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April 19, 2014

Dr. Anthony Jakeman
Editor in Chief,
Environmental Modelling and Software

Subject: Submittal of manuscript for consideration: ***CVNetica–A cross-validation package driving Netica with Python***

Dear Dr. Jakeman,

I am pleased to submit the attached manuscript–*CVNetica–A cross-validation package driving Netica with Python*–for consideration as a research article in Environmental Modelling and Software. My coauthor, Nathaniel Plant, and I have created a software package for cross validation for Bayesian Networks (BNs) to help scientists and managers avoid overfitting and maximize predictive power using such tools. We were inspired to do this after working together on a model emulation project for a groundwater model published in Water Resources Research.

The major impediments to Bayesian Network validation are a lack of awareness of overfitting as an issue and a lack of practical validation tools. The latter is more pressing, as some articles mention diagnostics for network performance, but the tools have not been readily available to make practical use of the techniques.

We encountered challenges calling a C dynamic library from Python. While this is documented in the Python documentation, we thought it useful for environmental modelers to learn from our challenges and included a section with technical details. We could move this information to online material if requested. The section on BN background draws heavily from a Water Resources Research article we wrote (doi: 10.1002/wrcr.20496) with attribution. We can clarify this in the text if necessary.

We also illustrate the use of our tool on a model emulation BN and a BN derived from data. The tool (CVNetica) is written in Python and interacts with the commercial Netica software package.

Thank you for your consideration of the manuscript and we look forward to hearing

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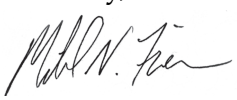
from the editors and reviewers.

Sincerely,



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