

iMRMC project @ code.google.com

Applications for Analyzing, Sizing, and Simulating MRMC
Reader Studies

<http://code.google.com/p/imrmc/>

The code.google website allows for version control and issue tracking. Please do not hesitate to contact us with questions. We are continually updating features and documentation and responding to users. We welcome you to check it out.

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iMRMC ROC analysis

Desc: The primary objective of the iMRMC application is to assist investigators with analyzing and sizing multi-reader multi-case (MRMC) reader studies that compare the difference in the area under Receiver Operating Characteristic curves (AUCs) from two modalities. The core elements of this application include the ability to perform MRMC variance analysis, the ability to size an MRMC trial, and a database containing components of variance from past MRMC studies. Stand-alone, precompiled, license-free Java applications and the source code.

iRoeMetz ROC simulation

Desc: The iRoeMetz application can be used to simulate the reader scores for MRMC experiments via Monte Carlo methods given variance components of the ROC scores. The application also estimates the variance components of AUC and can calculate the variance components directly with numerical integration. The simulated experiments can be saved and used in MRMC variance analysis programs, such as iMRMC. Stand-alone, precompiled, license-free Java applications and the source code.

iMRMC Binary

Desc: iMRMC_Binary is a software package for simulating, sizing, and analyzing a multi-reader multi-case (MRMC) reader study with binary assessments (e.g., whether a reader's assessment of a patient case agrees with a reference standard). The software allows generating MRMC datasets (binary reader assessment scores) that have the user-specified correlation structure (or variance components) that exists in real-world MRMC studies. The package also has a function that uses simulated datasets to validate an analysis method (i.e., examine the empirical coverage probability of the confidence interval estimated by an analysis method). The software also does Monte Carlo based power calculation that can be applied to any analysis method. The current version of the software assumes a fully-cross design, ie, every reader reads every case of both modalities. The documentation (user manual) has a description of the simulation model, the use of the model for validation and sizing, and literature related to MRMC analysis and study designs.