The candidate must be grounded in the basics of computer vision, have solid mathematical and discipline by the start date. Candidates must hold a Masters degree or equivalent in Computer Science or a closely related school ecosystem.

These above described three goals are the keystone of a biometric solution that can be used in a process it to transform it into templates, which will form the gallery.

- Development of a registration process, which captures biometric data in the invisible spectrum,
- Demonstration of universality and uniqueness of faces in the invisible spectrum,
- Analysis of the data related to contours, shape, etc. will be performed. Current methodology will be included:
  - Facial recognition in the invisible spectrum. Expected challenges have to do with limited colorimetry and lower contrasts.
  - Combining biometrics in the invisible spectra and anonymisation within an established group requires removing certain additional barriers that are specific to biometrics but also the use of statistical methods associated with biometrics. This pseudo-anonymized identification must also incorporate elements of information provided by the proposed electronic school IDs.

In addition to the first milestone (face recognition in the invisible spectrum), there are two other major milestones:

1. Exploring facial analysis in the invisible spectrum. Among the different spectra low energy infrared waves, as well as ultraviolet waves will be studied. In this context following tasks will be included:
   - Acquisition of images in the invisible spectrum and processing of such data.
   - Model design to extract biometric features from the acquired data.
   - Analysis of the data related to contours, shape, etc. will be performed. Current methodology cannot be adopted, since colorimetry in the invisible spectrum is more restricted with less diffuse variations and is less nuanced.
   - Facial recognition in the invisible spectrum. Expected challenges have to do with limited colorimetry and lower contrasts.

In addition to the first milestone (face recognition in the invisible spectrum), there are two other major milestones:

2. Implementation of such a face recognition system, to be tested at the passage of the access portal to a school.
3. Pseudo-anonymized identification within a school (outdoor courtyards, interior buildings). Combining biometrics in the invisible spectra and anonymisation within an established group requires removing certain additional barriers that are specific to biometrics but also the use of statistical methods associated with biometrics. This pseudo-anonymized identification must also incorporate elements of information provided by the proposed electronic school IDs.

Additional goals of the Ph.D. include:
- Demonstration of universality and uniqueness of faces in the invisible spectrum,
- Development of a registration process, which captures biometric data in the invisible spectrum, processes it to transform it into templates, which will form the gallery.
- Matching of gallery and probe images adapted to the invisible spectrum.

These above described three goals are the keystone of a biometric solution that can be used in a school ecosystem.

Skills
Candidates must hold a Masters degree or equivalent in Computer Science or a closely related discipline by the start date. The candidate must be grounded in the basics of computer vision, have solid mathematical and...
programming skills (knowledge of Matlab/Python, C++, Linux and Deep Learning packages like Torch/Theano/TensorFlow is preferable). The candidate must be committed to scientific research and strong publications.

**Benefits package**

- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities