Pioneer Research Program Evaluation Form

Student information:

Student name: First/Given name: **Sravani**   Last/Family name: **Nanduri**

Student's research concentration at Pioneer: Neural Networks for Vision

Title of student's research paper: Using Text Based Convolutional Neural Networks to Predict and Understand Genetic Population Structure

Grading and academic oversight section:

Program grade conferred by professor: A
Full grading rubric approved by Pioneer Academics and Oberlin College

The Pioneer Research Program's college accreditation and academic oversight are conducted collaboratively with Oberlin College:

Listing on Common Application:	"Summer Program, Credit Awarded Directly by Oberlin College"
Course Title on Coalition Application:	"099" "Pioneer Research Course"
College Course ID on UC Application:	"INST 099" "Pioneer Research Course"

Comprehensive evaluation section:

Evaluator name:	Avani Wildani	**Full title:**	Assistant Professor
College/University:	Emory University	**Department:**	Computer Science

Full educational background of evaluator: B.S. 2003, Harvey Mudd College, Ph.D. 2013 UC Santa Cruz

Please briefly explain the nature and requirements of the research paper and your interaction with the student:

Sravani met for five session meetings with the other five students in the research group and me.

During that time they did small projects, attended lectures, and discussed the intersection of artificial neural networks and biological networks. At the last session, students shared their projects with each other.

Each student came to the session with a 1-page summary of a research paper that they had read as the last week's assignment, along with 3 questions or extensions for the paper. There were several small computational exercises during and between sections. Despite missing the first week of class, Sravani caught up immensely fast and was an active and able contributor to our discussions, acquiring knowledge as we progressed. They developed an interest in how neural networks could be used in image analysis to improve health outcomes.

When we began our five one-on-one meetings, Sravani developed a thesis question that allowed them to pursue their interests in writing a final research paper for the program. Sravani had an existing collaboration with a lab analyzing hierarchical trees for characterizing population structures. She built on this collaboration to define a project that used computer vision to characterize the evolution of H3H2 influenza to better understand how the disease changes. Due to her existing collaboration, Sravani had access to lab data and early models.

Sravani consistently impressed me with her scientific maturity, resourcefulness, and ability to take feedback. It is difficult to believe that she is not a graduate student. It required a great deal of effort given the small number of relevant samples, but Sravani was able to find all needed information and also research a good deal of relevant literature that allowed Sravani to construct a strong argument for her conclusion.

Sravani worked on the paper between our meetings, and I read and commented on the results, including those delivered by email between our meetings.

Please rate the student in the following areas:

	Excellent	Good	Average	Below Average	Poor
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				

Based on the student's performance through Pioneer, 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% _X_	Excellent, top 10%_
Very Good, top 25%___	Good, top 50%___
Below Average____	

Describe some of the student's strengths:

Sravani has a preternatural idea of how to take a research project from insight to initial data. Her paper was comparable to a rotation project for a 1st year graduate student at Emory. Sravani has superb research skills and the ability to weave together diverse studies and works into a coherent and persuasive argument. She writes and speaks with ease and excellence. Sravani has the tools, creativity, and persistence to excel at the best universities and colleges.

Describe some areas in which the student can improve:

As with any student, Sravani's writing and data visualization could improve. But that should come with time and increased numbers of research papers. I believe that she will be a strong contributor to group discussions as her confidence grows in accord with her successes.

While the second half of the research work was one-to-one with the professor, the first half involved a small research cohort of 3-6 students. Describe the contribution that the student made to the research group discussion and learning:

Sravani was a refreshingly free and easy contributor, not guarded as many students tend to be. She was insightful, exuberant, and willing to make mistakes, as I encourage the group to do, and thereby profit by learning from them. But far more important than her mistakes were her insights and understanding. Sravani understands the nature of an argument and how to reason critically and well. She is a very creative and independent thinker who is frequently willing to speak her mind. Sravani has the superb ability to see an issue from multiple perspectives and thereby see beyond what is too often taken for granted yet mistaken.

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

 Definitely. Yes. Sravani is the equal of my best first-year students at Emory, and comparable in research creativity and maturity to early career graduate students. Based on my interactions with her and her written work, I believe that she can excel at the best colleges and universities. She has the tools, the skill, and the disposition to excel.

Evaluator name (signed): *Avani Wildani*

Evaluator name (printed): Avani Wildani

Date: 10/18/2020

Evaluator contact details (email and phone): avani@mathcs.emory.edu , please e-mail for voice channel