



# UCLA DEPARTMENT OF STATISTICS

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8130 Math Sciences Bldg.

Box 951554

Los Angeles, CA 90095-1554

Phone: (310) 825-8430

Fax: (310) 206-5658

email: [ywu@stat.ucla.edu](mailto:ywu@stat.ucla.edu)

## Pioneer Research Program Evaluation Form

**Student name:** Qiaosong (Johnson) Zhou

**Evaluator name and full title:** Ying Nian Wu, Professor of Statistics

**College/university and department:** UCLA

**Full educational background of evaluator:** Ph.D. Harvard, 1996.

**Pioneer Program title and title of student's research project topic:** Deep Learning, THE APPLIED STUDY OF THE OVERPARAMETERIZED NEURAL NETWORKS

**Please briefly explain the nature and requirements of the research project and your interaction with the student:** This project is to investigate the over-parametrization of deep neural networks (DNN). One explanation for the power of DNN is that it is over-parameterized, in the sense that the number of parameters can be much greater than the number of observations. Johnson's project is to understand the advantage of over-parametrization in terms of computation and generalization.

I discussed with Johnson about this project during our weekly meetings. We first went through some relevant papers on this topic. Johnson gained a good understanding of this topic quickly. He then started to write Python code to do experiments. He quickly obtained meaningful results. During our meeting, he shared his screen with me and showed me how he ran his code.

He wrote up a good paper on this topic. The paper is very insightful and thorough. His work deserved an A+ grade.

**Program grade**   A+  

Please rate the student in the following areas as compared to undergraduate students at your institution:

	Excellent	Good	Average	Below Average	Poor
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Ability to form original ideas and concepts	X				
Ability to communicate thoughts in an effective and articulate manner	X				
Ability to synthesize and organize information from disparate sources	X				
Level of student's curiosity, aptitude and industriousness	X				

**How would you rate this student's potential for undergraduate level academic work at a top college/university?**

One of the best I have encountered, top 5% <u>X</u>	Excellent, top 10% <u>    </u>
Very Good, top 25% <u>    </u>	Good, top 50% <u>    </u>
Below Average <u>    </u>	

**Describe some of the student's strengths:**

Johnson is a brilliant student with exceptionally strong backgrounds in mathematics and computer science. He is a very good programmer. He works very hard.

**Describe some areas in which the student can improve:**

Not aware of.

**While the second half of the research work was one-to-one with the professor, the first half involved a small research cohort of 2-4 students. Describe the contribution that the student made to research group discussion and learning:**

Johnson asked good questions and made insightful comments during our discussions. He was also willing to help his fellow students.

**Would you recommend this student to a college admissions officer at a top college or university? Why or why not?**

Yes. Johnson is a very good student. He is brilliant and hard working. He is responsible and reliable. He has a good taste about research.



Evaluator name (signed): \_\_\_\_\_

Evaluator name (printed): Ying Nian Wu

Date: Oct 14 2018

Evaluator contact details (email and phone): ywu@stat.ucla.edu