



PhD in DATA ANALYTICS AND DECISION SCIENCES - 39th cycle

**THEMATIC Research Field: IN-SITU BIG DATA MINING FOR 3D PRINTING PROCESS
MONITORING, CONTROL AND ADAPTIVE OPTIMIZATION**

Monthly net income of PhDscholarship (max 36 months)

€ 1300.0

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

Industry 4.0 is fostering a new generation of enabling technologies driving digital and smart manufacturing. Among these technologies, Additive Manufacturing, 3D printing and bioprinting are very promising solutions to target the green and digital goals that industry and society have to meet in the near future. Thanks to smart sensing, a new generation of big data (images, video- images and signals) are available to aid decision-making and define new solutions for in-situ monitoring, control and optimization. <https://www.ic.polimi.it>

Methods and techniques that will be developed and used to carry out the research

- Spatio-temporal modeling
- Image and thermal video image data modeling
- Multistream data reduction
- Statistical quality monitoring and transfer learning
- Metamodeling for process optimization

Educational objectives

The PhD candidate will develop skills and core competencies to face data mining, modeling, control to aid defect prediction and prevention in-situ and in-line in additive manufacturing and 3D bioprinting.

Job opportunities

- Industry 4.0 specialist
- Data scientists for industry 4.0



	<ul style="list-style-type: none"> •Quality experts in Additive manufacturing and bioprinting •Scientist in data mining for zero-waste advanced manufacturing
Composition of the research group	1 Full Professors 1 Associated Professors 1 Assistant Professors 5 PhD Students
Name of the research directors	Bianca Maria COLOSIMO

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	650.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>List of Universities and Companies cooperating in the research:</p> <ol style="list-style-type: none"> 1. Massachussetts Institute of Technology (MIT) 2. Georgia Institute of Technoogy 3. European Space Agency 4. Siemens (Erlangen) 5. Fraunhofer (IPA) <p>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>