

Politecnico di Milano

PhD in Information Technology

Research Area n. 1 – Computer Science and Engineering

Research Title: Data-Driven Resilience in Business Process for Industry 4.0

Scholarships and Financial support	
Monthly net income of PhD scholarship (max 36 months)	€. 1325 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Increase in the scholarship for stays abroad	€ 566,36 per month, for up to 6 months
Number of scholarships	1 reserved by virtue of INPS requirements to the children and / or orphans of members of the INPS "Gestione unitaria delle prestazioni creditizie e sociali" and to the children and / or orphans of retired users of the INPS "Gestione dipendenti pubblici".
Beginning of PhD	2 November 2020
Deadline for application	3 September 2020
Context of the research activity	
Motivations and objectives of the research in this field	Resilience is nowadays one of the main properties that an Information System and to guarantee to support the business continuity even in case of emergency situations. Especially in case of inter-organizational activities, resilience also implies to be able to enact business processes also in case one or more parties are not able to fully complete their job or to make their data accessible or the underlying infrastructure, that is increasingly relying on IoT solutions, fails.

	Following a data-drive approach, the research aims at innovate the methods and tools for designing IoT driven business processes to discover potential critical zones and for implementing solutions able to cope with emergency situations when occur. Additional info can be find at http://plebani.faculty.polimi.it/phd
Methods and techniques that will be developed and used to carry out the research	Starting from the state of the art concerning adaptive business processes and from the reference models like RAMI 4.0 (for Industry 4.0), the research will innovate the design tools (e.g., BPMN, CMMN) and the related engines to increase their flexibility
Educational objectives	To understand the role of business processes in complex scenarios where several actors are involved To understand the flexibility of declarative languages to design business processes To design and implement solutions integrating IoT (Internet of Things) and business processes To know the current solution enabling Industry 4.0 paradigm
Job opportunities	The candidate will acquire a solid experience on IoT driven business process modeling and execution which is very valuable especially nowadays where Industry 4.0 has been more and more adopted as a reference paradigm.
Composition of the research group	1 Full Professors 3 Associate Professors 1 Assistant Professors 2 Post-Docs 1 PhD students https://isgroup.dei.polimi.it/teaching/
Names of the research directors	Pierluigi Plebani
Contacts	Pierluigi.plebani@polimi.it Tel 02 2399 3473
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1. Engineering Ingegneria Informatica 2. Ulm University - Germany
Additional support	
<u>Educational activities</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year	2 nd year: max 1534,00 euro per student 3 rd year: max 1534,00 euro per student
<u>Teaching assistanship:</u> 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.
<u>Computer availability:</u>	1 st year: <i>individual use</i> 2 nd year: <i>individual use</i> 3 rd year: <i>individual use</i>

<u>Desk availability:</u>	1 st year: <i>individual use</i> 2 nd year: <i>individual use</i> 3 rd year: <i>individual use</i>
Additional information	
<p>According to the agreement with INPS, the candidate will spend 6 months in a company (Engineering – Ingegneria Informatica) and 3 months in a University (Ulm University, Germany). Agreements with those entities have been already established.</p>	