

A photograph of two women sitting at a table in a cafe, looking at a laptop. The woman on the left is pointing at the screen, and the woman on the right is smiling. There is a Starbucks cup on the table. The background is a blurred cafe interior.

WOMEN IN SMART INDUSTRY

Ada Lovelace: A Pioneer Woman in Smart Industry

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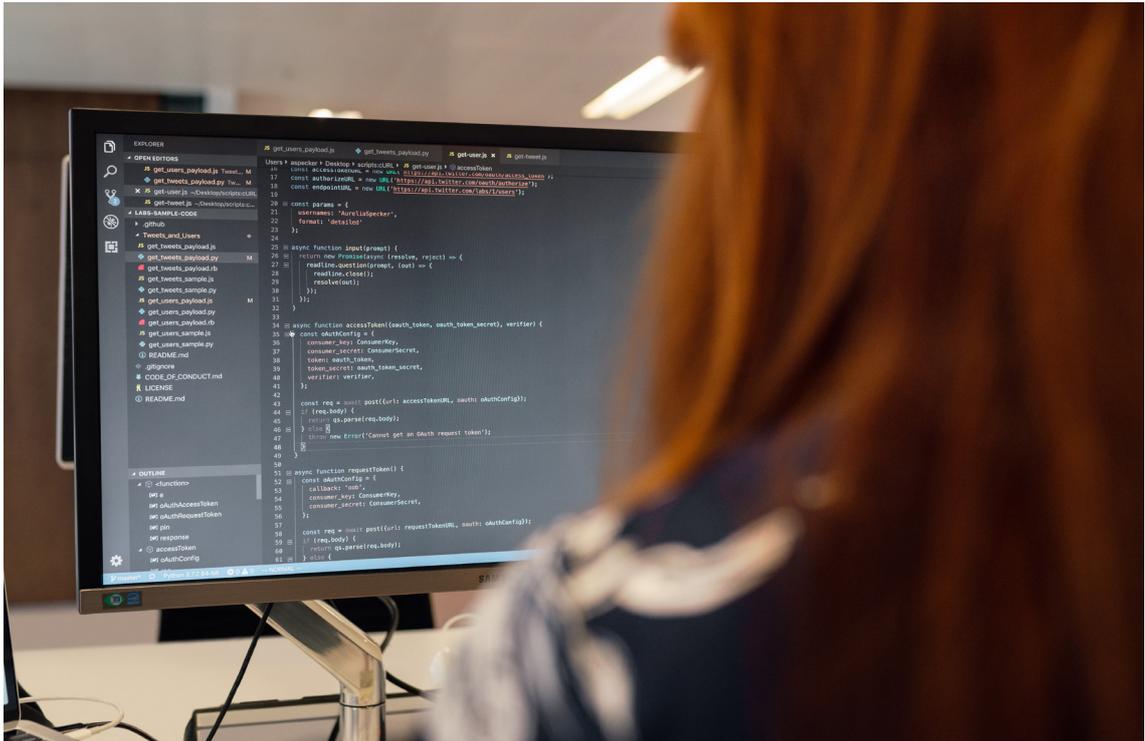
Ada Lovelace was a pioneer for women working within the field of technology and computing. Commemorating her impact as the world's first-ever computer programmer and celebrating her significant impact to a commitment central to the Modis mission, we look back at one of the key individuals in the trend towards diversity in technology.

Born in London in 1815, Augusta Ada Byron was immersed in the world of mathematics and science from the age of four. Her mother – Annabella Byron – insisted on ensuring that her daughter tended towards logic and reasoning. Unlike the traits of her idealist and whimsical father – the renowned English poet Lord Byron.

At age 12, like many imaginative children, Ada professed a wish to fly. But unlike her peers, she pursued her ambition conceptually and methodically. She researched possible materials for the construction of wings and examined the anatomy of birds to determine the optimal portions between wingspan and



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body mass.

By 17, Ada's aptitude for mathematics started to become widely known in London academic circles. Soon, she would meet her future mentor Charles Babbage, a renowned mathematician whose mechanical calculating machines would later see him dubbed "the father of the computer".

The world's first algorithm

Ada became fascinated by Babbage's "Difference Machine", an incomplete prototype that could make accurate calculations by turning numbered wheels. This would spark a long-standing correspondence between the two.

When Babbage began working on his new Analytical Engine – a successor to his Difference Machine – he enlisted the help of his protégé as an interpreter. In 1842, Ada, now Countess of Lovelace, was asked to translate a study of the Analytical Engine by Italian mathematician Luigi Federico Menabrea.

In the process, she added her own notes and descriptions, effectively tripling the length of the original paper. This included a detailed and clear description of how Babbage's machine would work and a code for programming the machine using punched cards to calculate a sequence of so-called Bernoulli numbers.

Reclaiming a legacy



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Note G – as the code was known – was essentially an algorithm for programming a machine to undertake a set of actions. It was the first of its kind, making Lovelace the world’s first-ever computer programmer.

The significance of Note G is that it was the first attempt to separate what Lovelace termed “the science of operations” from the science of mathematics and established it as its own discipline. As James Essinger argues in *A Female Genius*, his biography of Lovelace, the “science of operations” is effectively what we today call computing.

Lovelace was also a visionary who predicted the huge potential computing offered. Babbage and his peers saw the Analytical Engine as simply a machine for mathematical calculations. But Lovelace believed it could also be used for sound and images, as long they could be translated into a format that the machine could read.

An impressive legacy

In 1852, Lovelace died from uterine cancer, just 36 years old. For the following century, her work and contribution went largely unacknowledged. However, this started to change in the 1950s, as the proliferation of computers generated renewed interest in the field’s history and early development.

Today, there are countless events, awards, and other commemorative tributes to Ada Lovelace. Still, the most fitting is courtesy of the US Department of Defense. In the 1970s, when it developed a single software language to replace all the different ones in use, it decided to call it “Ada”. It is still the language of choice for safety-critical IT systems such as the military, aviation, health care, space exploration, transportation, and banking.

Discover more about Modis’ commitment to attracting and [developing diverse talent](#) and stay tuned to hear more about Modis’ newly launched campaign “Women in Smart Industry”.



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