Teaching profile

Software development

The Computer Science Department is looking to recruit an Assistant Professor who can effectively address the teaching of software development including web and mobile applications. The construction of the curriculum in this discipline should be done with appropriate pedagogical methods and in line with the state of the art in industry. Due to INSA de Lyon’s pedagogical philosophy, these courses will have practical goals and aim for the development of skills in the field of computer engineering.

Flexibility, the ability to listen and collaborate is desirable assets for a successful integration in the Computer Science Department.

Teaching department description

The Computer Science Department educates multi-profession computer engineers: all the areas of information technology and its applications are covered (industry, management and science), with an emphasis on engineering activities, modelling and integration of complex systems. Many international partnerships, two summer internships and an end-of-studies internship in a company consolidate the education and offer future employment possibilities. Our graduates are able to:

- work in a wide variety of professions in many economic sectors. The curriculum ensures this adaptability by developing the requisite expertise, combined with good interpersonal skills and an awareness of organisations and company operations.
- scientifically analyse a large spectrum of problems and propose solutions in line with the constraints of quality and cost: our curriculum aims to develop the student’s skills as a designer / architect, as well as an integrator.

The activities of a computer engineer are often performed as part of team projects, and very often focused on meeting the needs of clients and users. The technical knowledge and skills are complemented by a solid methodological basis (quality management, project management, customer relationship, etc.). Our curriculum develops the interpersonal skills necessary for all engineers: teamwork, independence, problem solving, organisational and inter-personal skills, written and oral proficiency in foreign languages.

Research profile

Methods for computational biology

The Beagle team is seeking for a Maître de Conférences in order to develop its activities in computational biology and in silico biology. The recruited Maître de Conférences will participate to the development of generic modeling methodology in computational biology. This includes the specification and design of models at the molecular, cellular and evolutionary level, the implementation of efficient simulations and consistent documentation, automatic parametric exploration, interpretation of simulation results… The objective will be to propose methods and approaches generic enough to be applied to a large range of scientific questions in life science. Two main applications to life science are specifically developed in the team: evolutionary biology (evolution of genome and network structure) and spatio-temporal modeling of cellular networks (spatial modeling of cell signaling and biochemical networks, reaction-diffusion models, anomalous diffusion in cells and membranes).

We seek for candidates with a strong background in applied and theoretical computer science including multi-scale modeling, scientific computation, artificial life, individual-based modeling, stochastic simulation and monte-carlo methods.
He/she will have to prove his/her capacity to conduct research in close interaction with experimental biology teams, ideally in evolutionary biology or cellular biology. Complementary expertise in bioinformatics, mathematics and statistics will also be appreciated.

**Research Fields**

Bioinformatics, Computational Science, Modeling tools

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**Research laboratory description**

LIRIS (Laboratoire d’InfoRmatique en Image et Systèmes d’information) is a research center on Information Science and Technology. LIRIS is affiliated to CNRS (Centre National de Recherche Scientifique) under the label UMR 5205. The laboratory involves 320 researchers from INSA de Lyon, Université Claude Bernard Lyon 1, École Centrale de Lyon, Université Lumière Lyon 2 and CNRS. It is organized in six areas of skills of 20-25 permanents. Each of the 12 research teams belongs to one of these areas:

- **Computer Vision and Pattern Recognition** (IMAGINE and M2DISCO research teams): automatically understanding multimedia data (images, video, digital documents, 3D scenes): acquisition/reconstruction, indexing, modeling, classification or automatic content recognition (objects, actions, concepts). Skills: signal and image processing (filtering, segmentation, feature extraction), machine learning and pattern recognition (connectionist, statistical and structural approaches), information fusion, constraint programming, discrete and continuous optimization
- **Geometry and modeling** (GEOMOD and M2DISCO research teams): computational geometry, discrete geometry, geometric and topological modeling, 3D reconstruction and interactive creation, procedural modeling, geometry processing (meshes and discrete shapes). Skills: signal and image processing (filtering, segmentation, feature extraction, indexing and retrieval, compression, watermarking, segmentation, visualization), topological modeling
- **Data Science** (BD, DM2L and GRAMA research teams): to provide adequate answers to the explosive deluge of digital data, this research group aims to promote fertilization between different complementary areas of computer sciences related to data modeling, algorithmic, graph theory and combinatorics, data mining and statistical learning or languages and systems for databases.
- **Services, Distributed Systems, and Security** (DRIM and SOC research teams): proliferation, discovery and composition of software and data services deployed over the Internet, quality of service and fault tolerance, security, trust, reputation, content adaptation and personalization, reliable information sharing and dissemination
- **Simulation, virtuality, and computational sciences** (BEAGLE, R3AM and SAARA research teams): this research group aims to acquire, understand, model, simulate and render our environment from the realistic simulation to mathematical modeling continuum. Along the real-virtual continuum, the following skills are present: intensive and parallel computing, scientific computing, stochastic methods, self-centered modeling, computer vision, bio-mechanical simulation, multi-physics simulation
- **Interactions and cognition** (GRAMA and SILEX research teams): this research group analyses, designs and develops dynamic digital systems in which agents (human or software systems) interact. The researchers focus both on individual properties of agents, and on properties of the system as a whole. In particular, they are interested in the cognitive abilities of those systems. Skills: knowledge dynamics and traced experience, Computer Environment for Human Learning, interactive systems, multi-agents systems.

The laboratory leads research on fundamental issues in these six areas. It also develops know-how with strong impacts on society and closely with the other scientific disciplines (engineering, Humanities and Social Sciences, Environmental Sciences and Life Sciences):

- **Culture and heritage** (digital libraries, critical edition, digitization of ancient documents, archiving, 3D virtual museums…)
- **Environment et urban world**: intelligent building, 3D modeling of the cities, Geographical Information Systems, mobility, transport optimization
- **Biology and health** (data mining, complex systems modeling and analysis, e-health…)
- **Ambient intelligence** (pervasive systems, sensor networks, intelligent video surveillance, secured communicating objects…)
- **Human learning** (personalization, cognitive assistance, collaborative learning…)
- **Digital entertainment** (video games, animated cinema, multimedia data processing…)
- **Big data management**, processing, visualization