POLITECNICO DI MILANO

PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 40th cycle

Research Area n. 1 - Computer Science and Engineering

THEMATIC Research Field: ELECTRIC VEHICLE AND SMART GRID CYBERSECURITY

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	The evolution of the landscape associated with smart and electric vehicles (EVs), along with their growing market share, has prompted the development of novel solutions for integrating EV charging stations with the electric smart grid. This ecosystem integrates critical infrastructure, safety-critical cyber-physical systems, and innovative AI technologies. Given the critical assets involved and the complexity of this new landscape, a careful cybersecurity evaluation is fundamental to ensure the development of safe and secure solutions. This Ph.D. research aims to systematically investigate the threat model of EV charging stations and smart grid ecosystems to understand relevant threats and identify the most effective countermeasures.
Methods and techniques that will be developed and used to carry out the research	The research will study the application of existing threat modeling methodologies in the smart grid and EV charging ecosystems. Once these methodologies have been applied, the candidate will focus on identifying the most relevant threats. Additionally, the candidate will undertake practical analyses of the identified threats and vulnerabilities, designing offensive security techniques to evaluate their security implications on the system. Finally, the candidate will design innovative defense measures for the systems at hand.

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Educational objectives	The Ph.D. program aims to equip the candidate with in-depth knowledge and practical skills in identifying and mitigating security threats specific to the cyber-physical ecosystems world. The candidate will learn to develop both offensive and defensive security measures for cyber-physical systems.
Job opportunities	Graduates of this program will be well-positioned for roles in academia, research institutions, and industries focused on cybersecurity and cyber-physical systems. The demand for professionals with advanced knowledge in this area is expected to continue to grow, especially for those with domain-specific knowledge.
Composition of the research group	1 Full Professors 0 Associated Professors 2 Assistant Professors 8 PhD Students
Name of the research directors	Stefano Longari

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

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 5707,20 Euro

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

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