# WOMEN IN MACHINE LEARNING AND DATA SCIENCE – INAUGURATION OF AMARAVATI CHAPTER AT SRM AP

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**Computer Basics: Breaking the Glass Ceiling in Technology**

Women's rights have come a long way in the last century or so. Women now have the right to vote, join the army or other armed services, and hold public office — among other things. However, there is still a very long way to go before gender equality exists and the pace in slower in some arenas than in others.

The Tech sector has, unfortunately, not been a beacon of hope for women's equality. Since the early days of computing, women have been largely ignored for their important contributions, despite the fact that they were the brains behind some major operations. Take the first computer, for example. A team of six American women programmed the first electronic computer — the pioneering Electrical Numerical Integrator and Computer (ENIAC) — during WWII but weren't given credit for their work.

Not only were they not recognized, they were later even identified in photos as "refrigerator ladies," models used to make products appear more alluring.

Their ground-breaking work went unrecognized for years. These women didn't have the godlike allure about them that Steve Wozniak or Steve Jobs had. No one knew of their contribution.

A couple of decades later in the U.S., one of the first space explorations –the launching of astronaut John Glenn into orbit captivated not only the U.S. but the entire world. What the world did not know was that the mission would not have been possible without the work of three brilliant African-American women at NASA. Everyone knew the name of the astronaut and the voices of the male announcers who narrated the launch, but no one heard about the women who helped restore the nation's confidence in the space program through their mathematical genius.

Finally, though some people know of Ada Lovelace, the English woman who was one of, if not THE first computer programmer, she certainly does not have the name recognition of Bill Gates or even Mark Zuckerberg.

The stories of the women and their glorious scientific achievements, only came to notice recently. During all of the years that the knowledge of their talents remained concealed, women were still working on other basics like legal rights to protect them in the workplace.

Today women continue to be passed over at the top. Only 5 percent of leadership positions in the tech sector are held by women; they make up only 7 percent of partners at the top 100 venture capital firms. And their growth is delayed: More than 30 percent of women over the age of 35 are still in junior positions. In fact, women are far more likely to be in junior positions than men — regardless of age.

Here's what today's influential women in tech have in common—an understanding of what it takes to make a crack in the glass ceiling—beginning with a psychological shift in how we view ourselves and how we expect others to view us.

Several successful women in business have noted publicly that other women can be held back by their own self-doubt, as it is not at all uncommon for women to experience **imposter syndrome** at a disproportionate rate than men. Catherine Chan, CEO of FitIn LTD says "That fact holds us back hugely when we're struggling to have our voices heard in a room full of the opposite sex," noted "My biggest wish would be for women to get over this idea of being less than an authority in the arena in which they are experts."

Reshma Saujani, New York Lawyer, politician and founder/CEO, Girls Who Code remarks "Girls are raised to be perfect, boys are raised to be brave. Because of this we forget how to speak up for ourselves.

Bravery is a muscle you gotta keep exercising," Saujani declared at a 2016 TED Talk. The bravery deficit, she believes, is the reason why women are underrepresented in STEM. Saujani, an Indian American women started Girls Who Code, a non-profit organization which works to empower young women in tech.  Saujani says "Teach girls bravery, not perfection."

But sometimes it's not the women who doubt themselves but those around them who are plagued by unconscious bias. Many women in tech comment on the particular problem of the scarcity of women in leadership positions. For example, Libby Fischer, CEO of Whetstone Education said the following: "What I want most in the tech world is the opportunity for more women to be able to achieve leadership roles in this industry. The lack of women in leadership roles in tech creates fewer role models so, in turn, fully qualified women don't see tech as a career option for them."

Another issue women FACE in emerging tech fields cite is work/family balance: Deepa Madhavan is the Chennai Director of Enterprise Data Services, Paypal. One of the first things that Madhavan mentions about PayPal is 'Recharge'—a programme that brings women back to work.

After working with Deloitte in San Francisco, she took a break to raise her three children. "I know the struggle, because I traversed the same journey," she says, emphasising how such programmes help women transition back to work. According to her, tech-related sectors will be defining "what the world looks like in the future."

**THERE HAVE BEEN SOME GREAT SUCCESS STORIES IN OUR LIFETIMES:**

Many women at the top in tech have been urging us to "Speak up and lean in!" and have been demonstrating what it takes to rise to the top. Sheryl Sandberg, COO of Facebook famously discussed this in her book "Lean In: Women, Work, and the Will to Lead," which explores themes like feminism, sexism in the workplace, and the societal/personal barriers to gender equality in the professional world. It topped bestseller lists and sold more than one million copies. In addition to being a bestselling author and being named one of Time Magazine's 100 Most Influential People, she is breaking the glass ceiling in pay equity, as her net worth is estimated to be over $1 billion.

An example closer to home is Indian Nivruti Rai, a Tech leader who is vice president in the data centre group and country head for India at Intel Corporation.

During a Ted talk she remarked, "Imagine an extra brain that knows us better than we know ourselves, that exists "with us, beside us, experiencing our world with us ... always connected, always processing, always watching." Nivruti Rai believes that AI systems could become these kinds of guardian angels if given the chance. In this future-forward talk, Rai explains how machine-learning could flourish once it's able to analyze complex traffic patterns and prevent road accidents.

Most recently, women have been breaking the glass ceiling in the area of data science and in doing so are tackling important social problems: there is a group of Fighting human trafficking around the globe: Tayler Sale (Data Science), Cristiana Principato (Health Data Science), Susanna McDonald (Data Engineering), and Hannah Lee (Data Product Management) — collaborated to develop Fievel, which uses machine learning to identify online content that may be related to commercial sex trafficking of adults and minors.

In the area of machine learning - Diagnosing harmful sleep disorders Sleep apnea is a disorder in which breathing repeatedly stops and starts during the night.

The condition is common, affecting an estimated 1 billion people across the globe — but if left untreated, it can lead to high blood pressure, heart disease, and stroke, as well as consequences related to fatigue (like car accidents caused by falling asleep at the wheel). To help facilitate diagnosis and treatment, Rachel Mak-McCully (Health Data Science, Silicon Valley) developed Tired! to predict increased risk of sleep apnea using data generated by wearable devices.

These are just a few example of how women are pulling ahead and leading in an emerging tech fields. Technology still has a reputation for being a male-dominated field, but these women (and more like them) are proving that gender is no barrier to success.

Similarly, Aakanksha, Sowjanya and Abirami, the three smart, brave young women who founded this important professional organization, WIMLDS and our guest speaker, who you will hear from shortly, are all evidence that the future is bright and the light is beginning to shine through the cracks in the ceiling.