

Volen National Center for Complex Systems,
Brandeis University,
Waltham, MA 02454
April 29, 2012

Recommendation for Tony Vladusich

I am writing to recommend Tony Vladusich for a faculty position in your department. Tony is an independent thinker with strong oral and written communication skills. He has a draft of an R01 proposal already written and ready to go, so he will hit the ground running once given the opportunity to pursue his research plans in a faculty position.

At present, Tony is in my computational neuroscience group, working on a collaborative project with the experimental group of Don Katz, also at Brandeis University. Tony's project is based on a sophisticated technique for data analysis, namely Hidden Markov modeling (HMM), which he uses to extract information from multi-electrode recordings of neural activity in gustatory cortex during taste processing. HMM extracts a number of underlying states from the spike trains of many neurons across trials, assuming fixed states and transition probabilities across trials, without assuming identical activity on every trial. As such, it is an ideal technique for analyzing neural data from awake animals, since it avoids the implicit assumption of identical processing across trials that lies in all methods based on across-trial averaging. A question regarding the use of HMM, has been how to select the number of possible states used by the algorithm. Completely on his own initiative, Tony took it upon himself to address this issue, by learning about and successfully implementing information theoretic tests – the Bayesian information criterion and the Aikake information criterion. Thus he was able to place some arbitrary aspects of the methodology on a rigorous foundation. By combining these improvements in technique with some new methods for analyzing recent data, Tony has completed the first draft of one paper that will be submitted this year and has obtained sufficient results for a second paper that we expect to submit also in 2012.

Tony has kept up his interest in his prior research field – the neural basis of visual perception – and has good ideas for further research in that area. In fact, this is the field that he proposes to pursue in a faculty career and forms the basis of his R01. Some of his past supervisors and collaborators will be better able to address his expertise in this area, but my impression is that he is extremely knowledgeable and has sufficiently novel ideas to generate a successful research program in visual perception.

I have seen Tony give talks on his own research and present the work of others in journal clubs. He has always been extremely articulate, thoughtful and clear in his presentation as well as responsive to questions. Given his great communication skills, and being someone who is willing to question rather than simply pass on “perceived wisdom”, I believe Tony will make a great classroom teacher and lecturer. Those latter qualities should also lead him to produce high quality, thoroughly grounded, original and creative research. Thus I am happy to recommend him for a position in your department.

Paul Miller

Assistant Professor of Biology & Neuroscience Program, Brandeis University