

## PhD Position in the

### H2020 project ExaMode

#### *Extreme scale Analytics via Multimodal Ontology Discovery & Enhancement*

#### At the University of Applied Sciences Western Switzerland (HES-SO), Sierre, Switzerland

##### **POSITION:**

Applications are invited for a position as a PhD student in the medGIFT research group at the University of Applied Sciences Western Switzerland (HES-SO) in Sierre, Switzerland. The successful applicant will join an international team of researchers working on machine learning and multimedia knowledge extraction from exascale biomedical data. The PhD will be part of the European H2020 research project ExaMode, coordinated by the HES-SO, in collaboration with the University of Padova (Italy), the Radboud University (Netherlands), the Cannizzaro Hospital (Italy), the Surfsara High Performance Computing center (Netherlands), MicroscopeIT (Poland) and Ontotext (Bulgaria).

The objectives of the PhD are as follows:

- Development of analytic methods and tools to extract & link content-based knowledge in highly heterogeneous and very large images.
- Creation of content-based visual ontologies of histopathology images and links of these ontologies with medical terminologies.

The project includes the following research fields and tasks:

- Exascale clinical data (in particular digital histopathology images and associated medical reports) and the creation of publicly available research data collections.
- Development of algorithms and tools to extract knowledge even when images are highly heterogeneous (e.g. color, contrast, compound images in the literature, ...) using traditional machine learning and deep learning methods.
- Development of graph representations of visual medical knowledge.
- Execute data analysis jobs (on local servers and on the Netherlands' national high performance computing center Surfsara).

These topics are of strong interest in the exploding field of machine learning and medical data analysis. The medGIFT research group has a strong experience in writing scientific publications, so high impact publication on these topics are foreseen. You will be joining a highly motivated multidisciplinary team of researchers working on related research topics.

##### **ENVIRONMENT:**

- Sierre is located in the heart of the canton of Valais and the high Swiss Alps (near Crans Montana, 4 Valles, Zermatt...). The town has around 300 days of sunshine each year and it is an excellent location to enjoy the alps for skiing during winter, for trekking or mountain biking during summer and tasting excellent wines during the entire year.
- Sierre is very central in Europe and it is well connected by train and highway. Travelling time by train to: Lausanne 1 hr 20 min; Milano 2.5 hrs; Geneva 2 hrs; Zurich 2.5 hrs; Venice: 5 hrs; Paris 5 hrs. The closest airports are Geneva, Zurich and Milano Malpensa (all served also by Easyjet).
- More on the MedGIFT research group can be found at: <http://medgift.hevs.ch/>
- University of Applied Sciences Western Switzerland (HES-SO): <http://www.hevs.ch/fr/rad-instituts/institut-informatique-de-gestion/>

##### **LANGUAGE:**

The group mainly speaks English, so good knowledge of English is important. French is the spoken language in Sierre, so it is beneficial to have some notions and being willing to learn it.

##### **SALARY:**

Switzerland is a relatively expensive place, but the salary of a PhD student allows to cover all living costs easily. Finding a flat in Sierre or the environments is not hard and the quality of life is very high.

##### **DURATION:**

The position is expected to start in March-April 2019. Salary is guaranteed for 4 years.

##### **REQUIREMENTS:**

- Master degree in physics, engineering, computer science, mathematics or a closely related field.
- Knowledge in image processing, computer vision, machine learning, knowledge graphs and software development (e.g. using Matlab or Python).

##### **APPLICATION:**

Please, send a motivation letter, a curriculum vitae, names and email addresses of two referees to:  
[manfredo.atzori@hevs.ch](mailto:manfredo.atzori@hevs.ch), [henning.mueller@hevs.ch](mailto:henning.mueller@hevs.ch)