

Impact-Aware Manipulation by Dexterous Robot Control and Learning in Dynamic Semi-Structured Logistic Environments



Gender Action Plan

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Control sheet

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ABBREVIATIONS

Abbreviation	Definition
EC	European Commission
PU	Public
WP	Work Package



EXECUTIVE SUMMARY

Currently, the EU Gender Action Plan 2016-2020 (referred to as GAP II) [3] is the Union's framework for promoting gender equality and women and girls' empowerment in external relations in third and partner countries, as well as in international fora and agendas.

The "She Figures 2018" report [4] shows that the number of women employed as scientists and engineers grew on average by 2.9% per year between 2013 and 2017. The number of tertiary educated women employed as professionals or technicians also grew over this period by 2.2% per year on average. Both these rates are faster than the respective rates for men.

The following document describes the actions that are implemented within the I.AM. project to contribute to that objective.

I.AM. will be making use of several institutional initiatives, such as TU/e Irene Curie Fellowship [1] or the CNRS "mission pour la place des femmes au CNRS" initiative [2] and additionally provide several action points in this deliverable that will be implemented throughout the course of the project in order to improve gender equality within the project and hopefully also on long-term after the project ends.



1. INTRODUCTION

1.1. Project background

Europe is leading the market of torque-controlled robots. These robots can withstand physical interaction with the environment, including impacts, while providing accurate sensing and actuation capabilities. I.AM leverages this technology and strengthens European leadership by endowing robots to exploit intentional impacts for manipulation. I.AM focuses on impact aware manipulation in logistics, a new area of application for robotics which will grow exponentially in the coming years, due to socio-economical drivers such as booming of e-commerce and scarcity of labour.

I.AM relies on four scientific and technological research lines that will lead to breakthroughs in modeling, sensing, learning and control of fast impacts:

1. I.Model offers experimentally validated accurate impact models, embedded in a highly realistic simulator to predict post-impact robot states based on pre-impact conditions;
2. I.Learn provides advances in planning and learning for generating desired control parameters based on models of uncertainties inherent to impacts;
3. I.Sense develops an impact-aware sensing technology to robustly assess velocity, force, and robot contact state in close proximity of impact times, allowing to distinguish between expected and unexpected events;
4. I.Control generates a framework that, in conjunction with the realistic models, advanced planning, and sensing components, allows for robust execution of dynamic manipulation tasks.

This integrated paradigm, I.AM, brings robots to an unprecedented level of manipulation abilities. By incorporating this new technology in existing robots, I.AM enables shorter cycle time (10%) for applications requiring dynamic manipulation in logistics. I.AM will speed up the take-up and deployment in this domain by validating its progress in three realistic scenarios: a bin-to-belt application demonstrating object tossing, a bin-to-bin application object fast boxing, and a case depalletizing scenario demonstrating object grabbing.

1.2. Gender Action Plan background

On 17 February 1999, the European Commission adopted the Communication "*Women and Science: mobilizing women to enrich European research*" [3], in which it undertook to mobilize women to enrich European research. Back in 2002, the Helsinki Group produced a report on National Policies on Women and Science in Europe [4]. Since then, correcting the underrepresentation of women in science has been part of a strategic approach to bring forward equal opportunities in the field of scientific research, enhance European competitiveness, and fully realize the European innovation potential. The European Commission sets the target of 40% women in the implementation and



management of its research programs at all levels. Currently, The EU's Gender Action Plan 2016-2020 (referred to as GAP II) [5] is the Union's framework for promoting gender equality and women and girls' empowerment in external relations in third and partner countries, as well as in international fora and agendas.

The "She Figures 2018" report [6] shows that the number of women employed as scientists and engineers grew on average by 2.9 % per year between 2013 and 2017. The number of tertiary educated women employed as professionals or technicians also grew over this period by 2.2 % per year on average. Both these rates are faster than the respective rates for men.

The following document describes the actions that are implemented within the I.AM. project to contribute to that objective.

1.3. Purpose of the deliverable

This deliverable D6.2 Gender Action Plan, aims at providing the background for gender equality as stated by European Commission and provides an overview of the actions that the consortium of I.AM. will execute throughout the duration of the project on gender equality both on institutional as on project level.

1.4. Intended audience

The dissemination level of D6.2 is 'public' (PU) – meant for members of the Consortium (including Commission Services) and the general public. This document is intended to serve as an internal guideline for the entire I.AM. Consortium and provide the consortium's implementation plans regarding gender equality to the general public.



2. EU GENDER ACTION PLAN 2016-2020

2.1. EU Gender Action Plan 2016-2020

The scope of the European Union “Gender Action Plan 2016-2020”[7] , also known as GAP II, is the second iteration of the Gender Action Plan and is much broader than the single problem of women representation in research and in fact addresses all gender-related questions.

Currently, a new version of the Gender Action Plan (GAP III) is being proposed [8], but as of time of writing this has not yet been finalized and accepted by EC. So, for reference in I.AM. project, we describe here mainly the status as described in GAP II.

The GAP II action plan is split into two broad categories:

1. Institutional Culture Shift in the European Union External Relations;
2. Thematic priorities;

The first category aims at ensuring that the EU’s commitments on gender equality are translated into clear and tangible outcomes. To do so, it defines clear, objective and numeric, indicators that gauge the progress made by the EU partners on the gender issues.

This is reflected in the European Union scientific projects through the various indicators that projects, including of course the I.AM. project, provide each year regarding female involvement in research.

The second category, thematic priorities, defines three themes:

- Physical and Psychological Integrity - To prevent, and respond to, all forms of violence against girls and women.
- Social and Cultural Rights - Economic and Social Empowerment - To contribute in a measurable manner to girls’ and women’s economic and social empowerment, to their active participation in the economy and to the prevention of economic exploitation.
- Political and civil rights - Voice and participation - To contribute in a measurable manner to an increase in girl’s and women’s agency, voice and participation in social, economic and civil life.

The I.AM. project’s partners believe in the merit of this initiative and wish to contribute to its realization through the present Gender Action Plan and the positive actions undertook within the project.



3. I.AM. GENDER ACTION PLAN

Within the I.AM. project, we aim for gender equality within the project in both leading positions, such as work package leads or technical leads as well as research positions.

We will aim to do this in 2 ways, on institutional and on project level:

- Making use of platforms for stimulating gender equality that each of the partners already have
- Provide concrete project related actions to improve the gender equality.

As I.AM. coordinator, TU/e actively promotes gender equality already at institutional level [9]:

At TU/e, the community of students and staff strive for diversity. A strong and welcoming community promotes inclusiveness, equality and cooperation. Diversity of nationality, gender, social background and cultural heritage adds to the success and pleasure in education and research. It broadens the research scope and enhances the quality of our education. Inclusion is a way of dealing with each other that is necessary to achieve the best results.

TU/e has therefore a diversity committee that has the following tasks:

1. To review the University's performance and progress in promoting diversity.
2. To support the University in meeting the diversity and gender-related targets in its Strategic Plan.
3. To evaluate the impact and promote the sharing of University-wide good practice initiatives in diversity and gender equality.
4. To develop a TU/e-wide vision on diversity and inclusion and a plan of priorities for further action.

This is currently for example emphasized, by the newly implemented Irene Curie Fellowship (see section 3.1 below).

At a project level:

The I.AM. project consortium strives to recruit 40% women on the project. We hope achieving this goal also seen the encouraging news that the number of women PhD in the scientific field is growing (as mentioned in the She Figures report of 2018 [6]). To that end, specific actions will be taken in I.AM. to attract women into the field of robotics and control and to encourage them to participate and play a leading role in European research.

Currently, Professor Aude Billard (EPFL) has a leading role in the I.AM. project, as lead for WP2.



3.1. At the recruitment stage

As of July 2019, TU/e has launched the Irène Curie Fellowship [1]. This program is aimed at talented women who pursue an academic career in our European top research university. TU/e opens vacancies for assistant, associate and full professor exclusively for female talent during the first six months of recruitment.

On project level, we propose the three following actions to motivate women's candidacy to participate to the project:

1. Open positions will be posted both on each of the partners' websites as well as on job websites specifically targeting female researchers;
2. Gender mixed panels, when possible, will be set-up for the interviews of candidates;
3. The principles of the "Code of Conduct for Recruitment of Researchers" [10] will be followed;

This section further discusses on project level each of these points and how they could be implemented within the project.

3.1.1. Job opportunities and women in the project

This point both concerns:

1. I.A.M. will publish job opportunities in the project as they come up, on the partners' dedicated website section and on job websites that specifically target female researcher.
2. On the I.A.M. website, a section will be created for introducing the members of the project;

Regarding the first point, during the proposal phase the consortium already agreed that new positions will be promoted in appropriate website specifically dedicated to women in engineering, such as:

- The Dutch Network of Women Professors (LNVH): www.lnvh.nl
- University female career development GmbH: www.femtec-berlin.de
- Place des Femmes au CNRS (MPDF): www.cnrs.fr/mpdf
- Women in Science and Research (CEWS): www.cews.uni-bonn.de
- Women's networks in Switzerland: www.femdat.ch

Some examples of how partners incorporate this currently:

- As of time of writing, TU/e has already posted 2 PhD positions on LNVH
- CNRS specifically already uses in its hiring procedures the obligation to start any open vacancy text by mentioning "H/F" meaning (Homme/Femme) followed by the description of the position, to emphasize a more non-biased pro-active approach.



- TUM has the following text at every vacancy text:
“TUM has been pursuing the strategic goal of substantially increasing the diversity of its staff. As an equal opportunity and affirmative action employer, TUM explicitly encourages nominations of and applications from women as well as from all others who would bring additional diversity dimensions to the university’s research and teaching strategies. Preference will be given to disabled candidates with equal qualifications. International candidates are highly encouraged to apply.”

For the second point; on the project website (see D6.1), one page introduces all the members of the project without distinction between male and female members of the project. In the future, as the project progress warrants such kind of presentations, we consider presenting in detail the project-related work of some of the people involved in this project. The first of these spotlights will be dedicated to women in the project, aiming to such a similar format as in [11].

3.1.2. Gender mixed-panels

I.AM. strives for more diversity; special attention to this when recruiting and assessing staff is useful and even necessary. After all, moments of selection and assessment are crucial when it comes to diversity and inclusion. That is when decisions are made about careers, about who is promoted or who is appointed. Research shows that almost everyone has unconscious preferences, even those who have absolutely no intention of doing so.

In hiring, I.AM. aims to have gender mixed panels, by involving both male and female scientists in the interview with a possible candidate. We will also ensure that the candidate has the opportunity to meet with more members from the group during for example a lunch or invite him/her for a presentation that more people of the group can attend.

I.AM. encourages the use of gender mixed panels to all consortium’s members respective institutes when hiring persons and researchers for long term positions. For short term positions, e.g. internships, that involve a less convoluted process for hiring, the consortium members also enforce this measure within their means.

Aside from including female scientists in the selection procedure, another example of how partners actively encourages gender mixed-panels is that TU/e already offers an "Inclusive Selection and Assessment" training course [12]. This course is designed for current associate and assistant professors to recognize "mind bugs", in order to make them aware of their, oftentimes unintended, bias. TU/e coordinator Alessandro Saccon will follow this course in order to be more aware of the bias in selection procedure (that both male and female interviewers have) within I.AM. for the TU/e hiring.



3.2. Implementing the “Code of Conduct for Recruitment of Researchers”

The “Code of Conduct for Recruitment of Researchers” [10] is a set of general principles and requirements that should be followed by employers and funders when recruiting researchers. These principles and requirements are in line with the values that the European Commission wishes to promote in order to contribute to the advancement of the European Research Area within a framework that allows for sustainable development and appropriate working conditions for the persons involved in these activities.

In particular, this document has the following quote about “Gender balance”:

Employers and/or funders should aim for a representative gender balance at all levels of staff, including at supervisory and managerial level. This should be achieved on the basis of an equal opportunity policy at recruitment and at the subsequent career stages without, however, taking precedence over quality and competence criteria. To ensure equal treatment, selection and evaluation committees should have an adequate gender balance.

This code of conduct has been adopted or approved by the institutes that compose the consortium and its principles and requirements are accepted by our recruitment processes. All the partners of I.AM. account such considerations in their recruitment policies.

As an example, TUM , TU/e and Vanderlande implement the code of conduct in the following ways:

- The TU/e policy for academic staff ‘Excellent People Attract Excellent People: the next generation’ enables new and current academic staff to shape and realize their career paths in a Development Track. Interdepartmental Committees [13], as part of the decision making process on individual scientific and career development, are installed to further the quality of the academic performance and personal development evaluation and feedback at our University. The members of the Interdepartmental Committees develop mutual, in-depth insights and expertise with regard to evaluating, assessing and guiding the scientific talent. The increase of multi-disciplinary and interdepartmental cooperation, both in research and in education, and with regard to valorisation will be stimulated by working with the interdepartmental committees (IFCs)

TU/e aims to conduct ethically responsible and professional appointment and evaluation practices for scientific staff members. Such practices constitute the foundation for lasting excellence. The Rules of Conduct set out principles for appointment and assessment committees in order to assist their members who endeavour to apply “best practices” in the proactive search for, selection and assessment of candidates. The Rules define minimum standards that are to serve as the benchmark for conscientious actions.

- At TUM, a Gender Equality Office is installed to promote equality between women and men and to support all female researchers. As a voting member, the head of Gender Equality Office takes part in the TUM Senate as well as in the TUM Extended Board of Trustees and continuously supports the gender equality efforts. This office organizes the Equality Conference, which takes place once per semester. Moreover, a “Gender & Diversity Board”



exists at the university that functions as a consulting institution for gender and diversity at TUM. Additionally, TUM professor and I.AM. WP3 leader Sami Haddadin supports actively the BayFiD program (<https://bayfid.org/>), which is the initiative of "BayFiD - Bavaria's Women in Digital Professions". The program is aimed at women between the ages of 18 and 30 who are enthusiastic about digital professions. It intends to break down gender-specific career choice behaviours and provides women with the opportunities of digital skills and jobs at an early stage. Participants in the BayFiD program will benefit from extensive training courses to develop their personal strengths. Sami Haddadin is one of their "Paten" (roughly translatable as "sponsor") and their research group hosted a big event for them earlier this year.

- Vanderlande has a policy to actively encourage women to participate. The Dutch workers council and board chose a woman for the supervisory board. Also, when filling in new vacancies, the company prefers to choose a woman, when the choice has to be made between an equally skilled male and female candidate. Vanderlande also invests in initiatives that introduce girls to technology and engineering, from manufacturing, R&D management (see [14] and [15]).

3.2.1. During the course of the project

At the time of the proposal, I.AM. proposed the four following actions to motivate women's candidacy to participate to the project:

1. Women participating in the project will actively be made aware to take part in the different events for the general public;
2. We will allow flexible working hours;
3. Care will be taken to ensure proper visibility of young female scientists in the project (PhD students, post-docs) in the organisation of meetings and scientific conference;
4. An effort will be made in I.AM. to avoid any unnecessary travel and to favour modern communication channels such as videoconference in order to allow women (as well as men), especially those with young children, to involve themselves in European projects;

This section will discuss each of these points and how they have been implemented within the project so-far.

3.2.1.1. Participation in general public events and networking

The aim of such measure is to promote the presence of women within our institutes as a mean to encourage scientific vocations. When such events present themselves, given the availability of women involved in the project, we will make sure they are given a voice.

I.AM. coordinator TU/e has several examples of networks and event which could be used for this purpose. Below a brief overview of a few:



- WISE-network [16]: a network for female scientific staff at TU/e.
- TINT [17]: offers students (BSc, MSc, PhD, and PDEng) the opportunity to deal with life issues related to philosophy of life, meaning, spirituality (parts of being a complete human) and culture (learning from each other's background).
- PhD council [18]: The PhD-PDEng Council consists of representatives of both PhD-candidates and PDEng-trainees who are educated at TU/e.

3.2.1.2. Flexible hours

In current days, flexible hours are a common measure. Especially in Sweden, the Netherlands and France part-time work is already common ground, benefitting both male and female employees. These measures already exist within each institution that compose the project and the national and European laws that govern these institutes work.

3.2.1.3. Visibility of young female scientists

As stated earlier, we will promote such works as part of a series of scientific features on the I.AM. website. I.AM. will provide video interviews, similar to what is for example showcased at the YouTube videos "Working @ Eindhoven University of Technology" [11] and per definition all researchers (male and female) will disseminate their work at national and international conferences.

3.2.1.4. Avoiding unnecessary travels

I.AM. is currently setting up its project environment and will make use of Office 365 capabilities to share documentation, communicate via videoconferencing and improve project participation. These technical solutions include all the modern amenities that allow to diminish the required travels to participate in the project scientific research. We will limit the amount of travels to the required annual project progress meetings and annual research project meetings. In the 2nd, 3rd and last year of the project, possibly also technical integration meetings will take place for integrating the developed technology, but I.AM. will aim to coincide these with the overall project meetings, to limit the amount of travels. Traveling for scientific meetings will be limited by planning these during or around a scientific conference, such as ICRA, to which the researchers are most likely to be travelling already.



4. CONCLUSION

Currently, the EU Gender Action Plan 2016-2020 (referred to as GAP II) [3] is the Union's framework for promoting gender equality and women and girls' empowerment in external relations in third and partner countries, as well as in international fora and agendas.

I.AM. aims to implement this by providing in this deliverable some guidelines, information on current institutional instruments as well as project actions in order to improve gender equality.



5. REFERENCES

- [1] (TU/e), "Irène Curie Fellowship." [Online]. Available: <https://www.tue.nl/en/working-at-tue/scientific-staff/irene-curie-fellowship/>. [Accessed: 22-Mar-2020].
- [2] (CNRS), "Mission for the place of women at the CNRS." [Online]. Available: <http://www.cnrs.fr/mpdf/>. [Accessed: 30-Mar-2020].
- [3] COMMISSION OF THE EUROPEAN COMMUNITIES, "Women and Science - Mobilising women to enrich European research," 1999.
- [4] DG Research (European Commission), *The Helsinki Group on Women and Science - National Policies on Women and Science in Europe*. Brussels, 2002.
- [5] European Commission, "Gender Action Plan II - 2018 Annual Implementation Report," no. August, 2008.
- [6] European Commission, *She Figures 2018*. 2019.
- [7] "EU Gender Action Plan 2016-2020 | Capacity4dev." [Online]. Available: <https://europa.eu/capacity4dev/public-gender/minisite/eu-gender-action-plan-2016-2020>. [Accessed: 27-Feb-2020].
- [8] (CONCORD), "Messages on EU Gender Action Plan III," 2019. [Online]. Available: https://concordeurope.org/wp-content/uploads/2019/10/CONCORD_Messages_GAP3_Oct2019.pdf. [Accessed: 27-Feb-2020].
- [9] (TU/e), "Diversity and Inclusion." [Online]. Available: <https://www.tue.nl/en/our-university/about-the-university/diversity-and-inclusion/>. [Accessed: 22-Mar-2020].
- [10] "Code of Conduct for Recruitment | EURAXESS." [Online]. Available: <https://euraxess.ec.europa.eu/jobs/charter/code>. [Accessed: 25-Jan-2020].
- [11] (TU/e), "Working @ Eindhoven University of Technology - YouTube." [Online]. Available: https://www.youtube.com/playlist?reload=g&list=PLgFH4e_2r1xeReuOPs1Cfj4LzmA6oKN2p. [Accessed: 22-Mar-2020].
- [12] (TU/e), "Inclusive Selection and Assessment (New!)." [Online]. Available: <https://intranet.tue.nl/en/university/services/service-for-personnel-and-organization/human-resource-management/professional-development/scientific-staff-management-training-program/inclusive-selection-and-assessment-new/>. [Accessed: 22-Mar-2020].
- [13] (TU/e), "TU/e Interdepartmental committees - Goals." [Online]. Available: <https://intranet.tue.nl/en/university/interdepartmental-committees/goals/>. [Accessed: 22-Mar-2020].
- [14] (Brabants Dagblad), "Meisjes van scholen uit Veghel en Uden daten bij Ladies Night | Veghel | bd.nl." [Online]. Available: <https://www.bd.nl/veghel/meisjes-van-scholen-uit-veghel-en-uden-daten-bij-ladies-night-af01a2cd/>. [Accessed: 31-Mar-2020].
- [15] (VHTO), "Meet-up in Tech bij Vanderlande: leerzame middag voor pabodocenten - VHTO." [Online]. Available: <https://www.vhto.nl/over-vhto/nieuws/meet-up-in-tech-bij-vanderlande-leerzame-middag-voor-pabodocenten/>. [Accessed: 31-Mar-2020].
- [16] (TU/e), "Women in Science - Eindhoven (WISE) Network." [Online]. Available: <https://www.tue.nl/en/our-university/community/women-in-science-eindhoven-wise-network/>. [Accessed: 22-Mar-2020].
- [17] (TU/e), "About Tint Eindhoven - Tint Eindhoven." [Online]. Available: <https://www.tint-eindhoven.nl/about-tint/>. [Accessed: 22-Mar-2020].
- [18] (TU/e), "PhD-PDEng Council." [Online]. Available: <https://www.tue.nl/en/our-university/community/phd-pdeng-council/>. [Accessed: 22-Mar-2020].