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Front Matter

JMASM Editors

DataMineIt℠

announces

PermuteIt™ v2.0

The fastest, most comprehensive and robust permutation test software on the market today.

Permutation tests increasingly are the statistical method of choice for addressing business questions and research hypotheses across a broad range of industries. Their distribution-free nature maintains test validity where many parametric tests (and even other nonparametric tests), encumbered by restrictive and often inappropriate data assumptions, fail miserably. The computational demands of permutation tests, however, have severely limited other vendors' attempts at providing useable permutation test software for anything but highly stylized situations or small datasets and few tests. PermuteIt™ addresses this unmet need by utilizing a combination of algorithms to perform non-parametric permutation tests very quickly – often more than an order of magnitude faster than widely available commercial alternatives when one sample is large and many tests and/or multiple comparisons are being performed (which is when runtimes matter most). PermuteIt™ can make the difference between making deadlines, or missing them, since data inputs often need to be revised, resent, or recleaned, and one hour of runtime quickly can become 10, 20, or 30 hours.

In addition to its speed even when one sample is large, some of the unique and powerful features of PermuteIt™ include:

- **the availability to the user of a wide range of test statistics for performing permutation tests on continuous, count, & binary data, including: pooled-variance t-test; separate-variance Behrens-Fisher t-test, scale test, and joint tests for scale and location coefficients using nonparametric combination methodology; Brownie et al. "modified" t-test; skew-adjusted "modified" t-test; Cochran-Armitage test; exact inference; Poisson normal-approximate test; Fisher's exact test; Freeman-Tukey Double Arcsine test**

- **extremely fast exact inference (no confidence intervals – just exact p-values) for most count data and high-frequency continuous data, often several orders of magnitude faster than the most widely available commercial alternative**

- **the availability to the user of a wide range of multiple testing procedures, including: Bonferroni, Sidak, Stepdown Bonferroni, Stepdown Sidak, Stepdown Bonferroni and Stepdown Sidak for discrete distributions, Hochberg Stepup, FDR, Dunnett's one-step (for MCC under ANOVA assumptions), Single-step Permutation, Stepdown Permutation, Single-step and Stepdown Permutation for discrete distributions, Permutation-style adjustment of permutation p-values**

- **fast, efficient, and automatic generation of all pairwise comparisons**

- **efficient variance-reduction under conventional Monte Carlo via self-adjusting permutation sampling when confidence intervals contain the user-specified critical value of the test**

- **maximum power, and the shortest confidence intervals, under conventional Monte Carlo via a new sampling optimization technique (see Opdyke, JMASM, Vol. 2, No. 1, May, 2003)**

- **fast permutation-style p-value adjustments for multiple comparisons (the code is designed to provide an additional speed premium for many of these resampling-based multiple testing procedures)**

- **simultaneous permutation testing and permutation-style p-value adjustment, although for relatively few tests at a time (this capability is not even provided as a preprogrammed option with any other software currently on the market)**

For Telecommunications, Pharmaceuticals, *f*MRI data, Financial Services, Clinical Trials, Insurance, Bioinformatics, and just about any data rich industry where large numbers of distributional null hypotheses need to be tested on samples that are not extremely small and parametric assumptions are either uncertain or inappropriate, PermuteIt™ is the optimal, and only, solution.

To learn more about how PermuteIt™ can be used for your enterprise, and to obtain a demo version, please contact its author, J.D. Opdyke, President, DataMineIt℠, at JDOpdyke@DataMineIt.com or www.DataMineIt.com.

DataMineIt℠ is a technical consultancy providing statistical data mining, econometric analysis, and data warehousing services and expertise to the industry, consulting, and research sectors. PermuteIt™ is its flagship product.

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JMASM is an independent print and electronic journal (http://tbf.coe.wayne.edu/jmasm) designed to provide an outlet for the scholarly works of applied nonparametric or parametric statisticians, data analysts, researchers, classical or modern psychometricians, quantitative or qualitative evaluators, and methodologists. Work appearing in *Regular Articles*, *Brief Reports*, and *Early Scholar*s are externally peer reviewed, with input from the Editorial Board; in *Statistical Software Applications and Review* and *JMASM Algorithms and Code* are internally reviewed by the Editorial Board.

Three areas are appropriate for *JMASM*: (1) development or study of new statistical tests or procedures, or the comparison of existing statistical tests or procedures, using computer-intensive Monte Carlo, bootstrap, jackknife, or resampling methods, (2) development or study of nonparametric, robust, permutation, exact, and approximate randomization methods, and (3) applications of computer programming, preferably in Fortran (all other programming environments are welcome), related to statistical algorithms, pseudo-random number generators, simulation techniques, and self-contained executable code to carry out new or interesting statistical methods. Elegant derivations, as well as articles with no take-home message to practitioners, have low priority. Articles based on Monte Carlo (and other computer-intensive) methods designed to evaluate new or existing techniques or practices, particularly as they relate to novel applications of modern methods to everyday data analysis problems, have high priority.

Problems may arise from applied statistics and data analysis; experimental and nonexperimental research design; psychometry, testing, and measurement; and quantitative or qualitative evaluation. They should relate to the social and behavioral sciences, especially education and psychology. Applications from other traditions, such as actuarial statistics, biometrics or biostatistics, chemometrics, econometrics, environmetrics, jurimetrics, quality control, and sociometrics are welcome. Applied methods from other disciplines (e.g., astronomy, business, engineering, genetics, logic, nursing, marketing, medicine, oceanography, pharmacy, physics, political science) are acceptable if the demonstration holds promise for the social and behavioral sciences.

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