

# Automated Quality Assessment for Digital Pathology using Artificial Intelligence

The Department of Electronics and Informatics ([ETRO](#)), an [imec research group](#) at the Vrije Universiteit Brussel ([VUB](#)), has an open research position for a talented and motivated researcher.

## Motivation

Clinical pathology is witnessing a paradigm shift by transferring from glass tissue slides (observed through optical microscopy) to digital slides scanned with whole slide imaging systems. Digital pathology enables acquiring high-resolution images that enhance disease diagnosis by permitting convenient visualization, image processing and artificial intelligence for automated analysis. Despite the growing interest, digital pathology is in an infant stage and shows challenges that require innovative solutions. The quality of whole slide imaging systems can be impacted by artifacts present intrinsically within the tissue and introduced during slide preparation and digitization. The quality of the produced images directly influences the reliability of the clinical diagnosis and the performance of artificial intelligence tools aiding in automated disease diagnosis. Therefore, quality assessment of the whole slide images remains essential during developing and deploying DP images.

## Project

The project intends to address several innovation pillars and to bridge the gaps still present toward effective and widespread integration of digital pathology into clinical practice. As one of the main innovations, we aim to develop an automated quality control and enhancement framework. Image processing and artificial intelligence – ensuring high-quality image delivery – will assist pathologists in interpreting DP images accurately and efficiently and improve the accuracy of the AI-enabled diagnosis decisions.

## Partners

This project will run in collaboration with [Barco](#) and the university hospital [UZ Brussel](#), and will be supervised by Prof. Peter Schelkens and Prof. Jef Vandemeulebroucke.

## Responsibilities:

- Design and conduct subjective quality assessment experiments to collect the pathologists' subjective ratings of overall diagnostic quality.
- Design and implement innovative objective image quality assessment algorithms for DP.
- Design and implement innovative image enhancement algorithms for DP.

## Profile and requirements:

- A MSc degree focusing on computer science, electrical engineering, mathematics or a related field.
- A Ph.D. in a related domain is an asset, but candidates that are interested in pursuing a Ph.D. degree are also encouraged to solicit for this position;
- Prior experience with image processing, image quality assessment, and computer vision is considered a strong asset;

- Proven programming experience (primarily Python and C++);
- Prior knowledge and hands-on experience with state-of-the-art machine learning frameworks (e.g., sci-kit-learn, Tensorflow, PyTorch);
- Excellent oral and written communication skills in English;

**What we offer:**

- A competitive salary and benefits
- An international scientific environment driven by excellence in research
- Opportunities for learning new technical and non-technical skills
- Participation in national and international workshops and conferences

**Application**

Enquiries/applications may be addressed to Dr. Saeed Mahmoudpour ([Saeed.Mahmoudpour@vub.be](mailto:Saeed.Mahmoudpour@vub.be)).

A statement of professional interest and a CV must accompany the application.