



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 40th cycle

THEMATIC Research Field: HUMAN-CENTRIC ENGINEERING DESIGN IN INDUSTRY 5.0

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	<p>On the one hand, Artificial Intelligence (AI) is radically changing the way data and information related to products and industrial processes are generated, acquired, elaborated and utilized. On the other hand, the role of humans in Industry 5.0 is of paramount importance, and new scenarios for exploiting human cognitive abilities are emerging. Given the apparent conflicting nature of the above trends, a research target that deserves significant attention is how to combine business and industrial interests with the valorization of human potential in the development of optimized products and processes. This research field concerns the methods and tools to properly exploit the implementation of digital technologies with the overall goal of developing advanced solutions and engineering design strategies. The specific research objective of the thesis will concern at least one of the following topics: Virtual, eXtended, and Augmented Reality, Metaverse, Digital Human Modeling, Artificial Intelligence (AI) for Design, Digital Twin and Additive Manufacturing.</p>
Methods and techniques that will be developed and used to carry out the research	<p>The research will be developed by referring to both emerging and established methodologies and technologies such as: Virtual, eXtended and Augmented Reality, Reverse Engineering, Artificial Intelligence, Multi-objective Optimization, Digital Twin, Digital Data Management, Human-Human, Human-Computer and Human-Machine Interaction and Design for Additive Manufacturing.</p>



Educational objectives	Operational competencies on up-to-date methodologies and technologies for developing innovative digital solutions and applications. Capability to interpret technology evolution and the dynamics of technological and digital transformations. R&D skills for scientific and industrial applications. Soft skills in the delivery of scientific talks, drafting project reports and scientific papers, and delivery of presentations to industry.
Job opportunities	Employment statistics of PhDs can be found at https://cm.careerservice.polimi.it/en/employment-statistics/ . The PhD candidate will develop the PhD thesis within an international environment. The research group has multiple collaborations ongoing with Institutions and universities inside and outside Europe.
Composition of the research group	4 Full Professors 8 Associated Professors 4 Assistant Professors 19 PhD Students
Name of the research directors	Proff. Colombo, Cascini, Bordegoni, Ferrise

Contacts

Names of the Research Directors:

Prof. Giorgio Colombo (giorgio.colombo@polimi.it, +39 02 2399 8259)
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For questions about scholarship/support, please contact phd-dmec@polimi.it.

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	750.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 6.114,50.</p> <p>Our candidates are strongly encouraged to spend a research period abroad, joining high-level research groups in the specific PhD research topic, selected in agreement with the Supervisor. An increase in the scholarship will be applied for periods up to 6 months (approx. 750 euro/month- net amount).</p> <p>Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD candidate. 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.</p>