Letizia Jaccheri

Gender Issues in Computer Science Research, Education, and Society

https://www.ntnu.edu/employees/letizia.jaccheri
About ACM

- ACM, the Association for Computing Machinery (www.acm.org), is the premier global community of computing professionals and students with nearly 100,000 members in more than 170 countries interacting with more than 2 million computing professionals worldwide.

- OUR MISSION: We help computing professionals to be their best and most creative. We connect them to their peers, to what the latest developments, and inspire them to advance the profession and make a positive impact on society.

- OUR VISION: We see a world where computing helps solve tomorrow’s problems – where we use our knowledge and skills to advance the computing profession and make a positive social impact throughout the world.

- I am proud to be an ACM Member.
The Distinguished Speakers Program is made possible by

Association for Computing Machinery

Advancing Computing as a Science & Profession

For additional information, please visit http://dsp.acm.org/
My role models
UN Goal 5:
Achieve gender equality and empower all women and girls. Ending all discrimination against women and girls is not only a basic human right, it's crucial for sustainable future; it's proven that empowering women and girls helps economic growth and development.
Software engineering and gender

- People decide requirements
- People develop solutions for people
- People interact with systems
Software engineering and gender

- People decide requirements
- People develop solutions for people
- People Interact with systems

Question: who decides the requirements and for which people?

Designing Software to Prevent Child Marriage Globally, J Brevik, L Jaccheri, JCT Vidal, Proceedings of the 18th ACM International
Technology with gender biases

• From smartphone voice assistants (Microsoft’s Cortana, Apple’s Siri, Amazon’s Alexa) that are all female with noticeable submissive personalities and ill-equipped to respond to user requests regarding crises that predominantly affect women (e.g., sexual assault)

• [I'd blush if I could, UNESCO/EQUALS Global, 2019]
Technology with gender biases

- Activity trackers that fail to measure steps in the predominantly female activity of pushing a stroller.
- Transport networks that ignore the so-called “mobility of care.”
- AI recruiting technology developed trained predominantly on men’s résumés.
- EU report of the Expert Group “Innovation through Gender.”
Europe Bachelor, Master, PhD

At the Bachelor level 80% or more of the students enrolling or graduating in Informatics Bachelor programs are male.

At the Master level 80% of the Master graduates in Austria, Belgium, Czech Republic, Germany, Italy, Lithuania, the Netherlands, Poland, Portugal, Spain, Switzerland are male.

At the Ph.D. level, except for Bulgaria, Romania, Estonia, Turkey, all other countries have less than 25% of women graduating from Informatics Ph.D. programs.
Software engineering and AI

People
• Decide requirements
• Develop solutions for people
• Interact with systems

Computer system
• learns

Question: who decides how the system will learn?
Europe Bachelor, Master, PhD

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Scarcity of role models

Engineering and Technology: on average, in the whole of Europe, women take less than 15% of the full professor positions.

Figures show that in 2016, an overwhelming majority (83.3%) of ICT specialists employed in the EU were men.

Skills and talent gap: 53% of European employers say they face difficulties in finding the right people with the right qualifications.
## Girl project ADA

<table>
<thead>
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<th>2004</th>
<th>2019</th>
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<td>7%</td>
<td>36%</td>
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Average %-share 5-year integrated Master
- Computer Sciences
- Communication Technologies
- Cybernetics and Robotics
- Electronics System design and innovation

Calling the applicants
- Welcome day
- 8th March - Women’s Day
- Networking lunches
- Programming courses
- Mountain hiking
- CodeHubs
- PhD-party

Invite girls from high school from all over the country
- 3 days
- Presentations and workshops
- Personal meeting with rolemodels
- Meeting students
- Break down stereotypes
- Hands-on experiences

[www.ntnu.edu/girls](www.ntnu.edu/girls)
Solution?
The Girl Project Ada!
IDUN – from PhD to Professor
1 Mio. Euro 2019 – 2022

Background:
581 employees in scientific positions – 22% female
125 professors – 13.8% female

Challenge:
• Too few women at master level
• Dropout from PhD to professor

https://www.ntnu.edu/idun

Idun Reiten, the first female professor at the Faculty of Information Technology and Electrical Engineering, Norwegian University of Science and Technology (NTNU)
Gender balance at the IE faculty

- PhD Candidates
- Postdocs
- Professors
- Associated professors
- Adjunct Professors

Male and Female distribution across departments.
Why IDUN?

SCIENTIFIC PERSONNEL AT IE FACULTY

- PhD Candidates
- Postdoctoral Researchers
- Professors
- Associated Professors
- Adjunct Professors

Male and Female distribution:

- PhD Candidates: Male - 275, Female - 70
- Postdoctoral Researchers: Male - 50, Female - 10
- Professors: Male - 125, Female - 25
- Associated Professors: Male - 100, Female - 20
- Adjunct Professors: Male - 50, Female - 10

SCIENTIFIC PERSONNEL

- FTE, women: 581 (22%)
- FTE, men: 2,487 (88%)

PROFESSORS

- FTE, women: 125 (13.8%)
- FTE, men: 875 (86.2%)

IDUN Launch Event 2019-12-03
IDUN Scientific Mentoring Program & beyond

- Promotion seminars
- Role models
- Gender balance in committees
- Mentoring program
- Inclusive work environment

7 Adjunct Professors

A professor working 20%: usually teaching duties while in IDUN the focus is on research and mentoring
Why Should You Start an ACM-W Chapter at Your School?
“101 Ideas for ACM-W Chapters”
Activities to educate women about the opportunities in the computing field
Engage women students in exciting computing activities;
Connect students with women leaders in the field;
Encourage students to promote the field of computing to young girls;
Promote the activities of ACM
Network with other ACM-W Chapter leaders and members
Mentor chapter members and pre-college girls
Broaden the computing community
Extend the “conversation” about why it’s important to increase the number of women in computing

https://women.acm.org/chapter/
COST Action 19122

• European Network For Gender Balance in Informatics (EUGAIN)

• 37 member countries and Kosovo

• Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom
The main challenges addressed

• How to have more girls choosing Informatics as their higher education studies and profession.
• How to retain female students and assure they finish their studies and start successful careers in the field.
• How to encourage more female Ph.D. and postdoctoral researchers to remain in the academic career and apply for professorships in Informatics departments.
• How to support and inspire young women in their careers and help them to overcome the main hurdles that prevent women to reach senior positions in the field.
• How to leverage from the experience of the partners in the network to tackle the previous challenges and achieve progress across more institutions and countries, and positive results that are sustained on the longer term.
• How to do science
• Conferences
  • Grace Hopper Celebration. https://ghc.anitab.org
  • ACM ACM Celebration of Women in Computing womENcourage (Rome 2019)
    • http://ieee-wie-ilc.org/
    • womENcourage (Rome 2019)

• Projects at Universities
  • The Girl Ada Project. https://www.ntnu.edu/girls
  • CS4All initiative, School of Computing, TU Dublin, www.dit.ie/computing/studentresources
  • EQUAL-IST Project. https://equal-ist.eu
  • IDUN project at NTNU. https://www.ntnu.edu/idun

• Policy Documents and white papers
  • https://unesdoc.unesco.org/ark:/48223/pf0000367416
  • SHE Figures https://ec.europa.eu/info/publications/she-figures-2018_en
  • ELSEVIER The researcher journey ... https://www.elsevier.com/research-intelligence/resource-library/gender-report-2020
  • Informatics Europe Report on Informatics Education in Europe https://www.informatics-europe.org/publications.html

• International Networks
  • Informatics Europe WIRE https://wwwinformatics-europeorg/working-groups/women-in-icst-research-and-education.html
  • ACM Women in Computing Europe. https://europe.acm.org/acm-we
  • European Centre for Women and Technology. http://www.ecwt.eu
Thanks to

• The whole EUGAIN and IDUN project participants
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• https://youtu.be/V7hzX9UgWel youtube Jaccheri gender