

MIDL 2020 – Short Paper

An interpretable automated detection system for FISH-based HER2 oncogene amplification testing in histo-pathological routine images of breast and gastric cancer diagnostics

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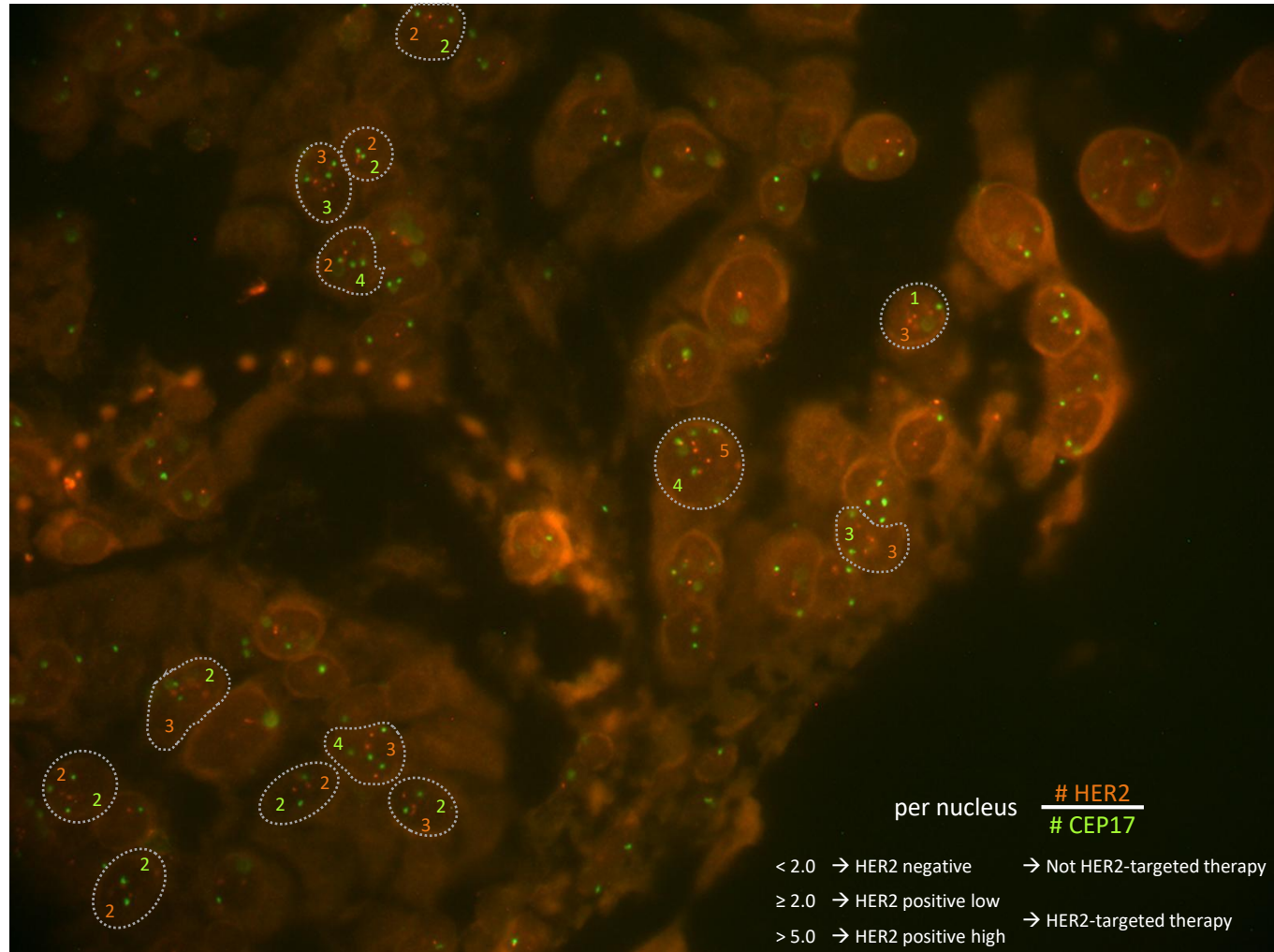
Universitätsklinikum
Carl Gustav Carus
DIE DRESDNER.



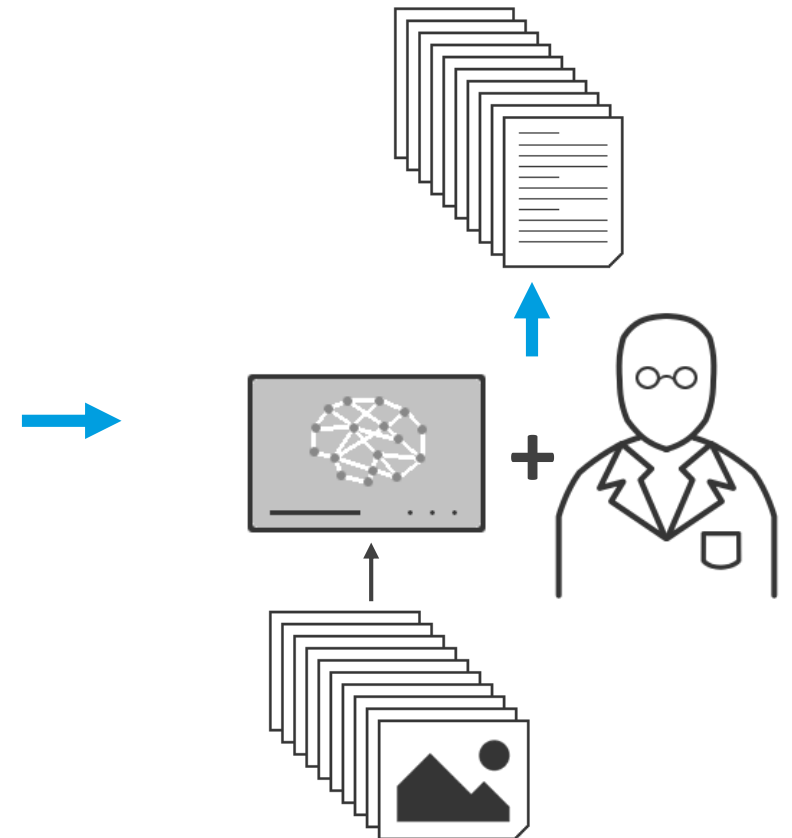
asgen
GmbH & Co. KG

Complex Diagnostics and Increasing Workload

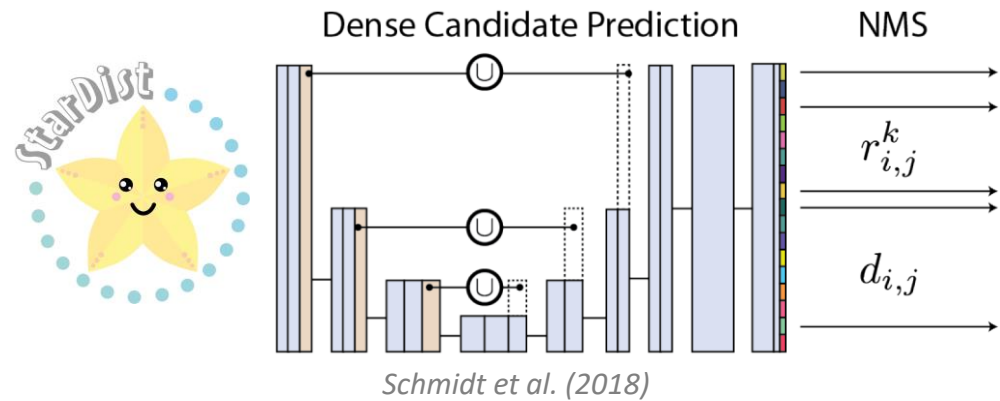
FISH HER2 amplification testing



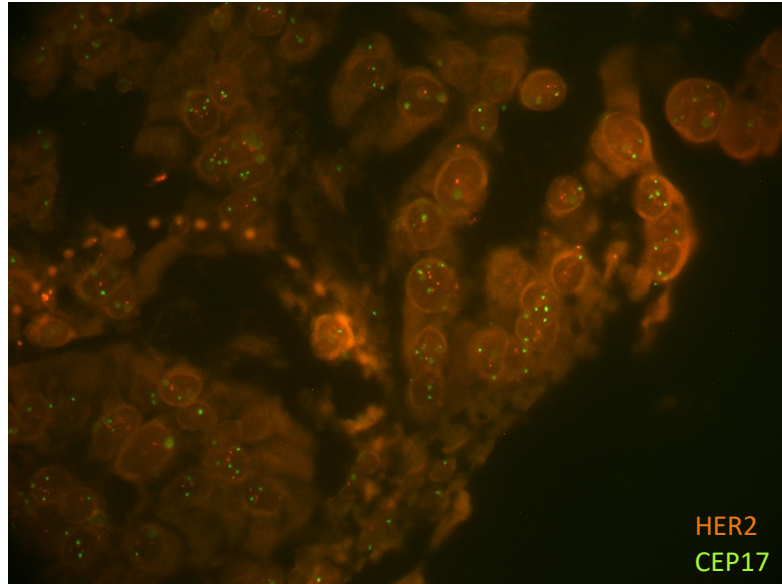
AI assisted Pathologist



1. Step: Nucleus Filtering with the Nucleus Detector



Input (1600 × 1200 px)



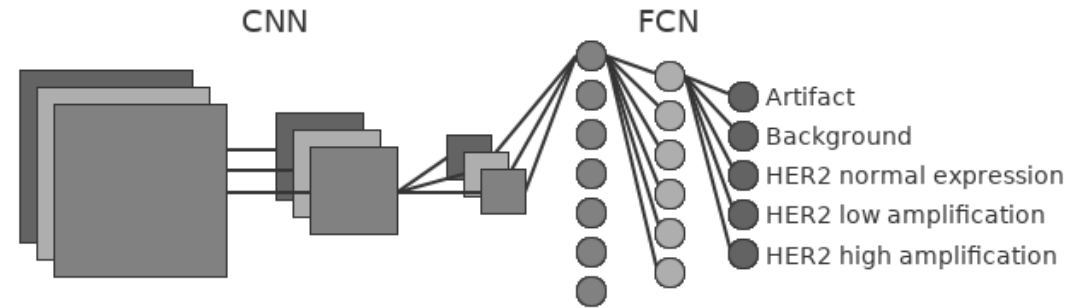
Output (~80 × 80 px)



Segmentation of detected Nuclei



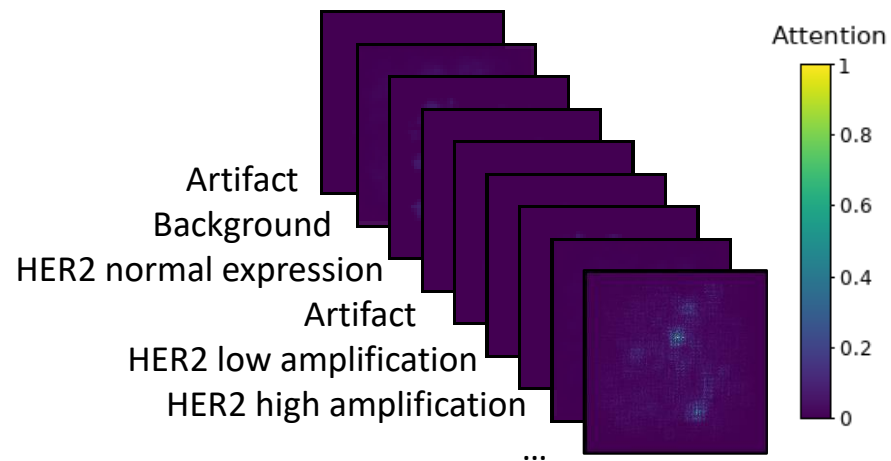
2. Step: Grading Nuclei with the Nucleus Classifier



Input ($\sim 80 \times 80$ px)



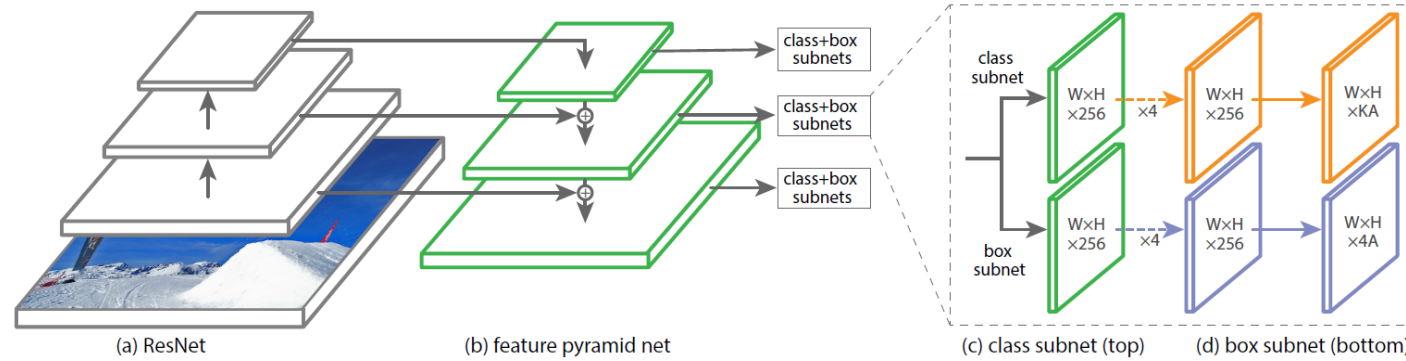
Output (Grading and CAM)



Postprocessing
(image-wide Grading)



3. Step: Second Opinion from the Signal Detector



Lin et al. (2017)

Input ($\sim 80 \times 80$ px)

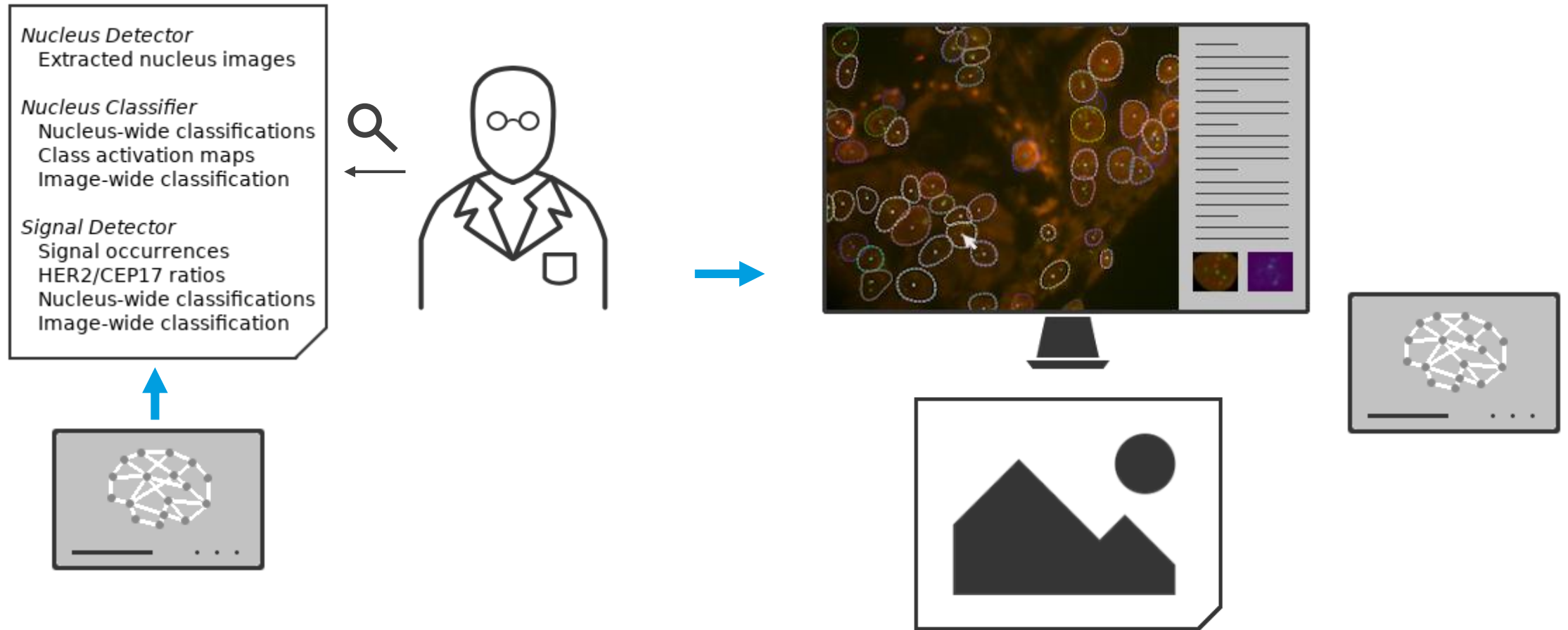
Output (Grading and BBoxes)

Postprocessing
(image-wide Grading)



4. Step: Reviewing the Report

Enhancements to the **AI assistance**



THANK YOU

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HER2 oncogene amplification testing in histo-pathological
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