



## PhD in DESIGN - 38th cycle

### PARTENARIATO PNRR Research Field: COMPUTATIONAL DESIGN AND SUSTAINABLE DEVELOPMENT

#### Monthly net income of PhDscholarship (max 36 months)

**€ 1250.0**

In case of a change of the welfare rates during the three-year period, the amount could be modified.

#### Context of the research activity

#### Motivation and objectives of the research in this field

The research will be strictly connected to the development of the Italian PNRR. It is part of MUSA-Multilayered Urban Sustainable Action, an innovation ecosystem promoted by a hub including Politecnico di Milano, Università degli Studi di Milano Bicocca and others. The focus is on the investigation of the opportunities for creating innovative solutions for healthcare, disease prevention and promotion of healthy lifestyles based on data, digital technologies and design for behavior change. The health of citizens, the availability of effective care systems accessible to all and the promotion of lifestyles that favor psychophysical well-being are central development objectives to which design is called together with other actors. The current availability of data and the diffusion of digital technologies make it possible to create platforms in which medical care can be supported and made more efficient through the improvement of information exchange, the increase of awareness on the impacts of behaviors on health and the production of knowledge useful for personalizing therapies. The development of new applications for prevention, promotion of affordable lifestyles, and optimization of therapies is based on three main strategic factors: multidisciplinary collaboration between designers, psychologists, biomedical technology experts and data analysts; the co-design with the citizens who will use the new solutions; the prototyping and testing of new digital solutions. The research is aimed at developing new solutions for health and well-being based on these factors. The MUSA project partners form an ideal network for this purpose. The creation of new applications and



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|  | <p>systems for health is confronted today with some important objectives. The design of new solutions should understand and respond to the diversified needs and attitudes of people, and it is a priority to learn how to design solutions that are increasingly consistent with the needs, priorities, and lifestyles of different groups of citizens. The creation of digital applications must meet the objectives of usability, accessibility, satisfaction of use of end users; it must create understanding and motivation in citizens; it must respond to the constraints of organizational and economic efficiency of health facilities; it should contribute to building a circular and improving model of data collection that produces useful knowledge for citizens and operators. These are the goals of the research, that will be focused also on the specific needs of selected clusters of users and include gender-issues. The expected outcomes will see the generation of scenarios for innovative applications and systems; the validation and critical discussion, also from the ethical point of view, of the proposed solutions through assessment and tests with users; the creation of design principles for the development of digital solutions for health and wellbeing; critical thinking of the theories on design for behavior change applied to the research topic.</p> |
| <p><b>Methods and techniques that will be developed and used to carry out the research</b></p> | <p>The research will interweave both theoretical-conceptual research and applicative-experimental ones. Theoretical-conceptual research will include knowledge from different disciplines:</p> <ul style="list-style-type: none"> <li>- Theories on Design for Behavior change</li> <li>- Behavioral psychology</li> <li>- Advanced UX Design methodologies</li> <li>- Gender studies</li> <li>- Design methodologies for co-design with users and stakeholders</li> <li>- Data-driven design</li> <li>- Design for embodied interaction and wearable technologies</li> <li>- Machine learning and data analysis</li> </ul> <p>The theoretical studies will be performed with the support of the academic partners with expertise in psychology and bioengineering.</p>   |



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|                               | <p>Applicative-experimental activities will include:</p> <ul style="list-style-type: none"> <li>- Co-design activities for the development of applications</li> <li>- Creation of interactive prototypes for assessment and testing</li> <li>- Assessment and tests to validate the suitability and desirability of the designed concepts</li> <li>- Multidisciplinary workshop for the validation of the scenarios.</li> </ul>   |
| <b>Educational objectives</b> | <p>The educational objective of this project is to offer the candidate the opportunity to acquire the theoretical and experimental skills to develop research in an autonomous and qualified way with a particular focus on design in multidisciplinary contexts.</p> <p>The proposal is based on the design-based approach to research. The candidate will acquire theoretical skills in different disciplinary fields that will make him aware of the complexity of designing applications for people's lifestyles, and that will enable him to use different approaches to the study of people's needs and attitudes in user centered design.</p> <p>Furthermore, the candidate will develop theoretical and practical skills regarding research for the project within a UX Design approach, becoming familiar with the results of the data that can guide the design choices. As a result of the project developments, the candidate will investigate the potential of different technological solutions and develop strategies for decisions related to the development of prototypes and their validation.</p> <p>The interpretation of the results of the experiments will make use of the collaboration with partners who are experts in bioengineering and psychology.</p> <p>The candidate will develop the capability to formulate research questions consistent with the objectives of the project and with the thematic focuses proposed by the international research community that is working on the same topics, and to plan and conduct the necessary actions to produce the answers.</p> <p>The candidate will also develop the ability to produce qualified scientific publications suitable for publication in international design research journals and congresses, reporting the theoretical and experimental results of the</p> |



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|                          | <p>research, and thus contributing to the dissemination of the outcomes.</p> <p>The education program will include a period of at least three months abroad at a research center with a high reputation in relation to research topics.</p>  |
| <b>Job opportunities</b> | <p>The professional figures of the interaction designer and the UX designer are today extremely appreciated after in many industrial sectors and in all professional fields of design.</p> <p>In fact, in every area, the digitization processes require that the design be conducted with the participation of designers who have design skills combined with the ability to conduct research on the people to whom the solutions are intended, to grasp their needs, motivations, expectations. and constraints.</p> <p>The techniques used in user experience studies are evolving rapidly and include the ability to read and interpret data on the real behavior of people, to use them in the project and in the improvement redesign of solutions.</p> <p>Today, companies looking for UX designers and interaction designers expect candidates to possess the ability to acquire and use knowledge that comes from disciplines such as behavioral psychology and cognitive psychology. Candidates are also expected to be able to conduct field research, and design co-design and verification activities.</p> <p>The educational and experimental activities program proposed in this document is aligned with the needs of the labor market and the PhD program has the requisites to provide an appreciable experience on the part of different subjects who are now looking for these professionals.</p> <p>Job opportunities are offered by:</p> <ul style="list-style-type: none"> <li>- design companies operating in various sectors of innovation and, specifically, digital innovation</li> <li>- companies that offer digital services</li> <li>- research companies specialized in research on users and customers</li> <li>- private and public institutions that offer digital services to the person</li> <li>- companies that develop wearable technology products</li> </ul> |



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|  | and digital applications<br>In addition to the opportunities listed above and which refer to the general skills acquired by the candidate in the PhD program, there are other opportunities more specifically related to the issues of health and prevention. |
| <b>Composition of the research group</b> | 1 Full Professors<br>2 Associated Professors<br>1 Assistant Professors<br>0 PhD Students  |
| <b>Name of the research directors</b>    | Margherita Pillan   |

| Contacts  |  |
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| email: margherita.pillan@polimi.it<br>phone: 02-2399-5936 |  |

| Additional support - Financial aid per PhD student per year (gross amount) |    |
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| <b>Housing - Foreign Students</b>  | -- |
| <b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>      | -- |

| Scholarship Increase for a period abroad |          |
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| <b>Amount monthly</b>                    | 873.07 € |
| <b>By number of months</b>               | 6        |

| Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information  |
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| <p>Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences):</p> <p>financial aid per PhD student</p> <p>max 5.095,96 euros per student (total for 3 years)</p> <p>Teaching assistanship: availability of funding in recognition of supporting teaching activities by the PhD student there are various forms of financial aid both for research and teaching activities. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</p> <p>Computer availability: 1st year, 2nd year and 3rd year: Each research group will supply PhD student with a computer, if necessary.</p> <p>Desk availability: 1st year, 2nd year and 3rd year: Each research group will supply phd student with a desk</p> |