

Pioneer Research Program Evaluation Form

Scholar Information

Scholar's Full Name:	Keshav Mohta
Scholar's Research Concentration:	Mathematical Algorithms to Denoise Modern Image Processing
Title of Scholar's Research Paper:	Denosing grayscale images using Total Variation Regularization

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 & Full Title:	Maryam Yashtini Assistant Professor of Mathematics
College/University & Department:	Georgetown University
Full Educational Background of Evaluator:	PhD - Applied Mathematics, University of Florida M.S. - Industrial Engineering, University of Florida M.S. - Applied Mathematics, University of Florida

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

This research focuses on image denoising models using total variation regularization. During the group meetings, students learned about multivariable functions, gradients, hessian, gradient descent methods, finite element techniques and fundamentals on image processing. In the individual meetings, Keshav implemented a gradient descent method to denoise several images, using Matlab Programming Language, which I taught in the course. In his paper, he investigated the effect of various parameters in the model and in the algorithm, and found their best values. In addition, he plotted the objective function values and the relative error of images versus iteration numbers and showed them decreasing. Keshav took his own picture with his phone, added gaussian noise, and removed the noise using the numerical gradient descent method he learned.

Keshav was always ready to do more research, and he was the first to answer questions. Based on my interaction with him, I believe Keshav has the maturity necessary for a successful academic career.

Please rate the scholar 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 scholar's curiosity, aptitude, and industriousness	X				

Based on the scholar's performance through Pioneer, how would you rate this scholar's potential for undergraduate-level academic work at a top college/university, relative to other undergraduate students whose academic work you have mentored?

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 scholar's strengths:

Keshav is a fast learner, has a good attitude, and is motivated and passionate about learning and doing research. He actively participated in the class and has a strong work ethic. Based on his paper, it is clear that he is very detail oriented when it comes to writing academic research papers.

Describe some areas in which the scholar can improve:

I believe Keshav is ready for college. All he needs now is to further expand his knowledge. I do not see any weaknesses.

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 scholars. Describe the contribution that the scholar made to the research group discussion and learning:

Keshav is friendly, fit well into his study group, and interacted well with his peers. I believe that he will fit very well into any research, design, or laboratory group, or internship cohort that he joins.

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

Yes. Definitely. He has many qualities that make him desirable for top colleges.

Evaluator's Signature:	<i>Maryam Yashtini</i>
Evaluator's Printed Name:	Maryam Yashtini
Date of Evaluation:	10/3/2023
Evaluator's email & phone:	my496@georgetown.edu

Pioneer Academics affirms that the scholar whose research paper is attached has followed Pioneer Academics' protocols for developing original research and that their paper has met Pioneer Academics' standards for authenticity. The grading and evaluation have met the standards collaboratively defined by Pioneer Academics and Oberlin College & Conservatory. If there are any questions regarding the work's academic integrity, please contact us at academic.integrity@pioneeracademics.com or by calling (855) 572-8863. We will conduct an immediate review and respond to your questions promptly.