

# Women in Dutch Computer Science: Best Practices for Recruitment, Onboarding and Promotion

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Women are underrepresented at all levels in computer science (CS) faculties of Dutch universities. In this report we focus on experiences related to hiring and promoting women as assistant, associate and full professors (or equivalent at NWO-I CWI). The study is conducted under the aegis of the IPN Equity, Diversity and Inclusion working group. While the working group aims at creating a diverse and inclusive environment for scientists of any gender identity, age, ethnicity or sexual orientation this report focuses specifically on practices for recruitment, onboarding and promotion of women.

## Research method

The authors have conducted 15 interviews with representatives from CWI and all Dutch universities.<sup>1</sup> Eleven interviewees identify as women, four interviewees identify as men. One interviewee is head of HR, one interviewee is a researcher/lecturer, one is a tenured assistant professor, twelve interviewees are associate or full professors. The interviews were conducted online between November 2020 and January 2021. We augmented the insights obtained from the interviews with recommendations of [Platform Academic Physics \(Platform Academische Natuurkunde, PAN\)](#). To reduce the threat of misinterpretation, the preliminary version of this document has been shared with the interviewees and their feedback has been integrated.

At the beginning of the interview we have asked the interviewees to estimate percentages of non-men among assistant, associate and full professors at their faculty. The reasons we opt for an estimate rather than for exact numbers are twofold. First of all, differences in the organisation of CS units within Dutch universities and presence of part-time employees and visitors make comparison of the exact numbers difficult. Second, perception rather than the exact count influences the way people feel within organisations. We asked the interviewees to reflect on their experiences and identify practices they would recommend other colleagues to implement when it comes to recruiting women, welcoming and onboarding them, and supporting their career advancement.

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<sup>1</sup> At the moment of writing the Netherlands has [17 public universities](#). We have excluded Erasmus University Rotterdam and University of Humanistic Studies as they do not have computer science-related faculties, Netherlands Defence Academy due to the specific nature of this institution and University of Curaçao. Respondents I2 and I4 represent the same institution. We have also included CWI, National Research Institute for Mathematics and Computer Science.

Notes were taken during all the interviews; seven interviews were video-recorded. The subsequent analysis is based on both notes and recordings (if present). To analyse the answers of the interviewees we performed axial coding.

## Results

### On the need for diversity

The interviewees raise several concerns related to the general perception of diversity in CS departments, and specifically the role played by women. At one of the institutions, for example, many women are lecturers, because they did not want to be involved in the perpetual competition surrounding publication and funding requests (I9). I14 indicated that successful women are seen as aggressive and impatient. Moreover, a low number of women might create an impression that as a woman you are not good enough for an academic career in CS (I1). Changing this situation requires a broad change of the organisational culture, as the importance of women in CS is not necessarily recognised by everyone (I1, I3, I8, I10, I14). In particular, it is crucial that the organisational leaders (I7), academic staff at all levels of the hierarchy (I10) and support staff (I14) recognise the importance of diversity. At the same time one should refrain from stereotyping women and pigeonholing them based on their gender (I14). To achieve this goal one might think about offering diversity awareness (I8, I10, I12) or active bystander courses (I4) to be attended (mandatorily) by academics of all genders and levels of seniority.

Several interviewees highlighted the need to go beyond the current focus on women, and include non-binary people (I11) and other kinds of diversity (I7, I15). As mentioned in the introduction while the goal of IPN Equity, Diversity and Inclusion working group is creating a diverse and inclusive environment for scientists of any gender identity, age, ethnicity or sexual orientation this report focuses specifically on practices for recruitment, onboarding and promotion of women.

### Recruitment

Several institutions have created positions open only for women: while the interviewees are, in general, positive about such initiatives, they also raise concerns related to misalignment of the initiatives and organisational culture. As several of the interviewees (I1, I9, I10) indicated, colleagues imply that women are hired merely because the university is required to hire women rather than based on their own merits. Thus, if positions are open only to women, departments have to be careful to stress that no compromises are made on quality. Once the formal hiring requirements are satisfied, the recruitment often regresses to the old ways (I3). This underlines the importance of accompanying recruitment activities targeting women with broader campaigns stressing the value of diversity.

**Soliciting candidates:** There is evidence that the way a recruitment text is phrased can make it more or less appealing to women.<sup>2</sup> This is why it is a common practice to involve an external team or employ an automatic tool to ensure that the text is gender-neutral (I3, I4, I7, I9, I11). One should however refrain from using typical feminine words, e.g., those identified by Gaucher et al., as these might not be appropriate for the CS domain (I14). A better recruitment text should highlight diversity of tasks associated with an academic career rather than solely focussing on academic excellence (I14). At the very least a recruitment text should be reviewed by a woman prior to it being published (I15).

Another suggestion made by several interviewees is to opt for a broad recruitment rather than looking for researchers with a very specific area of expertise (I1, I3, I5, I11, I14). While such a broad advertisement is necessarily less clear in terms of expectations making the prospective candidates wonder what the department is looking for (I4), broad advertisement allows for scouting in areas that are still relevant for the department, which people did not think upfront, hence opening for new directions (I3).

While academics are commonly recruited via mailing lists, the majority of the interviewees stressed the importance of targeted scouting and personal networks when looking for female candidates (I1, I2, I3, I4, I5, I7, I8, I10, I11, I12, I13, I14, I15) and explicitly encouraging female candidates to apply (I2). I6 has suggested to explicitly target international candidates coming from countries where there are more women in CS, while I14 stressed the importance of advertising in appropriate channels in those countries. Usually human resources offices or public relations offices at a Dutch university are not aware of such channels (I14). Some departments ask their group leaders to create an explicit list of talented people of any gender, who are actively approached when there is a vacancy (I7).

To attract more women I6 suggested to offer women higher salaries than to their male peers. At other institutions, there is the possibility to have an extra start-up package for a newly recruited woman (I7). I15 suggested that research group/section diversity should be one of the criteria used to evaluate performance of the group leader.

**Evaluating candidates:** The composition and the way of working of the hiring committee was discussed by several interviewees. I3, I9, I10 and I11 mention that there is always at least one woman on the hiring committee. This is, however, not a panacea as women are not free of gender biases either (I14). Moreover, van den Brink has observed that having one woman on a hiring committee is not enough: there should be at least two women participants to make a difference.<sup>3</sup> In combination with a small number of senior women this decision, however, induces a larger burden on senior women. I1 indicated that they are happy to serve on many committees in the years to come if this can help us to increase the percentage of women among

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<sup>2</sup> Gaucher, D., Friesen, J., & Kay, A. C. (2011, March 7). Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality. *Journal of Personality and Social Psychology*. Examples of words identified as feminine are "affectionate", "gentle", "honest", "modest".

<sup>3</sup> Marieke van den Brink, Hoogleraarbenoemingen in Nederland (m/v) Mythen, feiten en aanbevelingen, March 2011 <https://www.lnvh.nl/uploads/moxiemanager/downloads/169.pdf>

faculty; this kind of community work has to be taken into account when determining the management workload of the senior faculty members.

All members of hiring committees should be made aware of their own biases, be trained in appropriate interview techniques and adhere to best practices of inclusive hiring. I3 and I14 recommended determining interview questions before the interview and asking the same questions to all the candidates. I3 further elaborates that candidate-specific questions might still be asked, e.g., as candidate mention or forget to mention certain things, provided that the questions and notes about answers are logged before/during/after the interviews. I10 reported on psychologists observing hiring (and promotion) committees and discussing their observations over a longer period of time. I8 stressed the importance of peer learning of the committee members through shared ideas and experiences. I12 recommends to first evaluate the applications of women candidates, interview them and only then look at men that have applied for the same position. An extremely important role is played by the person responsible for compiling the evaluation report, usually a secretary of the hiring committee or its chairperson, as their biases are most likely to be reflected in the report prepared by the committee (I14).

In addition to making committee members aware of their own gender biases, candidates should be aware of the negotiation culture. This is particularly important for international candidates as they should be made aware of *Dutch* negotiation culture (PAN).

When hiring women, employment of partners (the so-called “two-body problem”) often plays a role. To solve this, more coordination within the university or at the national level could be useful (I7).

## Onboarding

While it is common to welcome the newcomers in a group, these introductions are often informal. Several institutions also offer newcomers more formal post-offer acceptance interviews with different people to explain official responsibilities and teaching duties but also to establish personal contact with colleagues (I5). It is crucial that welcoming and onboarding are not limited to scientific colleagues and also includes support staff (I14), covers various topics related to research, teaching and organisation, and also ensures that the new hires find their place in the Dutch research landscape (PAN).

Mentoring is commonly recognised as the best onboarding practice and beneficial for mentees of any gender. Specifically for women, it is important to train them to ask for things and be explicit about their expectations (I1). Academic Leadership courses might be beneficial, in particular if they explicitly target women (I3). Mentoring can also address some of the cross-cultural challenges faced by non-Dutch women working in Dutch universities: these challenges are related to large numbers of explicit rules and even larger numbers of implicit expectations (I4) as well as directness of communication. The latter also manifests itself in teaching feedback which is extremely direct, and hugely biased against junior women teachers. This is even more problematic if the teacher is coming from cultures where there is a lot of respect for teachers (I2). Ultimately, mentoring should provide the mentees with means of

discerning systemic and organisational biases from personal challenges the mentees might experience (I14).

Mentoring is usually organised such that the mentor is a more senior person, often a woman, from a different department than the mentee (I1, I6, I7, I11). This organisation of mentoring, however, reduces the likelihood of a match between the mentor and the mentee in terms of research domain, a match deemed important by I5. I7 disagrees, indicating that mentoring with senior staff did not always work well and is much better done with an external mentor. Compared to the direct manager, such an external mentor, however, is much more limited in the support they can provide to the mentee (I14). I3 indicates that the choice of the mentor (and ergo their gender) should match the learning goals of the mentee.

As part of the onboarding, research groups and institutions should ensure that the spoken language is no border to social or professional communication (PAN). In particular, one should be wary of social exclusion when Dutch-speaking colleagues switch to Dutch in the informal setting. While this problem affects non-Dutch-speaking employees of any gender, one should be aware of this problem when onboarding women in CS as many of them are non-Dutch.

Finally, support networks such as “Women in Computing Science” in Utrecht can contribute to successful onboarding of women in CS departments/faculties. However, while grass-roots efforts are common (I5, I11), they do not always evolve to formal networks, and when they do, they are sometimes merely informed by management rather than consulted (I10).

## Promotion

Departments in universities and research institutions vary greatly when it comes to tenure and promotion decisions. Expectations one has to meet to obtain tenure range from highly personalised, e.g., specific conferences are agreed upon between the candidate and the entire tenure committee (I1), quantitative (I15) or qualitative measures (I3), to generic ones (I4, I11). Many interviewees stress the importance of transparency in tenure decisions, whatever procedures are followed (I2, I5, I9, I14). This transparency is sometimes missing (I5) or obscured by numerous conditions that are hard if not impossible to achieve at the same time (I4) creating a sense of uncertainty and stress. At the same time, some interviewees indicate that not all aspects of an academic career can be quantitatively assessed (I15).

Tenure period is extended in case of maternity leave (I7, I10) and should be extended to parental leave.

Promotion rules beyond tenure are often much less clear (I6, I10, I11, I14). I10 is in favour of creating a formal path to a full professor position, so people know what is expected of them. In fact, several interviewees report that for many years there were no promotions for women (I4) or those promotions have been “forced” by external reasons such as large grants being awarded or people being appointed as educational directors (I5).

Organisational culture in the department can make a substantial difference here. In some institutions, the management, together with HR, regularly meets with the group leaders, and discusses the potential of all group members (I7). Such an active monitoring makes the chances for a successful promotion less dependent on a particular group leader.

Finally, many recommendations discussed in the context of hiring committees are equally applicable to tenure and promotion committees. Indeed, in many organisations these committees have the same structure and similar procedures.

## Childcare

While not being prompted to discuss childcare facilities, several interviewees have discussed this topic (I1, I6, I7, I10) calling for on-campus childcare facilities (I1) with extended working hours (I6) and overall better support for parental leave (I10). I10 mentions that some universities give a lump sum when somebody goes on maternity leave, which she can use freely to start activities to compensate for the gap in her cv.

## Management

CS management is often well-aware of the need for diversity within the department. However, to implement measures that can lead to a real culture change is not an easy step. Therefore, it is imperative that department heads from all the Dutch CS departments and CWI regularly discuss these challenges, ideas and experiences.

## Conclusions

The results of this investigation allow us to identify several recommendations that universities and faculties should consider implementing to support hiring, onboarding and retaining women:

- Create awareness of the importance of diversity among employees of all genders and seniorities.
  - Diversity trainings can be an instrument to create awareness.
- Recruitment messages should be gender-neutral, should not stress excellence and should explicitly encourage women to apply. The messages should still be appropriate for the CS domain.
  - Broad scope announcements can attract more women but should clearly communicate expectations.
  - Recruitment should include scouting and exploration of personal networks as well as advertising in appropriate channels in countries where there are more women in CS.
  - Hiring committees should be aware of their own biases and adhere to best practices of inclusive hiring. Candidates should be made aware of Dutch negotiation culture.
- Mentoring is a mandatory element of the onboarding.
  - Mentor is usually a senior woman from a different organisational unit.
  - Universities should financially support women support networks and see them as a valuable partner in determining diversity and inclusion strategies.

- Transparency in tenure and promotion decisions is crucial.
- Support of maternity, parental leave and childcare should be improved.

We should stop fixing the women and start fixing the system.

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## Appendix A: Dissemination plan

To ensure the impact of this work on the daily practice of the Dutch CS faculties we will start by presenting this document to the ICT Research Platform Netherlands (IPN). Then we disseminate this document among the deans of the Computer Science faculties of the Dutch Universities and CWI. Next we will schedule a series of meetings with the deans to discuss their vision on the problems and best practices identified in the document as well as their plans on implementing those practices. Finally, we will broadly disseminate this document using both traditional mail and social media.

## Appendix B; Summary of the follow-up meetings

After the report has been prepared it has been discussed at the IPN (ICT Research Platform Nederland), a body uniting all Dutch academic research groups that have ICT science as their core, and it has been shared with representatives of all Dutch universities. To discuss the report we have conducted a series of informal meetings with the representatives of all Dutch universities: for each university we have invited the head of the Computer Science division and 1-2 representatives of the institution in the IPN EDI group. We have opted for informal conversations and did not record them to allow the participants to express their opinions as freely as possible. The authors have been taking notes during the meetings with the second author acting as the primary note-taker; the first author then reviewed the notes and checked for omissions, mistakes and inconsistencies. Preliminary version of this appendix has been discussed at the meeting of the Equity, Diversity and Inclusion group of IPN.

Similarly to the report itself, during the meetings we have discussed the changes required to change the university as an organisation, recruitment, retaining and promotion of women and finally topics related to parenthood.

- When discussing the changes required at the organisational level our respondents have highlighted that similarly to the Athena SWAN effort in the UK, long-term commitment is essential to ensure change of the organisational culture. Moreover, even in presence of such best practices as mentoring, buddy system or active bystander training, awareness of how women experience the working environment at Computer Science divisions might be missing. Participants also suggested to expand the discussion of recruitment, retainment and promotion of women to women in non-academic positions as they might experience being treated differently from their peers.
- In terms of recruitment procedures participants also suggested “beta testing” the job advertisement, i.e., asking women currently employed by the institution whether they would react to the advertisement. During the interviews, at least two women should be part of a recruitment committee as well as an external observer. Furthermore, candidates invited to the interviews should be provided with information on childcare and Dutch culture. Universities might consider some form of mentoring before (or in parallel to) the interviews.
- In terms of recruitment policies, universities should also be more proactively looking for solutions of partner employment, as lack of employment opportunities for partners often prevents women from applying or accepting the offers. Furthermore, they should invest



in hiring senior women from the industry for one day a week, to create an impression that “women are there”.

- Retaining women in scientific positions is particularly difficult due to lack of stability at the junior level (postdoc, tenure track) as well as the extra work imposed on women due to expectation to invest in hiring more women or mentoring junior women. Women should be rewarded for this work but changing the reward system is challenging, even if people are willing to do it, as it requires a change in culture. Retaining women is further threatened by increasing workload and the associated implicit expectation that researchers should put extra hours in their work; as well as inappropriate student evaluations of teaching known to be biased against women and teachers from minority groups.
- Promotion of women can be supported by creating additional roles with managerial responsibilities, women can apply for. Moreover, the institutions should invite employees to reflect on their career, and support it in ways specific for a particular employee: there might be gender-related differences between what the employees require to support their careers (men - money and things, women - support and coaching) and how they ask for it.
- Finally, information related to parenthood and childcare facilities should be provided from the very beginning of the hiring process, and these considerations should be included in procedures related to promotion, e.g., universities should establish fair rules related to pregnancy and parental leave as part of the tenure track regulations. Furthermore, the promotion boards should not underestimate the challenges of parenthood/care taking duties also beyond the parental leave/care leave.

**Recommendation:** Based on the interviews and the series of follow-up interviews we recommend organizing a series of yearly meetings between representatives of the IPN EDI group, division heads and members of IPN EDI from the corresponding divisions. The topics of the discussion might cover different aspects of diversity and inclusion. It is important to keep the discussion on-going, to check the status of the EDI activities and support reflection. One might also consider organising separate discussions with division heads and with the new hires, as their perception of the diversity and inclusion within the division might differ.