The Original Tech Pioneers

Women in Early Computing

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Introduction

From the earliest days of computing to today's digital age, women have played a vital - though often overlooked - role in shaping the world of technology. In recent years, the industry has been dominated by men. It's important to highlight the groundbreaking contributions of women in computer history, celebrating the innovators, problem-solvers, and visionaries who helped build the foundations of modern computing, so woman today can feel empowered to enter the world of technology.

The Gender Gap

- Women earn only about 21% of computer science degrees
- In major tech companies, women make up around 25% of the tech workforce.
- Female representation in computing peaked in the 1980s but has since declined.
- Barriers include lack of visible role models, systemic gender bias, and a male-dominated workplace culture.

(National Center for Women & Information Technology, 2023).

How did it get this way?

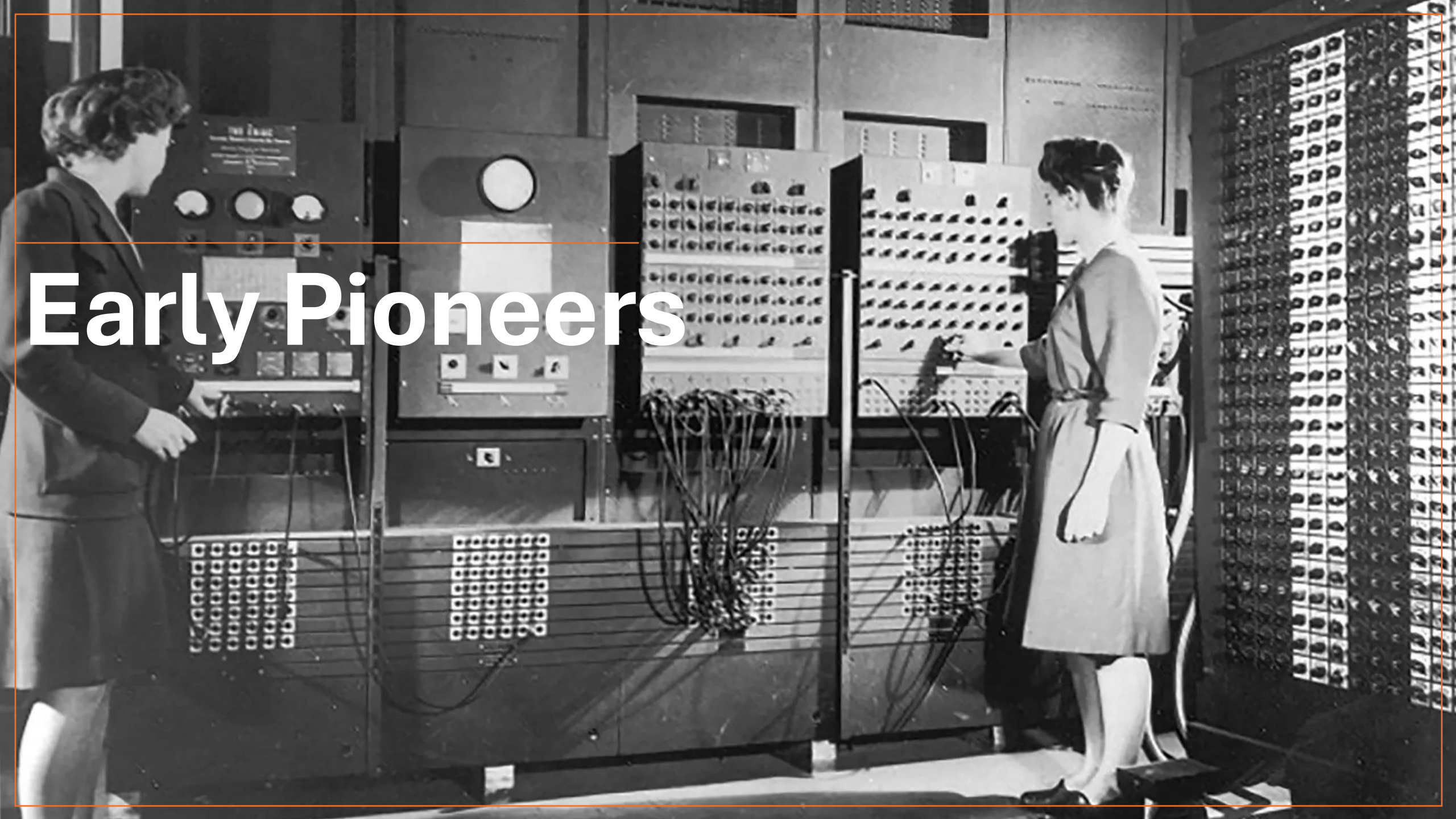
- As computing began to be seen as more prestigious and lucrative, its perception changed.
- Men entered the field in larger numbers as it became more highly paid and respected.
- The narrative shifted from programming being clerical to being technical, requiring innate genius - an image that biased hiring toward men.
- Popular media such as films, ads, and magazines increasingly portrayed the “computer geek” as male.

How did it get this way?

- In the 1980s, personal computers were marketed as toys or tools for boys. This created a gender gap in early exposure to computers.
- Boys were more likely than girls to use computers at home and get experience.
- By the time they entered college, men often had a head start, reinforcing stereotypes of male competence.
- Computer science departments became more male-dominated, and the culture could be unwelcoming to women.
- Hiring practices in tech often favored men through networking, assumptions about leadership, or bias in evaluating potential.
- Harassment, lack of mentorship, and limited role models also played roles in driving women out.

Why is this important?

- Women's work in computing is often overlooked and underrepresented.
- Recognizing these women's contributions brings balance to the historical record and inspires future generations.
- Diverse teams can help to foster creativity and better problem-solving.
- Having strong female tech leaders to look up to encourages more young women to pursue STEM careers.



Early Pioneers

Ada Lovelace (1815–1852)

Ada Lovelace was an English mathematician and writer who worked with Charles Babbage on his proposed mechanical general-purpose computer, the Analytical Engine. She is recognized as the first to realize that the machine could perform a sequence of operations, writing the first algorithm intended for machine processing.

Grace Hopper (1906–1992)

Grace Hopper was a U.S. Navy rear admiral and computer scientist who developed the first compiler for a computer programming language and was instrumental in the development of COBOL, one of the earliest high-level programming languages. Known as "Amazing Grace," she was a pioneer of machine-independent programming.

The ENIAC Women (1940s)

Also known as the ENIAC 6: Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Wescoff, Fran Bilas, and Ruth Lichterman were the original programmers of the ENIAC, the first general-purpose electronic digital computer. They developed complex programs using machine-level coding techniques without the benefit of programming languages or documentation.

Mid-20th Century

Katherine Johnson (1918–2020)

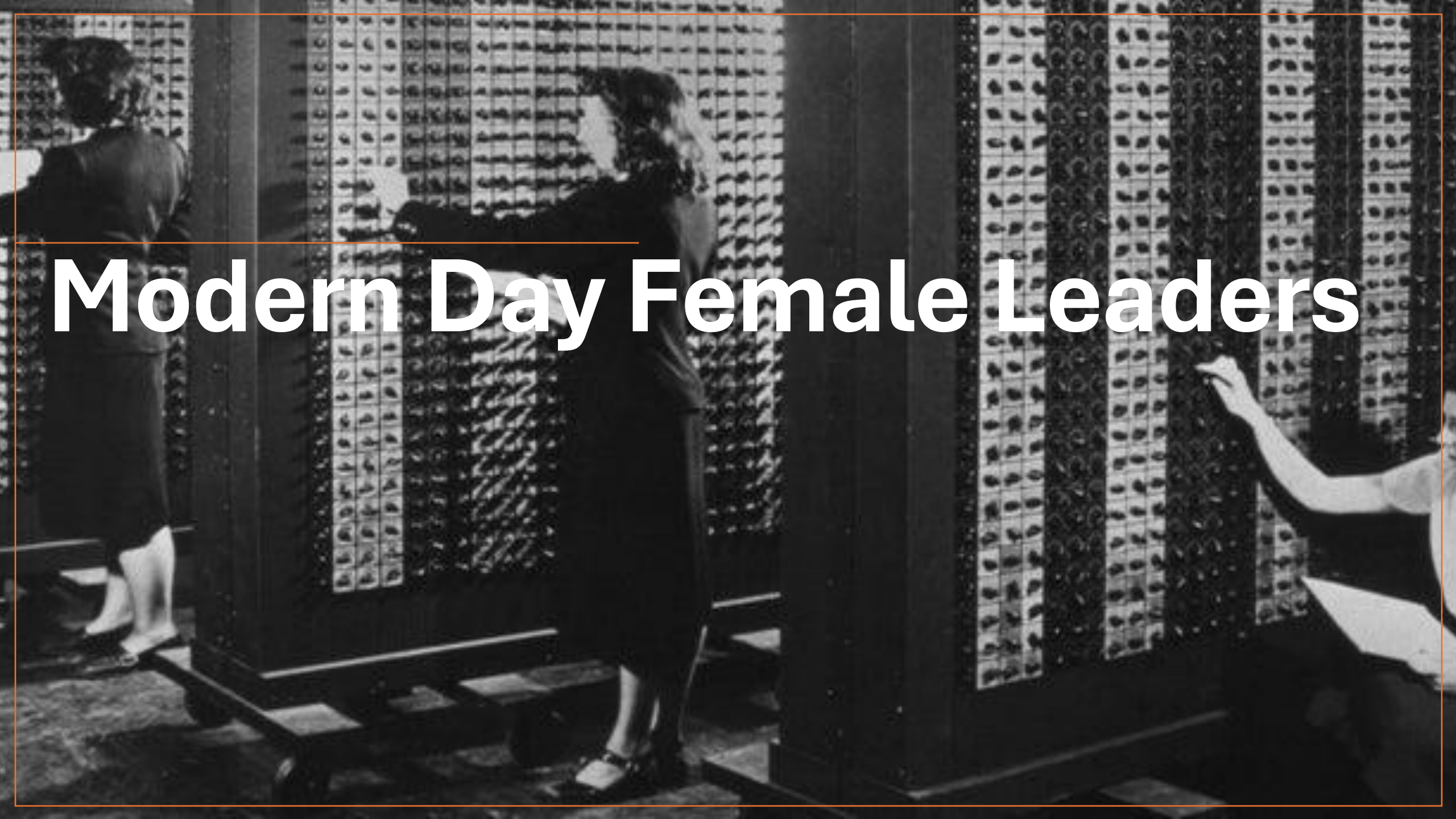
Katherine Johnsons was a prominent African-American mathematician whose calculations of orbital mechanics were critical to the success of NASA's crewed spaceflights. She played a key role in the trajectories, launch windows, and emergency return paths for Project Mercury and Apollo 11. She was awarded the Presidential Medal of Freedom in 2015.

Radia Perlman (born 1951)

Known as the "Mother of the Internet," she invented the spanning-tree protocol (STP), which is fundamental to the operation of network bridges. Her innovations greatly influenced the design of network protocols and the structure of the modern internet.

Margaret Hamilton (born 1936)

Director of the Software Engineering Division at MIT Instrumentation Laboratory, where she developed the onboard software for NASA’s Apollo space program. She coined the term "software engineering" and played a crucial role in ensuring the success of the moon landing.



Modern Day Female Leaders

Shafi Goldwasser (born 1958)

Shafi Goldwasser is a professor and cryptographer who co-invented zero-knowledge proofs, a major breakthrough in cryptography. She has received the Turing Award and significantly shaped modern cryptographic protocols.

Fei-Fei Li (born 1976)

A computer scientist and AI expert known for her work in computer vision. She founded ImageNet, a large visual database that helped advance deep learning research. She is also a vocal advocate for ethical AI and diversity in technology.

Kimberly Bryant (born 1967)

Kimberly Bryant is an electrical engineer who founded Black Girls Code, an organization dedicated to introducing girls of color to technology and computer science through mentorship and education.

Progress and Initiatives

- Organizations like Girls Who Code and Black Girls Code work to close the gender gap by providing coding education and support networks.
- University outreach and tech company diversity initiatives are helping to increase representation.
- There is growing advocacy for inclusion and accountability in the tech industry.

Conclusion

- Women have played foundational roles in computing history, from programming the first computers to advancing artificial intelligence.
- Despite ongoing challenges, progress is being made through awareness, education, and advocacy.
- Supporting women in tech today ensures a stronger, more innovative tomorrow.

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