in the ongoing T1 mapping DRO evaluation. As noted by the QIBA metrology effort, an aggregated approach which combines these into a single metric (e.g. using concordance correlation coefficients, intra-class correlation coefficients, mean squared error, total deviation index) can also be used. Progress in the T1 DRO project allows us to now apply an aggregated approach to the already obtained data to determine whether aggregated and disaggregated approaches rank the performance of software packages differently and to evaluate which metrics might have better statistical properties (e.g. homogeneity, linearity) which are needed for the claim statements. A statistician familiar with these issues, Dr. Nancy Obuchowski at Cleveland Clinic, will perform the analyses under separate contract and collaborate on this evaluation. We believe that the lessons learned here may significantly impact the decision whether a single metric derived from aggregated approach can be used to simplify the process of judging compliance of software.