



## Call for a PhD Position

We are looking for a motivated student for a PhD candidacy position (3 years funding) at the Image Processing Group of the Signal Theory and Communications Department, Universitat Politècnica de Catalunya.

**Description:** we look for a PhD student candidate that will work in a project in collaboration with expert clinicians from the Melanoma Unit – Dermatology Department at the Hospital Clinic Barcelona, funded by Fundació La Marató de TV3.

The project aims to improve the diagnosis, treatment, quality of life and survival of patients with melanoma.

Currently, all melanoma patients are divided into categories depending on the risk of having metastasis and potentially dying from the disease. To classify patients, a method (staging system) is used that includes information on a limited number of tumor characteristics and patient metastases. This information is used to predict the evolution and risk of relapse of the patient and to decide on the follow-up, diagnostic tests and treatment options for each patient. Unfortunately, this method is very inaccurate and many treatments and tests are not adequately indicated.

This project aims to build a precision medicine-oriented method for better guiding clinical management of patients with melanoma, by

- Identifying clinical, environmental, socio-economic, behavioral, phenotypical, biochemical, pharmacological, genetic and medical imaging data which correlate with the patient's risk to relapse, metastasize or die on a collaborative database which contains information from 23 different hospitals in Catalonia
- Creating a survival prediction multimodal Deep Learning algorithm to aggregate the information from a patient into a set of scores to predict disease-free survival and melanoma survival associated risks, and validating results on European melanoma patients from data registries from two International cancer societies.
- Using the model's outputs to create a new statistically coherent stratification for patients with melanoma and predicting the patient's outcome under different treatment options

### Your profile:

- Master's (MSc) degree in one of the following domains: telecommunications or biomedical engineering, computer vision, data science, computer science, applied mathematics or similar degree with an equivalent academic level. Also, students that are currently finishing their Master's thesis can apply.

- A genuine interest in machine learning, deep learning and medical imaging techniques is a must
- Hands on experience with deep learning, machine learning and signal/image processing
- Strong mathematical background
- Strong programming skills in Python with some experience in PyTorch, TensorFlow or Keras
- Good verbal and written communication skills in English
- Rigorous work habits, a curious and critical mind, and a good sense of initiative
- Ability to work independently while collaborating in a team environment

#### **We offer**

- A dynamic and stimulating work environment
- Gross salary per year: 16.127€ (first and second year), 17.278€ (third year)
- Registration fees for the official UPC doctorate program in Signal Theory and Communications (3 years)

#### **Application procedure:**

If you are interest in this position, please submit your complete application or questions related to the position by email to Verónica Vilaplana [veronica.vilaplana@upc.edu](mailto:veronica.vilaplana@upc.edu), with “PhD position-skin” in the email subject, **before May 15<sup>st</sup> 2020**

Applications should include:

- A detailed CV describing earlier experience and studies
- Diploma with grades
- Motivation letter that should indicate the relevance of your profile to this position, why you are interested in this position, link to your publicly available projects, codes or publications.
- The name and contact information of two referees