

Carnegie Mellon

Department of Statistics

232 Baker Hall
Carnegie Mellon University
Pittsburgh, PA 15213-3890
(412) 268-2717
FAX: (412) 268-7828

Christopher R. Genovese

Professor of Statistics
(412) 268-7836
genovese@stat.cmu.edu
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Selection Committee
Google Fellowship

Dear Committee,

I am writing in enthusiastic support of Han Liu's application for a Google Fellowship. He stands out among students I've encountered in my time at Carnegie Mellon and is clearly one the best. He brings more passion and dedication to his work than any student I have known. He diligently absorbs the literatures in Statistics and Machine Learning. And he brings a healthy skepticism, probing questions, and confident initiative to every problem. At the same time, he is whip smart and mathematically savvy. I have little doubt that Han is a future star.

To begin, let me tell you about myself. I am a Professor of Statistics at Carnegie Mellon University. My research focuses on nonparametric inference in complex and high-dimensional problems. I have done work in a variety of application areas, including stellar physics, neuroimaging, and cosmology. These problems involve large data sets, high- (or infinite-) dimensional objects of interest, and computationally intensive statistical procedures. My interest centers on developing methods that produce sharp inferences with a minimum of assumptions and that answer critical scientific questions. These applications also serve as a testbed and generator for a wide range of challenging theoretical problems. My recent theoretical work has focused on nonparametric function estimation, adaptive nonparametric confidence sets, multiple testing, nonlinear inverse problems, and clustering.

I first met Han when he was a student in a class on stochastic processes. His curiosity and hard work showed through immediately. He would come to my office with a long(!) list of questions, all well thought out and many going beyond the material discussed in class based on his outside reading. I have never had a student devote himself so wholly to learning in a class, and I was impressed. Needless to say, he was the top student in the class.

Later, Han came to me seeking a project to work on. Knowing that he already had at least one project in the works, I was hesitant to get him started on something else, but he assured me he could handle it. The problem was a difficult and computationally intensive function estimation problem on the sphere based on a massive data set. Han handled the challenge well and came up with useful insights and techniques. I had another, more

interesting problem, that I thought would be perfect for him, and I encouraged him to try it. The challenge was to estimate galaxy spectra which combine a smooth continuum with a large number of scattered spikes whose location must be specified very precisely. This became Han's Advanced Data Analysis project. His work was outstanding and received high praise from the faculty.

I am working with Han, Larry Wasserman, and Jiashun Jin on a multiple testing problem, developing a method to improve power in constraining the False Discovery Rate. It has been a pleasure working with Han, and he has made a substantial contribution. We are currently writing the paper describing that work.

As a student in Machine Learning and Statistics, Han brings two related but complementary perspectives to bear in his work. He has been an outstanding student in every way, and I am confident that with experience he will develop into one of the top researchers in the field. Han is an excellent candidate for the Google Fellowship. He has my highest recommendation.

Please feel free to contact me if I can provide any additional information.

Sincerely,

Christopher R. Genovese