ABSTRACT
In the proposed panel we discuss the efforts made by the academy and industry to bring computer science (CS) to audience that is not exposed to CS education, not represented in the CS workforce or not accessible due to lack in technological solutions.

Categories and Subject Descriptors
K.3.2 [COMPUTERS AND EDUCATION]: Computer and Information Science Education.

General Terms
Human Factors.

Keywords
Community involvement, engaging computer science, volunteering, students, computer science unplugged.

1. INTRODUCTION
The fundamental ideas of computer science (CS) go beyond numbers and formulas. However, CS education takes place at high schools and universities addressing mainly homogeneous target audiences. In this paper, we explore four initiatives aiming to make it accessible and appealing to larger audiences, which currently are intimidated by CS or not aware of its beauty due to prejudices or the manner in which it is usually introduced.

The four initiatives to be discussed include Tel Aviv University students who teach CS ideas to underprivileged high school kids; Google’s program encouraging female pupils to learn math and CS in high school; Microsoft’s technologies exploited by students to assist non-governmental organizations; HP encouragement of minorities to consider careers in technology, to learn about some practical technologies and to participate in hands-on activities.

2. CS UNPLUGGED FOR STUDENTS FROM ECONOMICALLY LESS PRIVILEGED BACKGROUND
The Blavatnik school of CS in Tel Aviv University initiated an undergraduate elective academic course titled “Teaching Computer Science in the Community”, and has run it for the last four years, providing a community service. Undergraduate CS students in their final year teach CS topics to diverse audience from economically under-privileged communities. The major emphasis this year was teaching an international program entitled “Computer Science Unplugged” (CSU) [1,2], a collection of learning activities that teach CS through engaging games and puzzles. Around thirty undergraduate students participate in the course for academic credit. After several meetings at the university, during which students are exposed to CSU and teaching methodologies, they are sent to various sites where they taught two hours weekly, for twelve weeks. The major target audience was middle-school pupils (ages 12-15), but there were groups of younger (down to 7 years old) and older (even adults) pupils. As the major academic requirement, the students were prepared a new teaching module in the style of CSU. All these modules are freely available online (in Hebrew, https://sites.google.com/site/computersciencesincomputers/home).

The program is considered a success for both the students and the pupils, and the reactions from school principals and site leaders have been enthusiastic.

2.1 Panelist - Benny Chor
Benny Chor did his B.Sc. and M.Sc. in Mathematics at the Hebrew University of Jerusalem, did his Ph.D. at the MIT working on public key cryptography under the supervision of Ron Rivest, and spent post-doctoral periods at MIT and Harvard. He was a faculty member at the CS department, Technion, between 1987-2001, and is with the CS school of Tel-Aviv University since 2001. He was a visiting fellow at Massey University, Palmerston North, New Zealand, and at the European Bioinformatics Institute (EBI), Cambridge, UK, and a Visiting Fellow in Clare Hall, Cambridge Univ., UK. His research interests are computational biology and educational issues and teaching of CS and computational thinking at the high school and university levels – both to CS and non CS majors.

3. ENCOURAGING HIGH SCHOOL GIRLS
As part of Google Israel's pre-university diversity efforts, this project is aimed at encouraging high school girls to select CS and math as their high-school major. The program has had so far 2500 girls coming from over 100 schools, with outstanding results of 40% of the participating girls indeed choosing CS as a major [3]. The diversity program is in the process of evolving as a key factor in helping more women progress to significant positions in the high tech industry.

3.1 Panelist – Michal Segalov
Michal Segalov is a Software Engineer working on improving Google's backbone-network infrastructure. Previously, she has worked on YouTube's monetization platform and launched several of Google's international search products. Prior to joining Google's R&D center, Michal worked at IBM research labs, focusing on hardware verification techniques. She holds B.A. in CS from the Technion and M.Sc. in CS from Tel Aviv University.

4. TAILOR-MADE SOLUTIONS FOR NON-GOVERNMENTAL ORGANIZATIONS
The Third Sector in Israel includes tens of thousands of non-governmental organizations (NGOs) that assist millions of people
each year. The sector is highly skilled in providing services to populations in need, but is still lacking in its IT infrastructure and capabilities. Computer engineering students from universities across the country implement their development skills to create tailor-made solutions for NGOs participating in the project. Working closely with the NGOs, the students identify their needs, investigate the subject, and develop appropriate applications. Microsoft R&D volunteers guide and tutor the students throughout the entire process – from research and planning to implementation and integration. The programs run for the second year, ending (last year) with a competition demonstrating 20 student projects including cognitive games for the elderly suited for smartphones, call for help button on the phone for emergency matters, text to voice SMS system for the blind, etc.

4.1 Panelist – Dana Shoushan-Whol
Dana Shoushan-Whol is the community affairs and social responsibility manager in Microsoft Israel who brings vast experience in both bridging between the business world to the social arena with former positions as head of the development resources of ELEM – for Youth at Risk org.; VP of flowers of medicine org. turning it into a national social org.; consultant for the Beyond Business co. bringing business companies to realize their roles as responsible players in the community; and initiating the office of community affairs and social responsibility at the Israel’s Microsoft's R&D Center. Dana holds a Master’s degree from the Hebrew University in conflict solutions and a BA in political science and communication from Bar-Ilan University. She is a graduate of the MA’ALA course for corporate affairs managers and ethics in the business world from Tel Aviv University, and served as volunteer using her fundraising abilities for the benefit of small NGOs around Israel.

5. ENCOURAGING MINORITIES
HP Israel recently launched a social innovation project entitled “It's all about people” with the objective of promoting technological education and employment among young people from minorities' populations by guidance and mentoring from HP volunteering employees. The program focuses on Arab pupils, young immigrants from Ethiopia, and young women from Jaffa. HP employees participate by providing pupils business and technological mentorship towards participation in national innovation competitions and towards achieving their career goals. In addition, HP also invests in organizing lectures given by HP professionals on technology, marketing and business. Visiting HP headquarters for the first time, the students, many of which come from low-income families, are exposed to a lifestyle very different than their own. Our team’s motivation to mentor and embrace the students inspires them to pursue a career in technology, as some of them claim - a mere dream not long before.

5.1 Panelist – Anna Levinson
After completing her BA in Economics at Tel Aviv University, Anna Levinson joined HP’s Graduate Program and worked as sales representative in the HP Enterprise Business Group. She later moved to Product Management in the Business Critical Solutions team, a position she’s been holding for almost two years now.

6. TEACHING KIDS TO PROGRAM USING SCRATCH
Scratch is an early computer language learning environment enabling young beginners to get results without having to learn syntactically correct writing first. Created by the MIT Media Lab, it is intended to motivate for further learning through playfully experimenting and creating projects, such as interactive animations etc. Panelist Oren Zuckerman, one of the leaders of the Israeli Scratch team, will share his experience teaching Scratch to kids.

6.1 Panelist – Oren Zuckerman
Oren Zuckerman (PhD MIT Media Lab 2007) is the founder of the Media Innovation Lab at IDC Herzliya's school of communications. Zuckerman's research areas include mobile technologies & wellbeing, tangible interfaces for learning, contextual media, and analysis of participation patterns in online & mobile communities. At MIT Media Lab, Zuckerman completed his Masters and PhD, looking deeply into the convergence of physical and digital interactive experiences. Prior to MIT (1999-2001), Zuckerman was the co-founder of an Internet startup that created a "decentralized blogging community" on top of the Web. On 2001, the World Economic Forum recognized Zuckerman as a “Technology Pioneer” at the annual forum in Davos, Switzerland.

7. REFERENCES