Teaching profile

The future nominee will be integrated in the Mathematics and Computer Science Department of Ecole Centrale de Lyon, where he (she) will strengthen the potential of the teaching staff in areas related to Big Data.

The future nominee will give classical computer sciences lectures in algorithms, object oriented programming and WEB programming for L3 students. According to his skills, the colleague will have to give lessons to M1 and M2 students, especially to train students for data scientist careers.

The ECL is looking for a highly motivated candidate to play a leading role in this issue, possibly using the educational platform Amigo (Ambient Intelligence Ground), for which he/she will have to show its ability to participate in cutting-edge programs of research, for instance through national and/or international research projects.

Research profile

The processing of data masses and the extraction of knowledge is a central expertise of the LIRIS lab (https://liris.cnrs.fr), whether for image type data, text, complex data, databases or semi-structured data.

The successful candidate will conduct his research activities in the LIRIS lab, where he (she) will contribute to the development of research in «Big Data», in interaction with the LIRIS research team located on the site of ECL. The poles of LIRIS involved in this position are «Interaction and Cognition», «Intelligent Vision and Visual Recognition» or «Data Science».

His research will focus on one of many scientific issues raised by the emergence of massive data (machine learning, data mining, human-machine interaction and visualization, database, information system) for applications such as robotics, connected objects or brain-Computer Interfaces...

ECL invites applicants with high scientific potential as demonstrated by his/her publication record in the best international journals and major conferences in the field. The potential of the candidate to enhance interaction between researchers of the ECL site will be considered. Furthermore he (she) will have to show its ability to participate in cutting-edge programs of research, for instance through national and/or international research projects.

Teaching department description

L’Ecole Centrale de Lyon (ECL, http://www.ec-lyon.fr/en) is a grand Ecole of engineers having a tradition of excellence in research in the field of engineering and is ranked among the top ten engineering schools in France offering access to excellent quality graduate and undergraduate students.

ECL invites applications for a full-time associate professor position to strengthen its team in computer science in general (Section 27, according to French classification for Computer Scientists), and “big data” in particular. This position offers full health, unemployment and retirement benefits and competitive salary.

LIRIS (Laboratoire d'Information 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 327 researchers from INSA de Lyon, Université Claude Bernard Lyon 1, Ecole Centrale de Lyon, Université Lumière Lyon 2 and CNRS. It is organized in six areas of skills of 20-25 permanents. Each of the 14 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 of meshes and discrete shapes (feature extraction, indexing and retrieval, compression, watermarking, segmentation, visualization), topological modeling.

- **Data Science** (BD, DM2L and GOAL 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 acquisition / modeling / interpretation / rendering of scenes, animation, computational biology, artificial evolution, multi-scale models, perception models, reaction / diffusion models in particle systems, augmented reality, computer graphics, artificial life. On the methods plan, 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** (SICAL, SMA and TWEAK 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 these 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.