## The Eagle Has Landed

Tom Coughlin, IEEE-USA President

On July 20, 1969 at about 11 PM ET the Eagle landing module from the Apollo 11 spacecraft landed on the moon. Neil Armstrong and Edwin (Buzz) Aldrin were on that lander, while Michael Collins, the command module pilot, orbited the moon. Buzz Aldrin was the lunar module pilot and Neil Armstrong was the first man to set foot on the moon. An estimated 650 million people watched Armstrong as he stepped onto the surface of the mon and said he "took one small step for (a) man, one giant leap for mankind." Mankind had started its first direct exploration of another body in space.



Technologists from many disciplines were involved in the Apollo and earlier Gemini and Mercury US space programs. Many IEEE members contributed to the US space program and the lunar landing. IEEE has a history resource page for primary source material related to the commemoration of human space travel at <a href="https://ethw.org/Human\_Space\_Travel\_Primary\_Sources">https://ethw.org/Human\_Space\_Travel\_Primary\_Sources</a>.

Historical resources on the resource page include oral histories, including one by astronaut James Lovell, first hand written histories and a list of IEEE space milestones, including the Mercury Spacecraft MA-6, Apollo Guidance Computer, Electronic technology for space rocket launches and the Grumman Lunar Module. IEEE is looking for additional materials related to the US space program. In August 2019 IEEE will celebrate a milestone for the lunar laser ranging experiment, that measured the distance between the earth and the moon using a laser from Southern California that reflected off a mirror left by the Apollo 11 astronauts on the moon to the Lick Observatory in Northern California.

At the IEEE Honors Ceremony in San Diego Katherine G. Johnson was awarded the 2019 President's Award. She was a black mathematician who worked for NASA and its predecessor organizations from 1953 to 1986, calculating trajectories, launch windows and navigation charts for astronauts from Alan Shepard's 1961 flight through the early shuttle missions. She also worked on plans for a mission to Mars. The US space program depended upon the work men and women and people from all nationalities and backgrounds. Outer space belongs to everyone.



While NASA put the first people on the moon, new space pioneers are enabling the industrialization of space and the permanent settlement of outer space by humans, from diverse backgrounds and aided by modern technology. Private companies are building

spacecraft that will take mankind into outer space to gather resources as well as settle and raise families. NASA has contracted with these companies for space transportation systems, while planning the return of Astronauts to the Moon by 2024.

IEEE-USA celebrates the 50<sup>th</sup> anniversary of the landing on the moon and the people who made the US space program possible. We will be engaged various ways to recognize the anniversary of the lunar landing and we will be involved in relevant IEEE milestones. We also recognize the modern United States space program, driven by private companies, as well as NASA, to expand mankind's presence in space.

In celebrating the tremendous achievements of the Apollo program, we also recognize the contributions of the thousands of scientists and engineers, including many IEEE members, whose unprecedented efforts opened the door to manned exploration of space. The spirit of Apollo lives on, and IEEE-USA is working to support a vibrant and innovative U.S. space program that develops and employs new technology to meet the new challenges in space, such as exploiting the resources of asteroids and building a lunar gateway to Mars, while enhancing and improving our lives here on Planet Earth.

The future belongs to those with big dreams, who are willing to spend the time, energy and finances to turn those dreams into reality!

