

FemTech: Broadening Participation to Digital Technology Development

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ABSTRACT

In the digital age, the fields and professions related to computing are having an unprecedented impact on our lives, and on societies. As computing becomes integrated in fundamental ways in healthcare [10,11], labor markets [2,4], and political processes [3,6], questions about who participates and takes decisions in developing digital technologies are becoming increasingly crucial and unavoidable [7].

A bottom line is that, if a rather homogeneous group develops most of the digital technologies, there is a risk that these technologies only consider a part of the population, and therefore unwillingly introduce biases or trigger exclusion. There are many intersectional characteristics – such as race, gender, or class - by which people can be part of an excluded minority. This keynote focuses on women as a gender minority in computing.

In Western societies, the percentage of women participating in computing is low. According to a recent report for the European Commission, there are four times more men than women in Europe in studies related to Information and Communication Technologies [12]. Similarly, a study by the Department of Labor Bureau of Labor Statistics showed that only 26% of computing jobs in USA were held by women [13].

Denmark is often viewed as a progressive country with gender equality; therefore, the gender homogeneity displayed in computer science education often comes as a surprise. In 2016, only 8% of the incoming bachelor students were women at the Computer Science department at the University of Copenhagen (DIKU). This remarkable low percentage triggered many questions to us: How did a field initially led by women lost so many of them? Why is this an issue that society should care about? What are the practices and actions that help address this issue? Who should engage with those practices and actions?

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These are some of the questions that we have been addressing at FemTech¹, an action research project started in 2017 at DIKU. Action research is an approach by which researchers explore a problem, and develop theoretical understandings, while working on the development of solutions [9]. Unsurprisingly, our results show that there is no silver bullet to address the gender gap in computing. However, there are different strategies that can help broaden participation, and they come with their advantages and pitfalls.

At FemTech, our efforts have been focusing in creating opportunities for people, and in particular young women with no prior interest in Computer Science, to explore ways in which computing could match their personal interests [1]. This approach is aligned with previous successful initiatives which suggested to create “new computing clubs” instead of including women in existing clubs [5]; and differentiates from a ‘deficit’ approach, by which the issue of gender diversity in computer science is framed as a problem of too few women, which can be addressed by bringing in more women [1].

FemTech is a project with many developments and interventions. What started as a primarily educational initiative for women high-school students has evolved into a broaden initiative that seeks to address structural and cultural issues in computing [8]. The project has delivered many results, some of them especially tangible and measurable such as the increase of from 8% to 18% of women incoming bachelor students at the department in two years; and the decrease of the drop-out rate in the first year of the bachelor from 22%-3.7%.

More importantly, throughout this project we have developed a great amount of insights which can be useful for engaging in similar endeavors and prompting discussions among those interested in addressing the issue of women as gender minority in computing. These insights include the importance of changing computer science departments from “within”, the relevance of challenging stereotypical and narrow definitions of computer science, and the instrumentality of interactive artefacts in prompting change.

¹ www.femtech.dk

CCS Concepts/ACM Classifiers

CCS → Human-centered computing

Author Keywords

Gender; Computer Science; Inclusion; Diversity; Action Research.

BIOGRAPHIES



Maria Menendez-Blanco is a post-doctoral researcher at the Human-Centered Computing section (HCC) at the University of Copenhagen. She obtained her PhD in Human-Computer Interaction at the University of Trento and before that she worked at Delft University and at Eindhoven

University of Technology. She is the co-organizer of FemTech.dk. Her research focuses on interaction design for societal engagement with a special interest in how digital technologies foster, and hinder, democratic forms of participation. She is a member of the program committee of several international conferences such as the Conference on Human Factors in Computing Systems (CHI) and Participatory Design Conference (PDC).



Pernille Bjørn is full professor at the Department of Computer Science, University of Copenhagen. She just returned from her Fulbright Scholarship at University of Washington where she established the research project AtariWomen.org which is

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