



PhD thesis: Retinal vascular network detection and characterisation

Many pathologies like AMD, glaucoma or diabetic retinopathy, can be detected and / or measured on a simple retina image. Such images can very easily be acquired in a few minutes with a retinograph. Many new medical indications detection and applications based on retinal images are still to be designed and developed. All retinal images contain physiological features like vascular network and optic nerve for instance. These landmarks have proved to be fundamental in many applications.

In this context, aiVision and MINES ParisTech are seeking a PhD candidate to work on vascular network extraction and characterisation. This work will include the design of new methods, the improvement of existing algorithms as well as the development of new applications. Among other tasks, the selected candidate will have to propose innovative AI algorithms and models and demonstrate their practical benefits. She/he will work in close collaboration with researchers and engineers from aiVision and MINES ParisTech.

The work will be done in the framework of an industrial collaboration between the startup aiVision and the Center for Mathematical Morphology (CMM) of MINES ParisTech.

The ideal candidate will have a strong background in applied mathematics / machine learning along with a proven track record in coding with high level languages like python.

aiVision, a startup founded in 2017, has specialized in fundus images analysis and processing to develop innovative and performing telemedicine solutions to improve healthcare professionals day to day practice as well as patients' experience of care. The Center for Mathematical Morphology of MINES ParisTech is a pioneer laboratory in image analysis.

The PhD student will work under the supervision of Etienne Decencière and Timothée Faucon.

Candidates should send a CV, a cover letter and the grades obtained during the last two years to Etienne.Decenciere@mines-paristech.fr and timothee.faucon@aivision.health.