

Pioneer Research Institute Evaluation Form

Scholar Information

Scholar's Full Name:	Li, Kaixuan (Elon)
Scholar's Research Concentration:	Computers that See: Exploring Computer Vision
Title of Scholar's Research Paper:	ACT vs. SmoIVLA: A Controlled Comparison of Task Success, Training Time, and Generalization

Grading and Academic Oversight Section

Grade conferred by professor: A+

**Full grading rubric approved by Pioneer Academics and Oberlin College*

The Pioneer Research Institute'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:	Susan Fox, DeWitt Wallace Professor of Computer Science
College/University & Department:	Macalester College, Dept. of Mathematics, Statistics, and Computer Science
Full Educational Background of Evaluator:	PhD, Computer Science, Indiana University (1995) MS, Computer Science, Indiana University (1993) AB, Computer Science, Oberlin College (1990)

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

In the first portion of this program, scholars met for five 90-minute group sessions. During these sessions they explored a broad range of image processing and computer vision techniques, including transformations, filters, and simple detection and tracking, as well as using and training machine learning models to perform object detection and image classification. Scholars applied these techniques to a variety of tasks including motion tracking, face detection, and video filters, and learned how to assess and evaluate how well different techniques worked for different tasks.

During the second portion of the program, each scholar met individually with me for five 60-minute sessions. Each scholar selected an individual project topic, developed a research problem statement, and designed and implemented a solution to that problem. They investigate current research in the area through reading relevant research articles. Each scholar wrote a formal research paper that incorporated their background research, and described their research problem, their solution. They analyzed the quality and success of their solution.

At the last group sessions, scholars each present their current ideas for projects, and get feedback from peers and from me. Then we refine their topic and work through both coding and writing together during the individual sessions.

Elon was outgoing and engaged throughout both group and individual sessions. He had already developed a clear plan for his research project by the time we met for our first individual session. He had developed a timeline for what he needed to achieve each week, and he followed through on that timeline! While he had a clear plan and ideas, Elon was always willing to hear my suggestions, and frequently added new items to his timeline in response.

Elon's project compared two deep learning methods that take in images from a robot's cameras, and produce robot movements in response. The goal is for the robot to learn to imitate human-generated movements, based solely on the images that go along with them. Elon has a small robot arm, which can be tele-operated by a human, or can operate autonomously. Elon created a small dataset for the robot, tele-operating the robot to pick up a small object from a grid in front of it, and deposit it into a box nearby. he then trained two deep learning models, ACT and SmoIVLA, to associate the camera images with movements of the robots motors. Elon then completed a set of experiments where the robot was given both familiar and unfamiliar tasks (moving a new kind of object, moving from a new square on its grid, operating under different lighting conditions) and evaluated how well the models performed on familiar and unfamiliar tasks.

Elon came well-prepared for our individual sessions. He would report on his progress completing the next steps in his timeline, and would demonstrate his work and ask questions. Typically, he had accomplished everything required for that week, and often he did not need much help from me. We had time to spend going over his first drafts of writing, and discussing robotics and AI in general.

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 throughout 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:

Elon has a great deal of experience with mathematics and programming, as well as robotics and machine learning. He was experienced in working with the robot arm, and had attempted to train similar models on the robot in the past. Thus he was well-prepared to undertake a complex and ambitious project. Elon approached every session with enthusiasm and a positive attitude: usually he had completed all the items on his checklist for that week, but even when he had hit an obstacle he remained upbeat and eager to find the solution. He demonstrated a strong interest in the work he peers were doing as well. Elon has broad curiosity about AI and the world of research: we often took some time together to talk broadly beyond the limits of our program's topics. My interactions with Elon were similar to those I have with my undergraduate research students.

Describe some areas in which the scholar can improve:

I don't have any significant improvements to recommend, so what I will list here are small issues, not major ones.

Because Elon is both outgoing and enthusiastic, he did at times dominate our group sessions. He could work on holding back a bit to give others the time to volunteer their own ideas, though I do recognize that Elon did hold back at times, and some of his peers were very hesitant to volunteer to show their work.

At times, Elon would lose sight of what his audience might know, both peers, the audience for his paper, and even me. I had to rein him in once or twice and ask him to go back and explain things to me better (for examples, I have not worked with his kind of robot arm, and I have not worked with the particular models he was using in the past, either). This kind of oversight can be a problem when talking about, presenting, or writing about highly technical work. I encourage Elon to pause now and then to make sure he is accurately assessing his audience's knowledge.

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:

Our group sessions involved some discussions, students presenting their solutions to assigned work, and time for students to work on assigned activities. It was very important to come to sessions prepared by having looked at materials, and completed the assigned activity for that day.

Elon was an enthusiastic contributor to our group sessions. He always asked questions about the topics and the assigned work, and he was quick to volunteer to show his solutions to assigned activities. Even in small group work time, Elon did at times collaborate with his peers to troubleshoot the activity. Elon was also a full participant in the peer review process, which took place during the project component of the program. The peer review process involved two meetings with a peer, outside of our regularly scheduled ones, to discuss their projects and provide feedback on their papers.

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

I would strongly recommend Elon for admission to any highly-selective college or university. Elon is intelligent, already experienced and skilled in mathematics, machine learning, and computer science. He understands the research process, and can work independently or with my supervision. He can read and understand complex technical research literature, and can turn those ideas into working code and detailed experiments that test the methods on a practical task. Elon writes clearly and with a deep understanding of the methods and results. Besides all of this, Elon was a joy to work with. His positive attitude, enthusiasm, and tremendous work ethic made our meetings together both productive and fun. Elon is already functioning at a level I see most often in my junior and senior students. He will be an asset to any college or university.

Evaluator's Signature:	
Evaluator's Printed Name:	Susan Fox
Date of Evaluation:	September 15, 2026
Evaluator's Email:	fox@macalester.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.