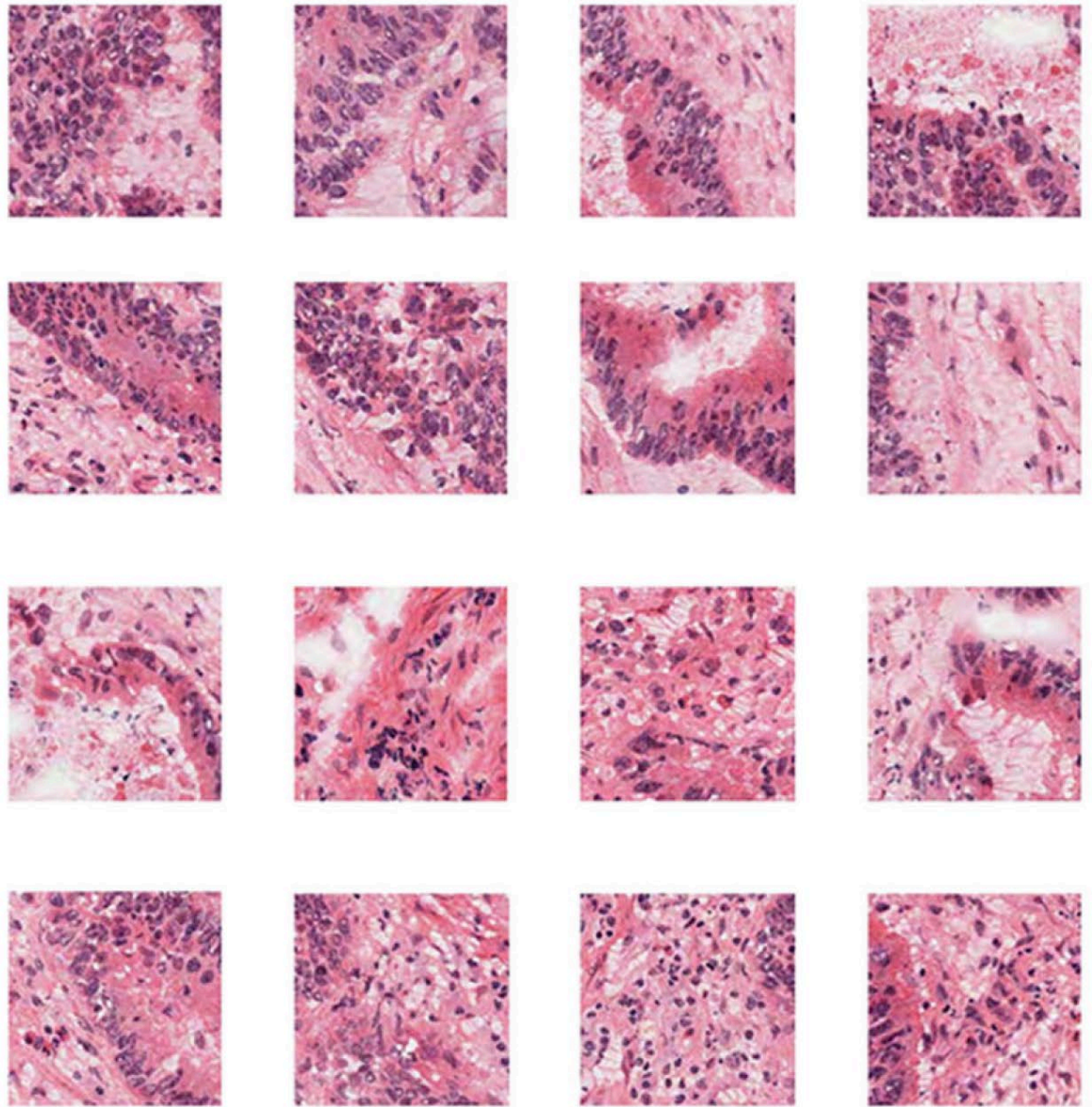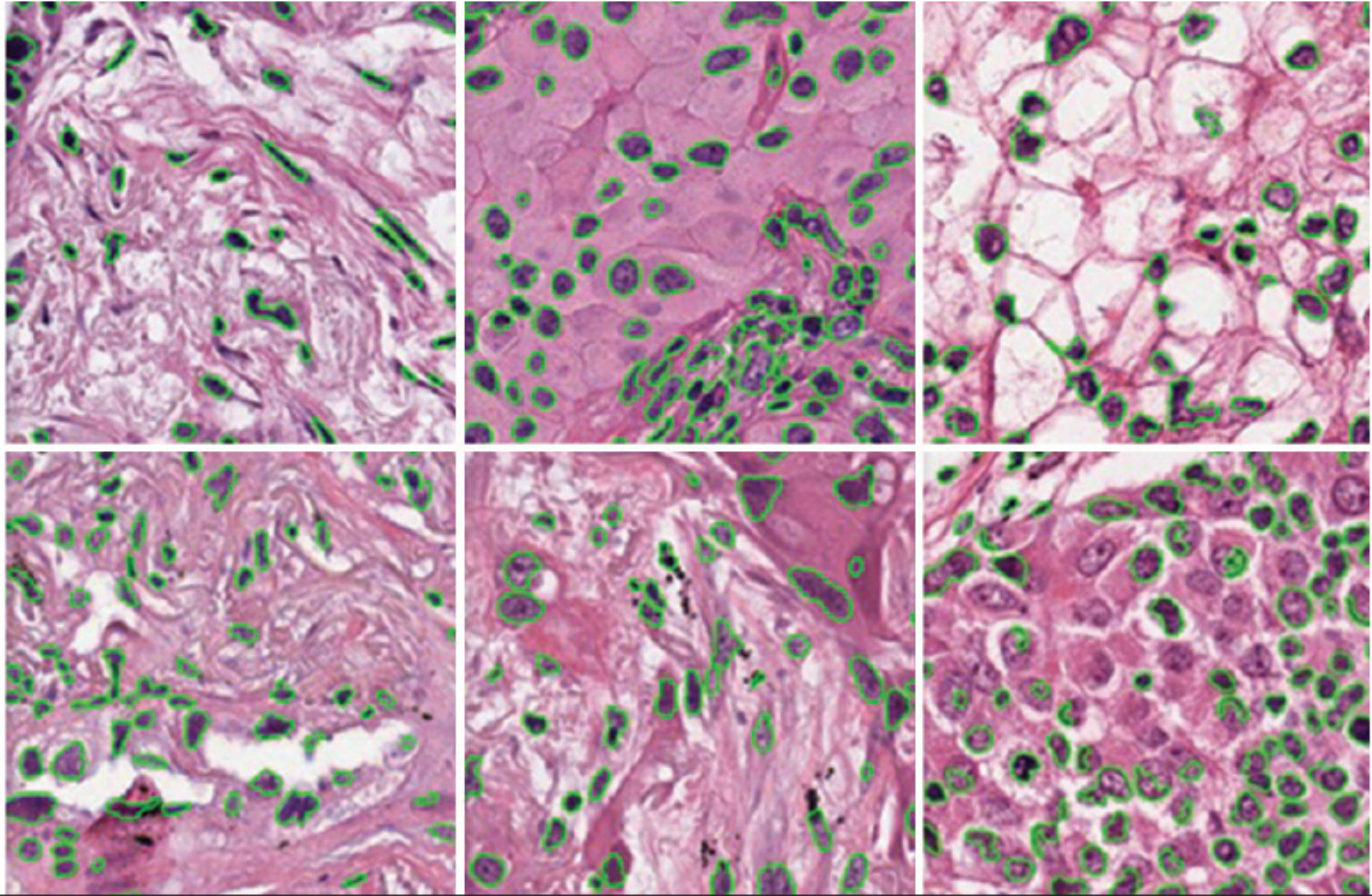# Supplement 222:

Microscopy Bulk Simple Annotations Storage

Working Group 26: Pathology

2021/03 WG 6 Letter Ballot

Overview

- Whole Slide Images (WSI) pyramidal, tiled
- Annotations needed for case, slide, location
- Codes, test, measurements and scores
- Human or machine generated
- Few or millions of objects
- SR suitable for few (human)
- SR doesn't scale to millions (machine)
- SEG may not be desirable (want shapes)

Yoon et al. Tumor Identification in Colorectal Histology Images Using a Convolutional Neural Network. J Digit Imaging. 2018 Jul 31;1–10.

Wen et al. A methodology for texture feature-based quality assessment in nucleus segmentation of histopathology image. JPI. 2017.

Requirements

- Need connected point-based objects
  - closed polygons
  - open polylines
  - individual points (e.g., center)
- Need parameterized shapes
  - rectangles, circles and ellipses
- Usually all of same type for same purpose
  - group by common form and purpose

Design Choices

- Can transcode to similar structures in SR

- 3D rather than 2D coordinates (? - Open Issue)
  - same as SR SCOORD3D (slide relative)
  - independent of pyramid layer or tile (boundaries)

- Factor out unchanging dimensions
  - Z coordinate (all, list)
  - optical path (all, list)

- Array of coordinates indexed by object
  - re-use vertex encoding of surface segmentation

Annotation Group Sequence Item (1-n)

Long Primitive Point Index List

0
14
24
34
...

Point Coordinates Data

0.66675001	0.032000002
0.66649997	0.032249998
0.66649997	...
0.7829001	0.163000002
...	...

Graphic Type = POLYGON
Common Z Coordinate Value
Annotation Group Number
Annotation Group Label
Annotation Property Type Code Sequence