MIT COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE LABORATORY


January 25, 2012

Dear colleagues,

I am writing in support of Maryam Shanechi's application for an assistant professor position. I am an associate professor in the Electrical Engineering and Computer Science Department (EECS) and the Computer Science and Artificial Intelligence Laboratory (CSAIL) at the Massachusetts Institute of Technology. I have known Maryam for about five years now. Maryam served as a teaching assistant in my graduate course twice; I was also part of her doctoral thesis committee. In short, Maryam is exceptional. She is technically deep in her area, has great taste in selecting research problems to work on, and has already demonstrated impressive results in her highly interdisciplinary field of research. I recommend her wholeheartedly.

Maryam's path through graduate school is quite unusual. She started working in a more traditional area of telecommunications, but at some point decided to shift to biomedical applications of inference and control theory. Maryam came to me for advice when she was considering changing the topic of her research. My work is in biomedical image analysis, and naturally I could help Maryam with information about relevant faculty and possible directions of research. We talked through some of the choices she had to make along the way. She later asked me to join her thesis committee, and I gladly agreed.

For her PhD thesis, Maryam developed a novel approach to decoding neural activity for neural prosthetics based on electrode recordings from the brain regions involved in motion planning and control. Maryam's approach derives from the optimal control theory. The resulting methods are quite different from the accepted approaches to this problem and dramatically outperform the state of the art. Maryam's work opened a new avenue of research in the area of neural decoding for motion planning. I am confident she will become one of the leaders in this field. As a member of her committee, I was blown away by the progress Maryam made on this problem, which included both proposing the new way to analyze the neuronal spike data and demonstrating her methods in live animal models.

**The Stata Center**, Building 32-D470

32 Vassar Street, Cambridge, Massachusetts 02139-4307

PHONE +1.617.253.8005 FAX +1.617.253.4640 WEB csail.mit.edu

Maryam's ability to enter the field, to identify important outstanding problems, and to bring analysis and modeling methods from her discipline to bear on these problems truly impressed me. She was fearless in exploring the new field and yet very thoughtful in her approach to formulating her solution. Serving on Maryam's thesis committee was incredible! I got to see her bridge between the fields of neuroscience and electrical engineering with amazing results. I am also confident Maryam will be good at running a research group and driving it to solve hard open problems in the field. If she could organize two MIT professors to work with her on the methodological aspects of her research, orchestrate experimental validation with her collaborators at Harvard Medical School, and bring all of it all together to demonstrate her solution, building a research group will be easy for her!

I also interacted with Maryam in the framework of a graduate course on probabilistic inference that I co-teach every spring with Maryam's PhD advisor Prof. Greg Wornell. Maryam TAed the course with me twice. She was excellent. She has a talent for explaining complicated things clearly. We always get very good teaching assistants, but Maryam stood out because of her thoughtfulness, her technical depth, and her original contributions to the course material that brought her research into the classroom. I have no doubt she will be great at teaching courses in any program she joins.

To summarize, Maryam is an exceptional young researcher. She is technically deep, has already made significant scientific contributions and will clearly go on to become a leader in her field of research. Her research is highly original and is truly interdisciplinary. She is broad in her research interests. I am confident you will enjoy her as a colleague. I recommend her enthusiastically.

Sincerely,

Polina Golland
Associate Professor
MIT EECS/CSAIL