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Opinion

Women, AI, and the Power of Supporting Communities: A Digital Gender-Support Partnership

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With the rapid development of the fields of data science and artificial intelligence, a dichotomy presents itself: more professionals are needed to fulfill the growing workfoce demand, and women continue to be underrepresented in all computer science-related jobs. Women AI Academy addresses both issues by inspiring, enabling, and targeting the employment of women in data science and artificial intelligence.

For an area supposed to re-shape society fundamentally, artificial intelligence (AI) has a long way to go when it comes to gender diversity. Even the most optimistic data highlight a current gender gap of 72% yet to close.[1] Gender diversity in the era of AI is key toward the elimination of gender-related conscious and unconscious biases and, therefore, a more balanced workforce.

We are faced with a contrasting picture. On one extreme, there is a huge lack of recognition and support: pay gaps are a minimum of 19%,[2] only 21% of executives in the tech industry are women, only 7% of venture capital (VC) funding goes to women-owned businesses, and only 4.2% of investing VCs are women.[3] While on the other, there are significant tangible results delivered by women: women are the lead adopters of technology and start-ups with women executives succeed more often.[4] Further, studies show that gender diversity in senior positions in the tech industry have a positive impact on the overall companies' performance and profit.[5]

One of the fundamental originating issues is the underrepresentation of female students in STEM areas. Though more than 60% of the students in higher education are female, less than 20% are enrolled in engineering and computer science subjects.[6,7] Adding to this, the lack of role models and mentors within this industry and the unconscious biases, discrimination, pay gaps, and unwelcoming climates (see the SEW Blog[6] and Barnard et al.[8]), are identified, among others, as reasons for low female representation within the tech workforce.

The current AI hype and innovative and powerful undertakings are set to change this trend: digital supporting communities and private companies are aiming to dramatically increase the number of women in AI by inspiring and promoting female role models in this sector through education and employing of women in AI-related technologies. Organizations such as Girls Who Code (https://girlswhocode.com/), Women in Technology (https://www.womenintechnology.org/), the AnitaB.org (https://anitab.org/), and Women In Technology International (https://witi.com/) have as a main goal increasing the number of women in tech-related jobs with their programs and services worldwide.

In this Opinion piece, we present Women AI Academy (WAIA, https://womenaiacademy.com/), founded on the principle of a new working culture of digital technology to enable women to build successful digital technical careers in AI. The aim is to address two critical dimensions: an ever-increasing need for women-working empowerment in the tech industry (women still make up only a quarter of the tech industry workforce[1]) and the workforce need for digital technologies experts (it is estimated that, only in the US, there will be 3.5 million computer-science-related jobs available by 2026)[9]. These two dimensions happen to also be two of the "gender gap accelerators" identified in the Global Gender Gap Report 2020.[1]

WAIA is realized through a digital platform to inspire, enable, and target the employment of women in AI. It involves the concept of digital learning circles and groups the skills that are needed to have a successful career in AI and a harmonized personal life in three categories: mindset skills, soft skills, and digital tech/AI skills. Aiming to be inclusive and location independent, all content are delivered online by experts and mentors from the AI industry, in English.

WAIA has four core principles:

Equality: here we aim to increase the participation of a diverse AI community, eradicating discrimination based on gender, ethnic origin, religious beliefs, or social background.
Mobility: everyone should have the opportunity to grow their career; being a tech-based discipline, AI offers this possibility.
Digital-tech/AI focus: we contribute toward the acquisition of skills needed for digital technologies with focus on AI and a technical workplace.
Community: strongly linked to the previous principles, WAIA's platform offers the "sense of belonging," building up a community at the same time as we form AI professionals. According to studies, 56% of women in technology leave their employers mid-career,[7] this being at least partially related to a lack of supportive mentors and role models and other workplace-related barriers as discussed above.

These principles can be generalized across all data science platforms, and they are not gender specific. In other words, they represent good guiding principles for building data science communities.

WAIA was founded on the experiences and lessons learned from over 25 years in the tech business world. Naz, the founder, started it as a side project to her corporate job. In 2012, she started to study issues for gender equality in tech,

especially from her perspectives as a working mum with two school-aged kids. During this time, she networked with experts around the world, joined in conferences, and participated in STEM mentorship projects. She searched and reviewed the best practices not only from Europe but also from the US and Australia. As part of her corporate assignments and independent research, she has developed valuable insights into the digital industrial revolution and new working culture of digital technology, and as a result, she decided to develop an online teaching organization to enable women to build successful digital careers in AI. WAIA serves also as a community of like-minded women, with a diverse team and background of founding members as well as carefully selected teaching experts and mentors from around the world.

There are reasons to be hopeful, for the first time more women than men enrolled in intro computer science at Berkeley, USA.[3] Further, the Hour of Code campaign of Code.org reported that, from the more than 15 million students who participated, more than half were girls.[3] Moreover, the Hardwiring Gender Parity into the Future of Work program of the World Economic Forum aims to set a business commitment framework with a target of 50 pioneering companies over the course of 2020 to better connect supply and demand.[1] We believe these types of initiatives will prove to be very beneficial for gender parity in the future.

We believe that for everyone involved in AI, the ethics of AI is of pivotal importance and, therefore, is a primary concern of WAIA. AI heavily relies on the origin, quality, and quantity of data and also on the diversity of the team designing the associated algorithms and individual society's value on dictating the norms. Therefore, these factors can be seen to impact the ethics of AI. In our view, there is a great mystification of AI capabilities. This is, in its own right, an important issue; however, there is a direct consequence of this that ultimately affects the ethics of AI: the belief that the ethical challenges of AI can be solved with code. The issues involved are far more complex. For example, the unintentional algorithm bias in women's healthcare can be inevitable due to scarcity in scientific studies and data of cause of an illness in one specific ethnic minority group.[10] That means not only do we need diversity in the data but also in the associated AI team, from stakeholders to programmers. Diversity in its broad sense: gender, race, age, discipline, expertise. . . . Those who have been underprivileged in the current ecosystems will be the main victims if we do not address the existing biases and defects. We believe in the need for definitions, common understanding, regulations, and monitoring systems for all stakeholders who design, develop, deploy, and operate AI. These standards and systems for ethical AI will be one of the major challenges in the future, and WAIA has exciting plans to address this matter.

Among other projects, which like WAIA offer teaching in AI-related subjects, we can mention the Barcelona-based AllWomen.tech, offering onsite data science courses, and the IE Data Science Bootcamp, an 11-week program for women to learn data science, located in the heart of IE's Madrid campus. Women in AI (WAI) is a nonprofit do-tank working toward gender-inclusive AI that benefits global society. Together with WAIA, all these endeavors, built for women, bring hope toward building a more diverse AI. Let us humanize AI with WOMEN POWER!

WEB RESOURCES

AnitaB.org, https://anitab.org/
Girls Who Code, https://girlswhocode.com/
Women AI Academy, https://womenaiacademy.com/
Women in Technology, https://www.womenintechnology.org/
Women in Technology International, https://witi.com/

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About the Authors

Judith Cerit (maiden name Pérez-Velázquez) was born in Mexico City, Mexico. After completing her first degree in mathematics at the National University of Mexico (UNAM), she obtained her PhD at the University of Nottingham in the UK. She also recently achieved the highest academic German degree (habilitation) at the Technical University of Munich through the Laura Bassi Award, which she received in 2016. She is a researcher and a lecturer. She is very enthusiastic about teaching her main subject of interest: the applications of mathematics, from biology and medicine to data science and artificial intelligence. She currently lives in Germany, is married, and has three children.

Dr. Azadeh Dindarian obtained her PhD and BEng in electrical and electronic engineering from the University of Manchester, UK. She is an experienced researcher in smart city, AI, and digital innovation; in particular, Azadeh is interested in the value of AI and IoT-enabled solutions for smart industries. A multicultural and multilingual individual who has lived, worked, and studied in seven countries, she is a proud mother and an advocate for women in tech and diversity in the workplace.

Naz Cilo-van Norel was born in Turkey and has a BSc in electronics engineering and a MSc in political science. Naz has worked for one of the biggest engineering German companies since 1993, in different positions and regions around the world. Currently, she is a senior consultant for IoT (Internet of Things). She is also an activist for gender equality for women in tech. She lives in Munich, Germany, and cares for five children: three foster kids and two kids of her own. Naz dreams of a world in which gender equality becomes the rule and all kids are provided with the same education and development opportunities.