

# Issa Nesnas

## Opportunity to Innovate

Earlier this year, the US National Aeronautics and Space Administration (NASA) landed its fifth rover to explore the red planet. This time, the one-metric-ton rover, named Perseverance, carried a small helicopter, which has already completed five flights in the thin atmosphere of Mars. Such historical endeavors are born from the contributions of hundreds of the greatest scientific and engineering minds from around the globe.

Dr. Issa Nesnas, whose group has led the development of the autonomous surface navigation for this mission and has contributed to the Mars helicopter, remarks, “I am very proud of the accomplishments of my group members and all those who persevered, in spite of the hardships of a COVID year, to deliver the most sophisticated rover to date and the first interplanetary helicopter.” Issa, a Jerusalem-born Palestinian American and a graduate of Jerusalem’s Frères High School, has worked at NASA’s Jet Propulsion Laboratory (JPL) for the past 24 years. Inspired by the first rover mission in 1997, he left his Silicon Valley job to join JPL and has since contributed to the three subsequent Mars rover missions. He led robotics research and supervised the Robotics Software Systems Group for eight years and the Robotics Mobility Group for another five. On the most recent mission, Issa played a role in the formulation and oversight of the next generation Mars surface navigation to increase the rover’s speed and enhance its ability to handle difficult terrain.

Issa Nesnas left with his teammates preparing to board the NASA C-9 airplane.



Issa is a visionary who tries to look beyond the current state of affairs. He has pioneered the development of novel robots to access difficult terrain, such as the Axel rovers, which enabled JPL to propose a new lunar mission concept. Among the most memorable moments, in collaboration with Stanford, was a flight experiment to test a hopping robot for asteroids and comets. Issa was recognized with JPL’s highest award for an individual scientific or technical accomplishment and by the Arab American Association of Engineers and Architects for his professional achievements.

The journey to get there, however, was not easy. Since his early childhood, Issa has had big dreams and ambitions. “I was very fortunate as a child to have had the freedom to explore my interests with full support from my family,” he adds. Tinkering with chemistry, computers, and robots at a young age allowed him to nurture natural curiosities about science and hone problem-solving skills. However, he also faced the same struggles as many Palestinian youth. At times, the future looked very bleak, with constant school closures and concern about securing a college-level education in the field he loves. “Hardships drive a

determined mind and a passionate soul to be even more creative and resourceful, especially when little is available. Sometimes, this could be a blessing in disguise,” Issa muses. He attributes his success not only to a strong work ethic but also to the persistent support of his family throughout and a healthy dose of luck.

“Nowadays, technology makes information more readily accessible, connects people across the world, allows more voices to be heard, and provides creative minds more opportunities to innovate. Let’s try to create opportunities for the young generation to blossom through fair competition.” Issa hopes that people around the world will step up to rectify grave injustices in order to allow every child an opportunity and a fair shot.

*Issa A.D. Nesnas holds a BE degree in electrical engineering from Manhattan College in New York and an MS and PhD in mechanical engineering with a specialization in robotics from the University of Notre Dame in Indiana, USA. He lives in San Marino, California, with his wife, Suhair, and their three children.*

Issa, in the blue shirt and brown hat, with his Axel team following a field test.

