VO 706.046 AK HCI Selected Topics of HCI: Intelligent User Interfaces
Summer Term 2018

Mobile Silico Lab

Tutors: a.holzinger@hci-kdd.org,
m.plass@hci-kdd.org
robert.reihs@medunigraz.at
heimo.mueller@medunigraz.at

https://hci-kdd.org/iui-explainable-ai/

Current status

- Slide diagnosed thru microscope
- Experience based decision
  - Relatively little amount of rules
  - Long way to become a good pathologist
- Learning by watching other pathologists

Goal

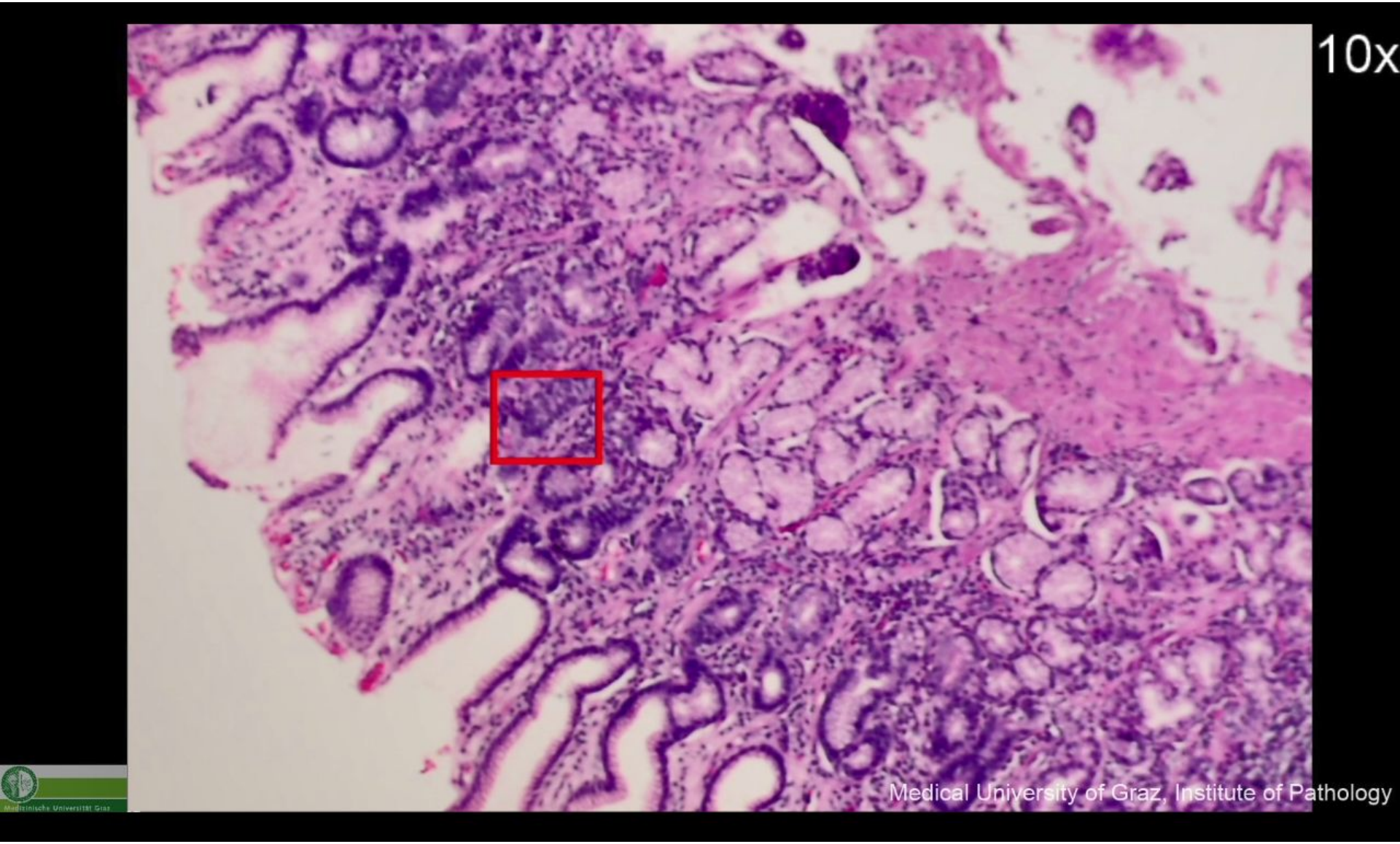
- Extract information
  - What is important?
  - Why is that important?
  - Why should we take a detailed view on this part of the slide?
- Improve the methods how to teach new pathologists
- Get information for intelligent supporting systems
- Harvest information for automated diagnosis

Video Demo

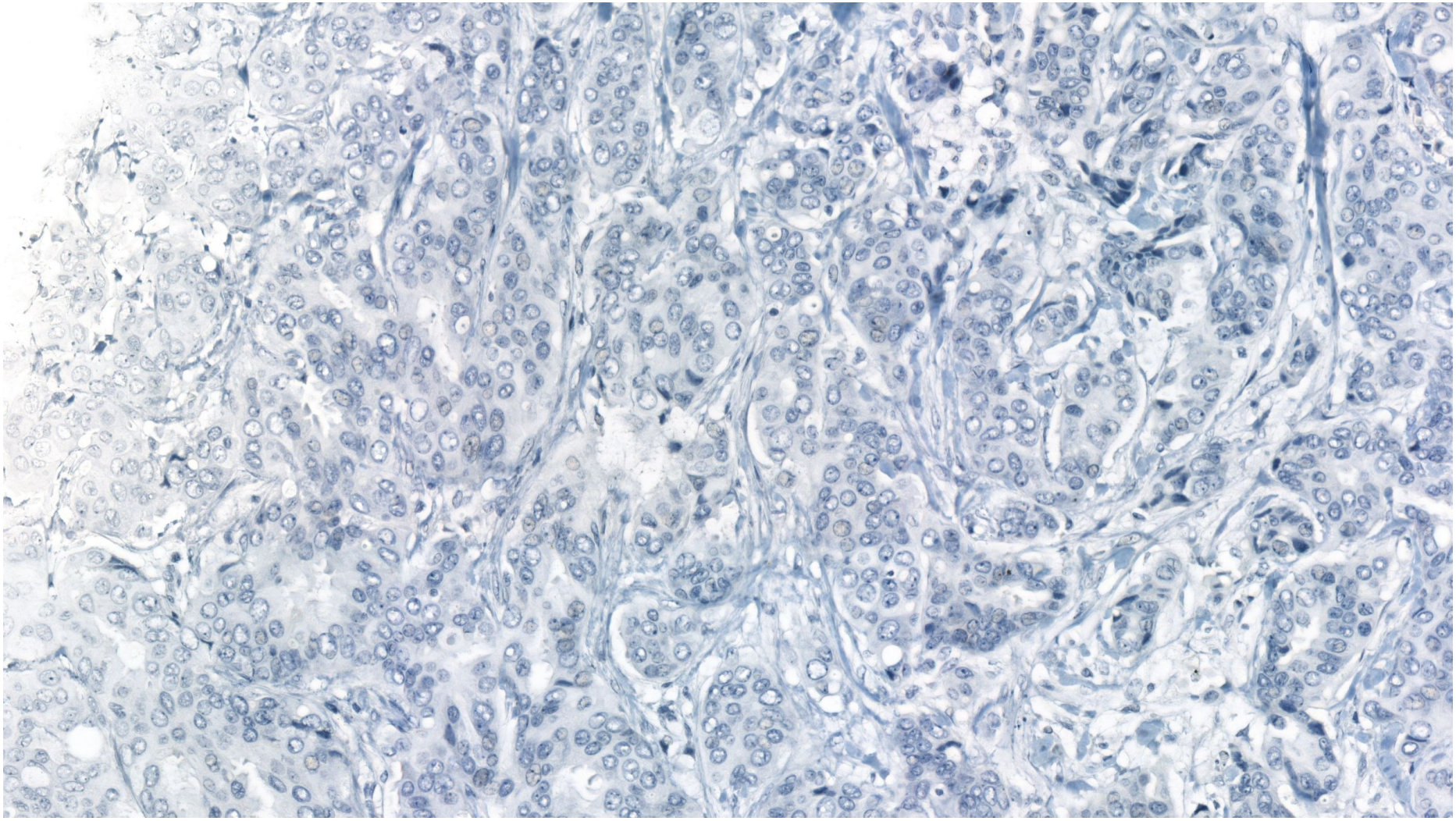
Video Demo

10 20 30 40 50 60 70 80
90 100 110 120 130 140 150
110 120 130 140 150

Video Demo

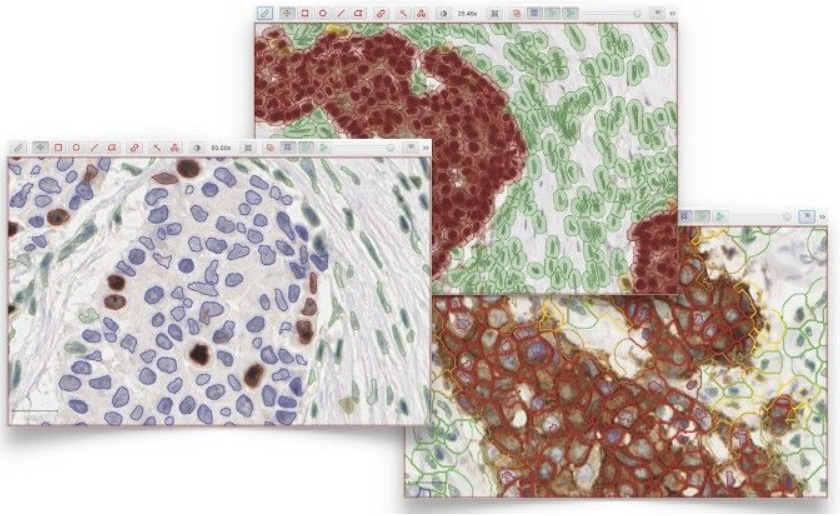


Whole slide image

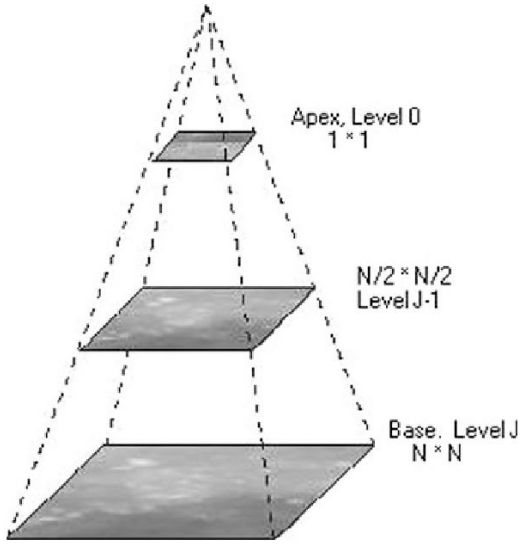


- QuPath interface
- Digital Patient
- Microscope tracking and WSI generation
- Player and recorder for OpenSlide viewer

- Interface/API for QuPath
  - Extract nucleus from WSI/Images QuPath
  - Export of nucleus
  - Integration in OpenSlideViewer
  - Group of 3 students



- GUI for Pathologist
  - Display of Medical evidence
  - Display of WSI
  - Display of histological evidence
  - Group of 3 students

- Video to slide-image mapping
  - Find positions in the WSI from the video
  - Frame extraction from the Video
  - Position finding on the WSI
    - Where is the where is the current frame in the WSI?
    - Storage of the extracted information
  - Group of 3 students

- Visualisation of the Video in the WSI with OpenSlideViewer
- Path marking on the WSI
  - Draw a route thru the WSI
  - Different layers (pyramidal picture)
- Projection in different layers
- Rebuilt the Video with pictures from the WSI
- Group of 3 students