



Microscopic-scale Hyperspectral Imaging for Histopathological Diagnosis

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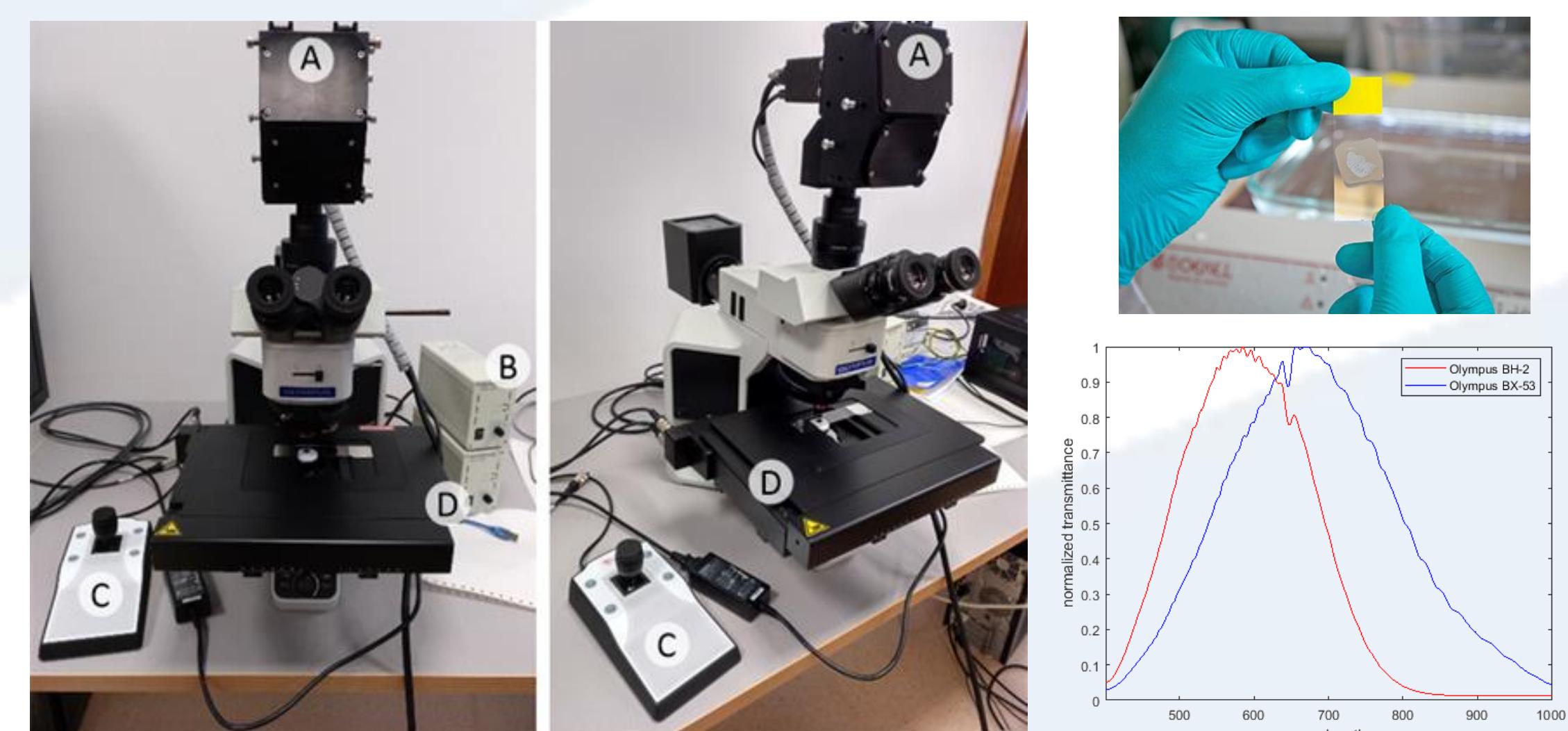
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Goals:

- Optimize the acquisition of hyperspectral images using a microscope.
- Capture hyperspectral images from pathological slides.
- Automate the diagnosis of digitized slides of cancer biopsies using Machine Learning.
- Two case studies: **breast cancer** and **brain cancer**.

Instrumentation:

- Microscope and pushbroom HS camera.



Data collection:



Biological samples are prepared and annotated by pathologists, and are digitized using HSI instrumentation.

- Cell-level **breast cancer** annotated slides.
- Slide-level **brain cancer** annotated slides.

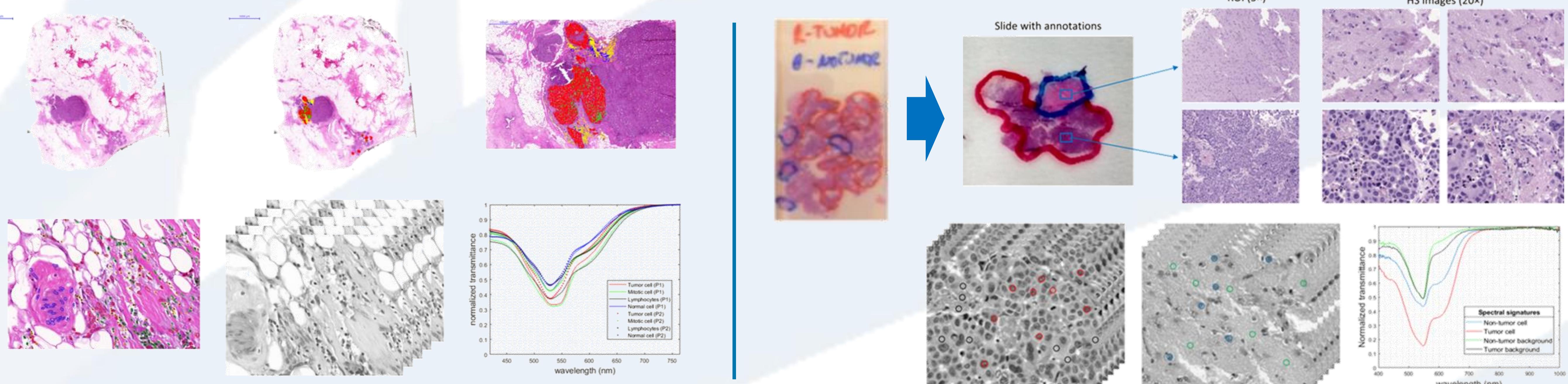
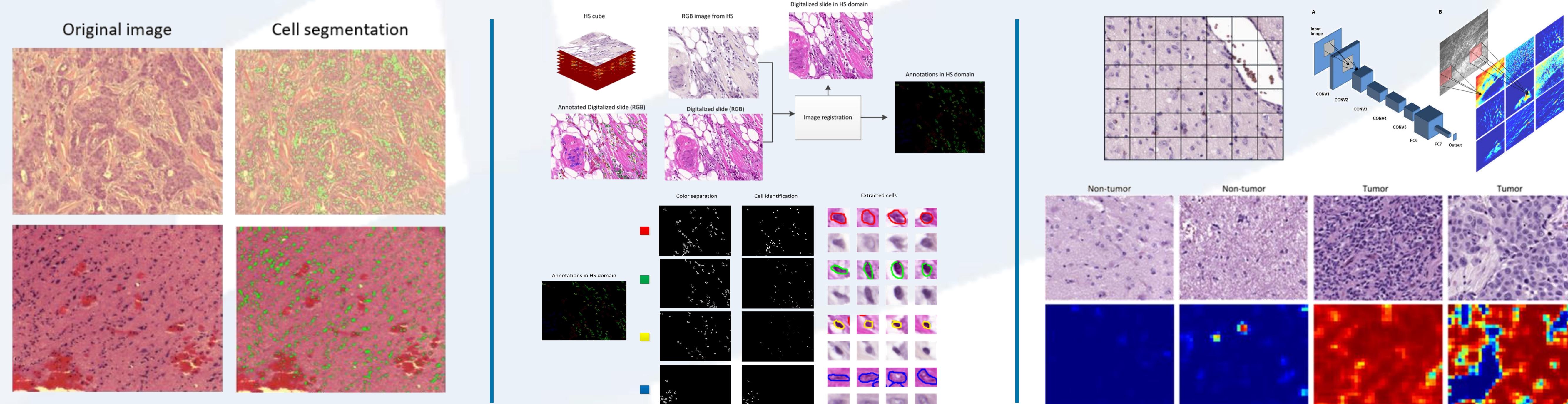


Image processing:

Different image analysis approaches are used to automatically distinguish between cancer and normal cells.

- Image segmentation for cell identification.
- Image registration for cell annotations.
- Deep Learning classification for automate diagnosis.

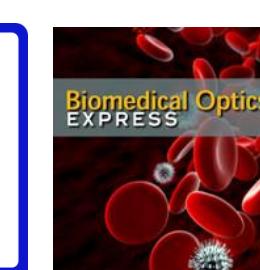


Future goals:

- Further analyse the classification for both case studies.
- Try to perform the digital stain of histological samples.
- Apply the methodology to different diseases.

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