

November 7, 2006

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Editor
Undergraduate Math Journal
Rose-Hulman Institute of Technology
Terre Haute, IN 47803

Dear Sir or Madam:

I am writing to support the submission of the paper *Markov chains and traffic analysis* by Emanuel Indrei for publication in the Rose-Hulman Undergraduate Mathematics Journal. Emanuel began working on this project during January of 2006 as part of an independent study course I supervised in the School of Mathematics at the Georgia Institute of Technology where I was a visiting assistant professor. Emanuel was in his junior year of undergraduate study at the time. He worked on the project during the Spring semester of 2006 and continued working on it over the summer with Dr. Thomas Morley, also at Georgia Tech. Emanuel completed the paper in August of 2006 and is currently in his senior year. This paper therefore has been entirely written while Emanuel is still an undergraduate.

I believe the paper is interesting because it describes an application of Markov chains and random walks to a setting that is appealing and easy to visualize. It does not contain new mathematical results. Rather, the accomplishment of the author lies in constructing a model with reasonable properties from a multilane highway system and then translating that model into a framework in which mathematical ideas can be applied. It is in this process of translation and interpretation that the interest of the paper lies. Once the framework is established, Emanuel is able to apply the theory of random walks and reinterpret the results in terms of the concrete vocabulary of highway traffic. For example, he presents an interesting application of the Central Limit theorem in deciding whether an overhead camera traveling at a constant speed equal to the average speed of a given car will be able to track the car in the long run. The concrete nature of the applications helps the reader to visualize the ideas easily and makes the paper interesting to a wide audience.

As per the instructions on your web site, if you should decide to publish the paper, please include my name where appropriate as follows: Mark Demers, Assistant Professor of Mathematics, Fairfield University, email: mdemers@mail.fairfield.edu.

I would be happy to provide further information should you require it. Please do not hesitate to contact me at the above email address.

Sincerely,

Mark Demers