POLITECNICO DI MILANO

PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 39th cycle

Research Area n. 1 - Computer Science and Engineering

PNRR 118 PA Research Field: HUMAN-CENTERED AI FOR KNOWLEDGE WORK

Monthly net income of PhDscholarship (max 36 months)
€ 1400.0 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	In the current era of a knowledge-based economy, the effectiveness of public administration is increasingly dependent on knowledge work. To successfully navigate the digital transformation of public administration, knowledge workers should be equipped with sophisticated tools and technologies that boost their efficiency and productivity in managing knowledge-centric tasks. Artificial intelligence (AI) tools have the potential to help knowledge workers manage the complexity of this digital transformation by automating routine tasks, providing decision support, and enhancing collaboration. One area where AI shows promise for knowledge workers is information seeking, where technologies like large language models (LLMs) promise to retrieve and consume information more efficiently than traditional methods but at the risk of loss of control and lack of trust in the gathered information. The research proposal aims to support knowledge work by contributing to the integration of novel AI technologies into knowledge workers? workflow. The Ph.D. research will have the objective of designing novel interactive systems that can improve how knowledge workers retrieve and consume information while ensuring high levels of user control, safety, and trust, according to the principles of human-centered AI (HCAI).

	principles of human-centered AI (HCAI). To achieve this objective, the proposed research will contribute to the development of a design framework that accounts for the unique challenges posed by AI. The framework will then be used to develop innovative technical solutions that align with human values and needs. The effectiveness of these solutions will be evaluated through a rigorous validation process involving a range of studies spanning qualitative and quantitative analytics.
Methods and techniques that will be developed and used to carry out the research	The research will draw on the principles of HCAI to implement methods, tools, and user interfaces for supporting knowledge work, including novel methods for dealing with uncertainty in design, novel user interfaces for providing enhanced control and transparency in AI-infused tools, and novel predictive techniques for anticipating knowledge workers' information needs.
Educational objectives	The Ph.D. project will equip the student with the ability to conduct user-centered design. The student will develop expertise in the responsible and ethical use of AI, drawing from the principles of Human-Centered AI, which are increasingly adopted by leading technology companies and crucial for the development of user-oriented systems. They will also learn to assess the feasibility of their research and transfer their findings into practical processes for producing digital services. The project offers a unique opportunity for the successful candidate to engage with cutting-edge research topics that are of high significance globally and have tangible applications in the industry.
Job opportunities	Currently, there is a significant trend in utilizing AI to assist with complex tasks that demand advanced skills. The market for LLM-based technologies is flourishing, and there is a strong need to comply with ethical standards. The suggested research presents an exceptional opportunity to integrate these promising areas into the development of future digital interactive systems. This

	approach can create numerous employment prospects as the trend towards designing AI-powered technologies that cater to human requirements continues to grow.
Composition of the research group	0 Full Professors 2 Associated Professors 0 Assistant Professors 3 PhD Students
Name of the research directors	prof. Salvatore Andolina

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

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Comune di Prato, pubblica amministrazione
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	University of Helsinki, università pubblica
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student. TEACHING ASSISTANTSHIP: availability of funding in recognition of supporting teaching activities by the PhD student There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

COMPUTER AVAILABILITY: individual use.

DESK AVAILABILITY: individual use.