Teaching profile

The teaching activity concerns all degrees provided by the computer science department: undergraduate and Master degree and complementary skills in Computer science.

The selected candidate will come in renfort for the teaching staff mainly in areas related to algorithmic, the programming, operating systems and application development for embedded systems. The candidate will contribute to make teaching at undergraduate level a real success.

Research profile

Image-based physical modeling and animation of virtual human

The position is open for an interdisciplinary project involving analysis, recognition and modeling of human action. The successful applicant will join the LIRIS laboratory in the SAARA (http://liris.cnrs.fr/SAARA) team, specialized in simulation, analysis and animation of complex scenes involving virtual human in motion. He will work closely with members of GEOMOD team (http://liris.cnrs.fr/GEOMOD), specialized in the field of geometric modeling.

The selected candidate will be involved in research in the field of realistic motion simulation controlled by image and video data in the real-time constraint.

The applicant should demonstrate an expertise in the area physically-based modeling and animation. We hereby explicitly welcome applications from highly skilled candidates in the physically-based modeling and animation.

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, 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 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 of meshes and discrete shapes (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 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 (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