

EVALUATION OF THE APPROPRIATENESS AND ROBUSTNESS OF RIGOROUS
STATISTICAL METHODOLOGIES VERSUS SOFT COMPUTING FOR
TRANSPORTATION MODELING APPLICATIONS

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Sponsored by the Committee on Artificial Intelligence and Advanced Computing Applications (ABJ70) and the Committee on Statistical Methodology and Statistical Computer Software in Transportation Research (ABJ80)

The above committees solicit papers and presentations involving the evaluation of the appropriateness and robustness of rigorous statistical methodologies versus soft computing for transportation modeling applications. For purpose of this call for papers, *rigorous statistical methodologies* refer to methodologies and model forms grounded in mathematics. These methodologies typically require substantive insight into and assumptions about the processes being modeled and are therefore deductive in nature. *Soft computing* refers to modeling methods based on emerging computational intelligence frameworks, such as fuzzy systems, neural networks, and evolutionary algorithms. These methodologies are generally data driven and therefore inductive in nature. There are of course examples of mathematical modeling applications where the underlying techniques and formulations have been applied in a “black box” fashion.

In the case of modeling applications where viable methodologies exist both in the mathematical and soft computing domains there are clearly trade offs to be evaluated in model selection. For example, there may be a trade-off between the potential for new insight versus ease of implementation or between the motivation to inform the modeling with accurate prior knowledge versus the aversion to biasing the results through misconceptions and faulty assumptions. Explicit presentation of the evaluation of these kinds of trade-offs is often missing from papers on transportation modeling applications.

The purpose of this call is to encourage the submission of modeling application papers that provide this explicit evaluation. Although the larger context also includes the selection of appropriate modeling frameworks *within* the mathematical and soft computing domains, the focus of this call is on evaluation of candidate methodologies *across* the two domains. In addition to specific modeling applications, the committees also welcome papers that more generally address the theory, practice, and philosophy of model selection in transportation modeling applications. Such papers will be especially useful if they provide recommendations regarding the assessment of specific conditions and characteristics in order to frame and inform the decision between statistical modeling and soft computing approaches.

Those interested in submitting papers to this session should submit full papers for peer review to the Transportation Research Board (<http://www.trb.org>) by August 1, 2005. The submitted papers should include the session title and sponsoring committees. Direct any questions regarding this session to:

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