

PhD In Information Technology

Research Area n. 1 Computer Science and Engineering

Research Field: “Data Driven Genomic Computing”

| Scholarships and Financial support | |
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| Monthly net income of PhD scholarship (max 36 months) | €. 1.200 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified) |
| Number of scholarships | 2 |
| Beginning of PhD | 1/5/2017 |
| Deadline for application | 13/03/2017 |
| Context of the research activity | |
| Motivations and objectives of the research in this field | <p>The Genomic Computing project focuses on big data analysis and Web technology for genomic data. It will be conducted in collaboration with the Istituto Europeo di Oncologia (IEO) (https://www.ieo.it/) and the Center for Genomic Science of Istituto Italiano di Tecnologia (IIT) (http://genomics.iit.it/) at the IFOM-IEO campus (http://www.ifom-ieo-campus.it/), and will take advantage of next generation sequencing technology, which opens up to radical innovation in biological and medical research. The project aims at building a powerful data computing infrastructure at the receiving end of DNA sequencing machines, for enabling viewing, querying, analyzing, mining, and searching over a world-wide available collection of genomic data. The project goal is generating an open-source, standard, highly efficient, extendable and easily usable computational framework to support scientists in genome-related research. It also includes the development of new big data analysis algorithms to be efficiently implemented as framework modules specifically devoted to the challenging comparative analysis of multiple genome features. Data-Centered</p> |

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| | Genomic Computing is a project funded by the European Research Council (ERC). |
| Methods and techniques that will be developed and used to carry out the research | Research focuses both on theoretical models and methods to support design of a genomic computing infrastructure and web-based interaction protocols, with emphasis on data models, query languages, data analysis, and search methods. The strong connection with IEO-IIT makes the mix between theory and application one of the strength of our PhDs. |
| Educational objectives | We are aimed at developing specific competence, autonomy, research methodology and skills, in an interdisciplinary environment. Laboratory activity is usually required to finalize the research. The student is also encouraged to spend a period of study abroad. |
| Job opportunities | Career development is possible both in research, in academic and private institutions, and in production, in Italy and abroad. Start-ups from research results are also encouraged. Employment in this area provides plenty of opportunities. |
| Composition of the research group | Selected candidates will be part of a multidisciplinary team with researchers from IEO-IIT. |
| Names of the research directors | Stefano Ceri |
| E-mail address, phone number and web-page | ceri@elet.polimi.it , +39-02-2399 3532 http://home.dei.polimi.it/ceri/ |
| List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research | IEO-IIT (prof. Pelicci, Amati, Testa, Campaner), Singapore University (Prof. Wong), Broad Institute @ Cambridge, MS (dr. Shorem), Madrid (Prof. Valencia), Manchester (Prof. Goble and Paton), Chicago (Argonne group). |
| Additional support | |
| <u>Educational activities</u> (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per year | 2nd year: 1.370 euro per student 3rd year: 1.370 euro per student |
| <u>Teaching assistantship:</u> availability of funding in recognition of support to 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> |