POLITECNICO DI MILANO

PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 41st cycle

THEMATIC Research Field: ARTIFICIAL INTELLIGENCE AND DECISION MAKING – TOWARDS A REAL AUGMENTED INTELLIGENCE

Monthly net income of PhDscholarship (max 36 months)
1500.0 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	Artificial Intelligence (AI) is reshaping how decisions are made in organizations, raising critical questions about the evolving roles of humans and machines. While early visions emphasized full automation, recent developments show that the most promising uses of AI emerge from hybrid models where human judgement and machine capabilities interact synergistically. This shift towards "Augmented Intelligence" reframes AI not as a substitute for human decision-making, but as a support system that enhances human capabilities such as judgement, intuition, and creativity. The research investigates the paradox between automation and augmentation, where the two approaches are not mutually exclusive but interdependent across time and organizational processes. Organizations often face a strategic dilemma: automation promises cost-efficiency but can lead to loss of human expertise; augmentation fosters learning and responsibility but may be harder to scale. Understanding how to navigate this paradox is essential to avoid short-sighted, partial strategies that lead to skill erosion or technology rejection. The project aims to: - Understand how AI impacts decision-making structures and human roles across design, implementation, and use stages. - Identify the organizational conditions and interaction designs that favour responsible and effective integration

	of AI. - Develop the concept of Augmented Intelligence as a sustainable and human-centered path to AI adoption in organizations.
Methods and techniques that will be developed and used to carry out the research	The research will adopt a multi-method approach to explore the complex, evolving relationship between AI systems and human decision-making in organizational contexts. - Case Study Research will be employed to explore real-world examples of AI integration across different sectors (e.g., healthcare, manufacturing, public administration). This will help identify design dilemmas, success factors, and unintended consequences in the implementation of human-AI collaboration. - Lab Experiments will be used to simulate specific decision-making environments where human and algorithmic agents interact. These experiments will allow researchers to test causal relationships, compare alternative interaction designs, and assess the effect of contextual variables such as accountability or transparency. These methodologies will be applied iteratively to investigate at least on the three core phases of AI use: design (e.g., involving users in system development), implementation (e.g., adapting organizational structures), and use (e.g., measuring outcomes and human-machine contribution). Special attention will be paid to identifying organizational archetypes and managing paradoxes in human-machine collaboration.
Educational objectives	This PhD project offers a unique opportunity to develop interdisciplinary expertise at the intersection of AI technologies, decision sciences, and organizational studies. The educational path will combine rigorous academic training with hands-on methodological development, aiming to equip the candidate with: - Advanced knowledge in theories of automation, augmentation, and paradox management. - Competence in empirical methods including qualitative case study research, experimental design, and design science approaches.

	- Skills in analyzing sociotechnical systems, with particular focus on human-algorithm interaction and responsible innovation. - Capacity to assess organizational impacts of AI, including accountability, bias mitigation, and knowledge production. - Ability to engage in collaborative research with external partners, such as tech companies, public institutions, or research labs. The candidate will be encouraged to publish in top-tier journals, present findings in international conferences, and contribute to academic and applied debates on AI in decision making. The project supports a learning-by-doing approach, where the PhD student plays an active role in shaping the research agenda and contributing to the broader discourse on ethical and sustainable AI use.
Job opportunities	This PhD project is designed to prepare candidates for diverse career paths that combine academic excellence with high societal relevance. Upon completion, graduates will be competitive for: - Academic careers in management, information systems, or organizational theory, with a specialization in digital transformation and AI adoption. - Industry roles such as AI integration consultants, digital transformation analysts, or innovation managers, where they can lead projects involving responsible and effective AI implementation. - Policy and public sector positions, contributing to the development of guidelines, regulations, and evaluation frameworks for human-centered AI in domains such as health, education, or public services. - Research and development roles in think tanks, labs, or technology-driven firms focusing on human-computer interaction, organizational innovation, and ethical AI. Graduates will be equipped not only with technical and analytical tools, but also with a strong reflexive understanding of the human and organizational implications of AI. This will enable them to act as bridges between technical experts, decision makers, and stakeholders, guiding organizations toward augmented intelligence strategies that are both effective and ethically

	sound.
Composition of the research group	1 Full Professors 0 Associated Professors 0 Assistant Professors 1 PhD Students
Name of the research directors	Matteo Kalchschmidt

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents	--

Scholarship Increase for a period abroad	
Amount monthly	750.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

The candidate will be provided with a desk and access to all facilities required for the research. A key facility will be the BRIEL Lab in particular to develop lab Experiments that will constitute a significant part of the research project.
Additional opportunities to work on side projects that may relate to the general topic will be provided. Opportunities to be involved in teaching activities will be provided. All these are not mandatory, but additional opportunities to develop skills and capabilities.
Italian language skill is not mandatory but can be useful given the possible need to interact with local companies and institutions.

For the overall development of their capabilities, PhD candidates will work on sinergical projects to favour empirical data collection and network development for their career. Projects will give candidates the opportunity to work in groups (peers and other senior professors).

If coherent with the development of their doctoral program, the PhD candidate will have the opportunity to be involved in: teaching activities, tutoring to master students, tutoring to PhD candidates for administrative processes.

Funding for educational activities: 6.100,00 Euros for three years.