

# COMPUTER SCIENCE AND ENGINEERING

Section "Positions and scholarships" integrated on 29/05/2019

Section "Positions and scholarships" integrated on 31/05/2019

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<b>Starting date of the PhD Programme</b>	01/11/2019		
<b>Duration</b>	3 calendar years		
<b>Language of the PhD Programme</b>	English		
<b>Mandatory stay abroad</b>	Yes (3 months)		
<b>Research topics</b>			
<ul style="list-style-type: none"> <li>- Distributed systems and algorithms</li> <li>- Programming languages and systems</li> <li>- Computer networks and applications</li> <li>- Software engineering</li> <li>- Formal methods and semantics of programming languages</li> <li>- Artificial intelligence</li> <li>- Real-time and fault-tolerant systems</li> <li>- Parallel algorithms and probabilistic algorithms</li> <li>- Image Processing</li> <li>- Bioinformatics and biometric systems</li> <li>- Information systems and databases</li> <li>- Concurrency theory</li> <li>- Security</li> <li>- Logical foundations of computer science</li> <li>- Multimedia systems</li> </ul>			
<b>PhD positions and scholarships</b>			
<b>Position n.</b>	<b>Financial support</b>	<b>Description</b>	<b>Positions linked to research subjects</b>
1	PhD Scholarship	Totally funded by the University of Bologna general budget	
2	PhD Scholarship	Totally funded by the University of Bologna general budget	
3	PhD Scholarship	Totally funded by the University of Bologna general budget	
4	PhD Scholarship	Totally funded by the University of Bologna general budget	
5	PhD Scholarship	Totally funded by the University of Bologna general budget	
6	PhD Scholarship	Totally funded by the Department of computer science and engineering	
7	PhD Scholarship	Funded under the three-year High Competence Plan for research, technology transfer and entrepreneurship (POR FSE funds – Resolution n. 388 of 19/03/2018). All PhD activities will take place at the Department of Cesena UOS. The presence of the doctoral student at this location is strictly necessary. The assignment of this scholarship is subject to the declaration of residence or domicile of the beneficiary in Emilia-Romagna.	Big Data Analytics for IoT data: applications to Agriculture and Industry 4.0
8	PhD Scholarship	Totally funded by Sis.Ter S.r.l.	Artificial intelligence techniques for water management and irrigation planning
9	PhD Scholarship	financed by the National Research Council (CNR) with funds from the E-RIHS infrastructure	Knowledge graphs and ontology patterns for heritage interpretation, preservation, documentation and management;

10	PhD Scholarship	financed by the National Research Council (CNR) with funds from the E-RIHS infrastructure	Semantic virtual environments for cultural heritage;
11	PhD Scholarship	financed by the National Research Council (CNR) with funds from the E-RIHS infrastructure	Automated learning of models for cross-modal linking of creative works.
12	PhD Scholarship	Financed by CNR - ISMN (Istituto per lo Studio dei Materiali Nanostrutturati)	Modeling methods and machine learning tools for predictive design of materials, processes and novel devices in advanced applications and e-health
13	Research grant	Provided by the Department of Computer Science and Engineering. This research grant will have a duration of 12 months and a gross percipient amount of 20.350€	Human computer interaction and data visualization
14	Research grant	Provided by the Department of Computer Science and Engineering. This research grant will have a duration of 12 months and a gross percipient amount of 19.367€	Transparent, Explainable, Accountable and Verifiable AI for the Health Domain
15	Research grant	Provided by the Department of Computer Science and Engineering. This research grant will have a duration of 12 months and a gross percipient amount of 19.367€	AI and creativity: automatic generation of theatrical dance movements in robots
16	PhD Scholarship	Financed by the Department of Computer Science and Engineering with funds made available by Credit Agricole Italia, Fondazione Fruttadoro Orogel e Fondazione Romagna Solidale Onlus	From sensors to analysis: study of complex systems for the integration of heterogeneous and financial data and their solutions
17	PhD Scholarship	Financed by the Department of Computer Science and Engineering within the UE Project Fidelity	Generative models and their application to vision and biometrics
18	Research grant	Provided by the Department of Computer Science and Engineering with funds made available by Project H2020_A14EU (Prof.ssa Michela Milano). This research grant will have a duration of 12 months, renewable up to 36, and a gross percipient amount of 19.367 €.	AI techniques for evaluating the fruition of artworks
19	Research grant	Provided by the Department of Computer Science and Engineering. This research grant will have a duration of 12 months, renewable up to 36, and a gross percipient amount of 19.367 €.	Fog computing for the monitoring and reconfiguration of industrial IoT under QoS constraints
20	Research grant	Provided by the Department of Computer Science and Engineering with funds made available by Project MobileCloud_Network. This research grant will have a duration of 12 months, renewable up to 36, and a gross percipient amount of 19.367 €.	Fog computing to enable federated learning in Industry 4.0
21	Research grant	Provided by the Department of Computer Science and Engineering with funds made available by Project Ecoirra. This research grant will have a duration of 12 months, renewable up to 36, and a gross percipient amount of 19.367,00 €.	Big Data and IoT enriched environment as novel event based middleware for Smart Tourism
22	Research grant	Provided by the Department of Computer Science and Engineering with funds made available by Project Ecoirra. This research grant will have a duration of 12 months, renewable up to 36, and a gross percipient amount of 19.367 €.	Edge and Big Data technologies to enable Industry 4.0 rich services, shop floor, pre-sale and after-sale

**Positions linked to specific research subjects:** during the oral test, applicants may express to the Admission board their interest in one or more positions linked to specific research subjects. Considering the expressions of interest above, the Admission Board shall express its view on the suitability of the interested applicants, taking into account their specific skills, experience and aptitude.

#### Admission requirements

Please, see art. 2 of the Call for applications

#### Mandatory documents to be attached to the application

Please, see art. 3 of the Call for applications

**Further qualifications that may be attached to the application, if in possession of the applicant** (only qualifications

attested by documents drawn up in Italian, English, French, German and Spanish shall be considered as valid and assessed by the Admission Board)

- Abstract of the second cycle master's degree thesis. Undergraduate applicants may submit the draft of the thesis approved by their supervisor (please, note that abstracts cannot exceed 5.000 characters, including spaces and formula possibly used. The above figure does not include: the title of thesis, the outline, and images such as graphs, diagrams, tables etc. - where present). **To be drawn up in ENGLISH or in ITALIAN.**
- No more than 3 reference letters signed by Italian and international academics and professionals in the research field, which do not form part of the Admission Board, attesting the suitability of the applicant and his/her interest for the scientific research.  
Please, note that the above letters cannot be uploaded by applicants. When filling the online application form on <http://studenti.unibo.it>, applicants will be only allowed to provide the email accounts of the requested academic/professional. The latter shall receive an email from the University of Bologna providing for the instructions for uploading. Only letters in pdf format submitted before the expiry date and time of the Call shall be accepted.
- Multi-annual research project, with special emphasis on the activities to be completed during the first-year course, **to be drawn up in ENGLISH or in ITALIAN.**  
The proposal must meet the following requirements:
  - o It cannot exceed 20.000 characters, including spaces and formula possibly used. This figure does not include: the title of project, the outline, references and images (such as graphs, diagrams, tables etc - where present);
  - o It must include: the state of the art; description of the project; expected results; lead-time for implementation; (proposed) criteria to be used to assess the findings obtained; references.
 The research projects that successful applicants shall carry out during their doctoral career may possibly differ from the project proposed at the application stage. This shall be defined together with the supervisor and approved by the Academic Board.
- List of the publications (monographs, articles published on scientific journals. book's chapters). **In ENGLISH or in ITALIAN**
- List of the minor publications (conference papers,, etc.). **In ENGLISH or in ITALIAN**
- Professional Master courses completed in Italy (1st or 2nd level) relevant to the PhD Programme.
- Postgraduate vocational training programmes/specialisation programmes relevant to the PhD Programme.
- Teaching activity carried out at university level.
- Research activity of any kind - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research projects.
- Work activity;
- Documents attesting the knowledge of foreign languages
- Study periods completed by students outside their countries of origin (e.g. Erasmus programme or other similar mobility programmes).
- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc).

**Admission exams** (art. 4 of the call for applications)

Examination type	Schedule (please, note that applicants shall not receive any communication concerning the exams schedule)	Examination results publication (please, note that applicants shall not receive any communication concerning the publication of results)
Qualifications and research project evaluation	Non-presential.	The results of the qualifications and research project evaluation shall be available online starting from the <b>07/06/2019</b> at the page <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> (please, select: (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati valutazione titoli e progetto")
Oral examination	Date	<b>14/06/2019</b> In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral exam schedule shall be made available at the webpage <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> together with the results of the qualifications and research project evaluation
	Place	Bologna – Mura Anteo Zamboni 7, Dipartimento di Computer Science and Engineering, Aula Busi
	Time	09:30 a.m.
The results of the oral examination shall be available on the webpage <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> starting from <b>24/06/2018</b> (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati prova orale")		

Applicants can ask to take the exam remotely using Skype. For further details please refer to the relevant provision laid down in art. 4 of the Call for applications.

## Evaluation criteria

Points will be allocated to applications out of a total of 100 on the basis of the following weighting:

### 1. Qualifications and research project

- Minimum for admission to the oral exam: 30 points
- Maximum: 50 points

Only qualifications relating to the last 5 calendar years prior to the calendar year of publication of the Call for applications shall be taken into consideration, with the exception of the University Degree (Diploma di laurea). Please, note that qualifications must be consistent with the PhD Programme.

Points relating to qualifications shall be allocated on the basis of the following criteria:

- Graduation final mark. Undergraduates shall be evaluated on the basis of the Weighted Average Mark (WAM): max 10 points
- Master's degree thesis relevant to the PhD programme: max 10 points
- CV, reference letters and other qualifications: max 10 points
- Publications: max 5 points
- Research project (assessed on the basis of: the scientific value, the structure and the feasibility of the proposal): max 15 points

### 2. Oral examination

- Minimum for inclusion in the final ranking list :30 points
- Maximum: 50 points

Oral examination includes the presentation of the research project and is intended to assess the suitability of the applicant to pursue scientific research as well as the general knowledge of issues connected to the PhD Programme.

During the oral examination, knowledge of English language shall be assessed.

The oral examination is carried out in Italian or in English.

Points relating to the oral examination shall be allocated on the basis of the following criteria:

- research project presentation and general knowledge of issues connected to the PhD Programme: max 40 points
- knowledge of English languages: max 10 points

Possible evaluation sub-criteria will be available on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".

## Final ranking list and enrolment (arts.6 and 7 of the Call for applications)

After the publication of the results of the oral exam, the final ranking list will be available on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".

Following the publication of the final ranking list, successful applicants must enroll on <http://studenti.unibo.it> by the deadline indicated on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information".