Margaret, mind behind moon landing, no more

MATHURES PAUL

Calcutta: On July 20, 1969, an event that changed the world forever — the moon landing — almost did not happen.

As the Apollo lunar module Eagle separated from the command module and began its gradual descent towards the moon's surface, the unexpected happened.

Two alarms, numbered 1201 and 1202, went off, and mission control had to make a go/no-go decision on the landing. Apollo 11 commander Neil Armstrong wanted to know what was happening. During a pre-mission simulation, Nasa controllers had aborted the descent when faced with a similar alert. This time, what could have been a serious system failure was averted: the software restarted itself and lightened its workload by performing only high-priority tasks.

"It quickly became clear that the software was not only informing everyone that there was a hardware-related problem, but that the software was compensating for it. With only minutes to spare, the decision was made to go for the landing. The rest is history," Margaret Hamilton, who led the team behind that software, told MIT News in 2009.



Margaret Hamilton stands next to a stack of programme listings from the Apollo Guidance Computer in a photograph taken in 1969

The influential computer scientist died on September 30, the Massachusetts Institute of Technology (MIT) announced on Wednesday. She was 90.

Born in Indiana in 1936, Hamilton joined MIT at the age of 23 or 24 as a software developer, at a time when programming was still a nascent field. At first, the job was a way to support her first husband, James Cox Hamilton, while he studied law. But a year later, MIT was asked to write the software for the Apollo guidance and navigation system, and she grabbed the opportunity.

As a spacecraft programmer, she broke new ground. She would bring her four-year-old daughter, Lauren, to the lab on weekends and evenings, and the child slept in the office while Hamilton programmed.

At the MIT Instrumentation Laboratory, Hamilton and her colleagues came up with core ideas in computer programming. She led the division that developed the guidance, navigation and control software for the Apollo programme, which ran from 1961 to 1972, and she is credited with popularising the term "software engineering".

"When I first got into it, nobody knew what it was that we were doing. It was like the Wild West. There was no course in it. They didn't teach it," Hamilton told Wired in 2016.

In recognition of her pioneering work, Nasa gave her a special award in 2003 for her role in developing the Apollo software. In 2016, then US president Barack Obama awarded her the Presidential Medal of Freedom, saying that "her example speaks to the American spirit of discovery that exists in every little girl and little boy who know that somehow to look beyond the heavens is to look deep within ourselves".