

# geekFEST - Engendering computer science and innovation training

Jasminka Hasić  
International University of Sarajevo



INTERNATIONAL UNIVERSITY OF SARAJEVO

## Introduction

Real and meaningful work is one of the core tasks of UN Women aimed to empower women and girls around the world and enable them to claim their rights by expanding their opportunities. One of the greatest challenges of the Fourth Technological Revolution is preparing the new generations for the jobs of the future. These jobs are still being anticipated but coding skills have been identified as one of the most desirable skills. A number of countries in the world are starting to introduce teaching coding even in elementary schools.

Across the globe, females participate less in jobs that require coding. Similar situation is found in Bosnia and Herzegovina. Fewer female IT university graduates end up at leading positions in the IT industry, and, when in IT industry, they have less opportunities for career advancement. Even when females participate in IT industry, their roles are different from male roles. Females usually take up software testing, documentation writing and design while more males are software architects, technology specialist and developers (which are more lucrative and prestigious positions). The reasons that would hold women back in STEM careers are multifold, but implicit bias that many women, not only men, have against other women in STEM is among the most important reasons.



## About Project

At the International University of Sarajevo, we have designed a program to encourage IT education and innovation in general with specific gender component/gender mainstreaming. The program is named geekFEST and it is envisioned as the summer school of innovation. During the period of a week, high school participants in a groups of five, define and code a mobile application of their choice. In the end, we collectively choose the best one based both on usefulness and technical merit.

The fourth geekFEST, organized in 2017, was an event in which we piloted gender mainstreaming. We implemented the following actions:

- Quotas for girls (50%)
- Participants were in mixed gender project teams
- No traditional gender based roles in teams (we encouraged girls to take on tasks usually taken by males currently in the industry)
- Emphasis on female instructors and role models (majority of instructors and role models were female)
- Introduction to implicit bias (participants took the Harvard Implicit Bias test to test themselves whether they think science is more for males and humanities is more for females)
- Watching a movie that questions traditional gender roles and promotes women in science

The geekFEST2017 Summer School of Innovation took place August 14<sup>th</sup>-18<sup>th</sup> 2017. In the mornings, the participants attended lectures. In the afternoons, program included inspiring guest lectures, visits to IT companies and work on the group projects.

In the evening, participants did sport activities (basketball, volleyball and table tennis), visited historical districts, watched movies, and worked on their projects.

Students from different parts and ethnic groups of Bosnia and Herzegovina participated.



## Results



The program included 5 day of instructions and self study, exposure to unconscious gender bias, exposure to IT companies that operate in the countries capital, socialization of students from different parts of the country. In the end, each of the 10 groups delivered a working Android app. Participants collaborated well and created apps were incredibly creative and technically sound projects.

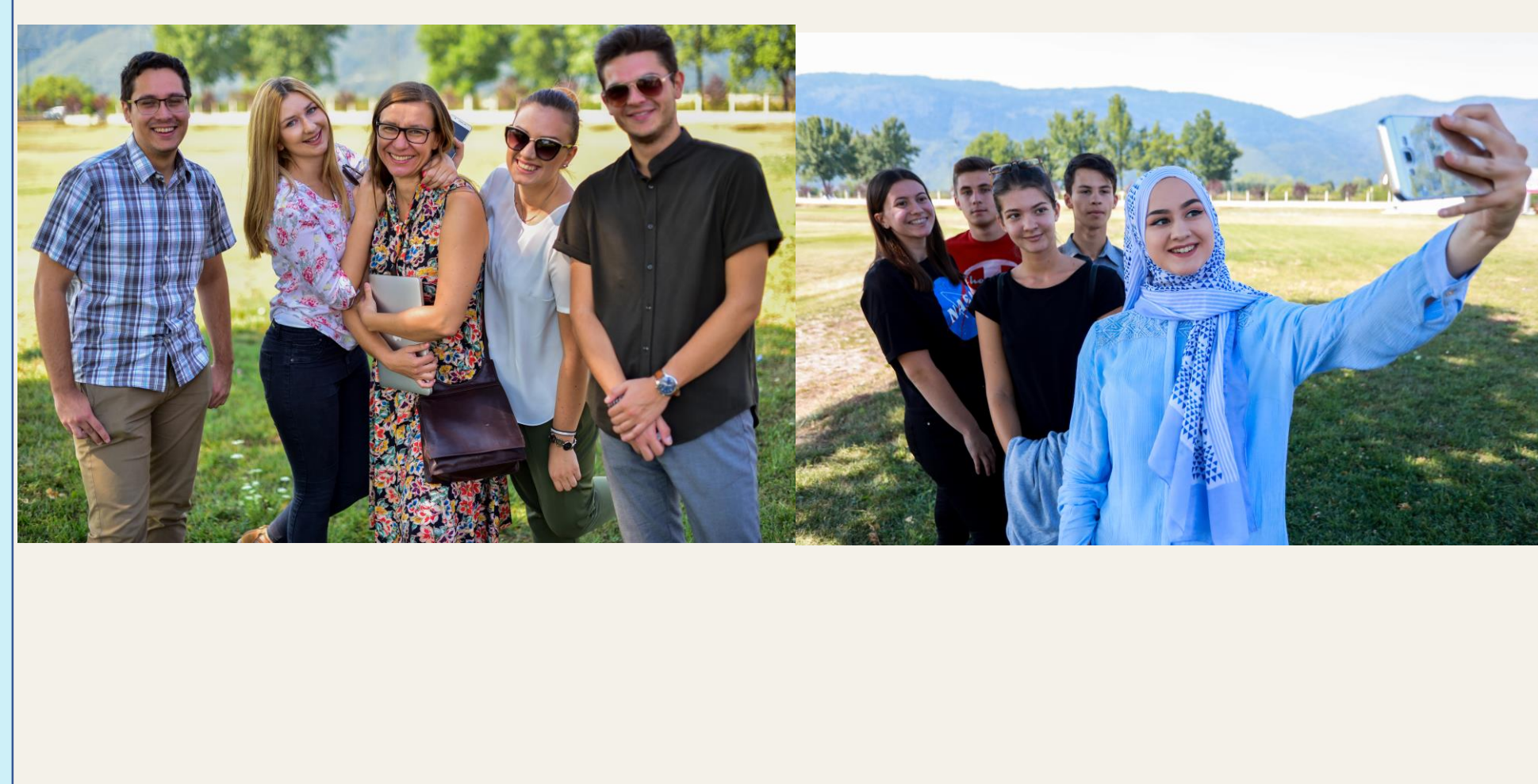
Girls and boys alike were very successful in coding. Based on both participants' informal comments and analysis of evaluation forms, they were not aware of own implicit biases and prejudices. This event has raised this awareness and everyone become more aware of gender issues in IT (in addition to gaining important technical skills). This is especially important for girls in their future endeavours and possible careers in leading IT development of the future. Fighting gender bias in STEM is a timely task but early intervention and small step, such as this one, can help make a change in the long run. Empowering women to actively participate in society is a step toward gender equity culture.



The high school kids were taught useful technical skills. It was also demonstrated to them that there are great opportunities in the IT sector in Bosnia and Herzegovina and that they can have fun, exiting and contemporary jobs if they stay in the country. This is addressing the brain drain currently happening in the country.

The participants were exposed to a number of strong female leaders in coding. They also discovered that they may have an unconscious bias when it comes to girls in Computer Science which is valuable so that they are aware of it in the future.

We made a closed group on social media where all participants joined. We used this media to share information during the school but now it is used to stay in touch and exchange valuable information.



## Conclusion

It was challenging to collect a group of gender balance participants as we had limited advertising resources (especially girls). We extended the application deadline to be able to collect more applications and used different available channels to advertise more. In the end we managed to collect enough girls. Even though it was hard to attract girls, the average evaluation grade (school grad and extra curricular activities) was higher for female participants.

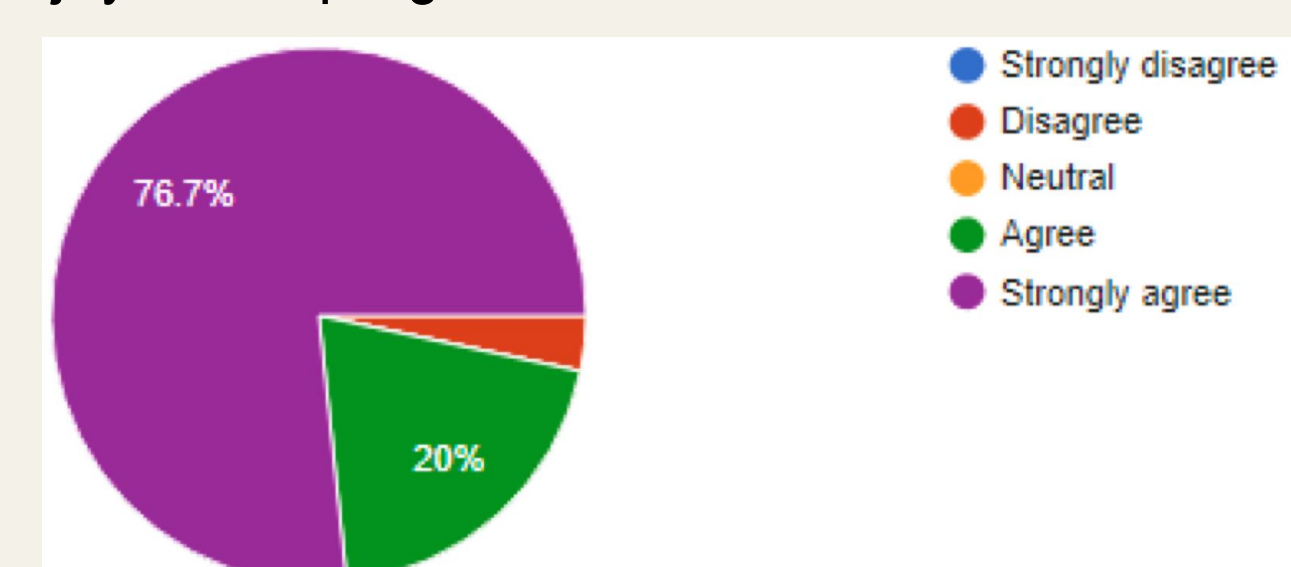
geekFEST2017 is an example of gender mainstreaming. We did have a summer school of innovation but we also concentrated on women empowerment. As university we are currently in the process of implementing Gender Equality Plan. This is an effort of European Union's Horizon 2020 program. Within these efforts, we are implementing gender mainstreaming in both teaching and research activities. geekFEST2017 piloted gender mainstreaming at IUS and as such it is very useful as a guideline for future gender mainstreaming activities at the university.

Fewer girls in general take on programming and there is an unconscious bias by many that this is not a field for girls. Besides participants, we made sure that we had plenty of females for role models as they were teachers, mentors or guest lecturers during the summer school.

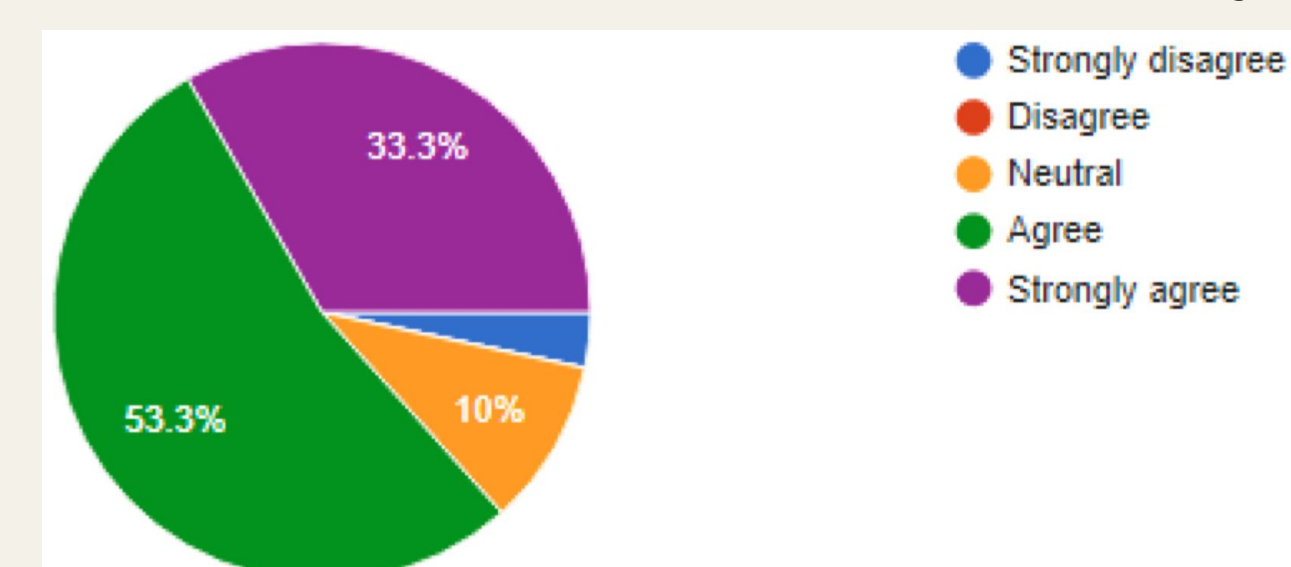
These biases are something that takes a lot of effort to remove so a 5 day program is not able to address that but what we were able to address is discovery of this bias. We have done so by first asking the participants if they thought that programming is more for boys than for girls and everyone answered negative. Then we asked them to take an online test designed by Harvard University (Gender – Science IAT) and asked them to share their results with us. Most came out biased to their surprise and this was point of reflection that we came back to through all the activities in the program.

These are the results of survey questions answered by participants.

I enjoyed the program of the Summer School:



I have benefited from the lessons and skills taught during the camp:



## Acknowledgements

This project was funded in part by a grant from the United States Department of State. The opinions, findings and conclusions stated herein are those of the author[s] and do not necessarily reflect those of the United States Department of State.

