

Submission 327

# Fast Mitochondria Detection for Connectomics



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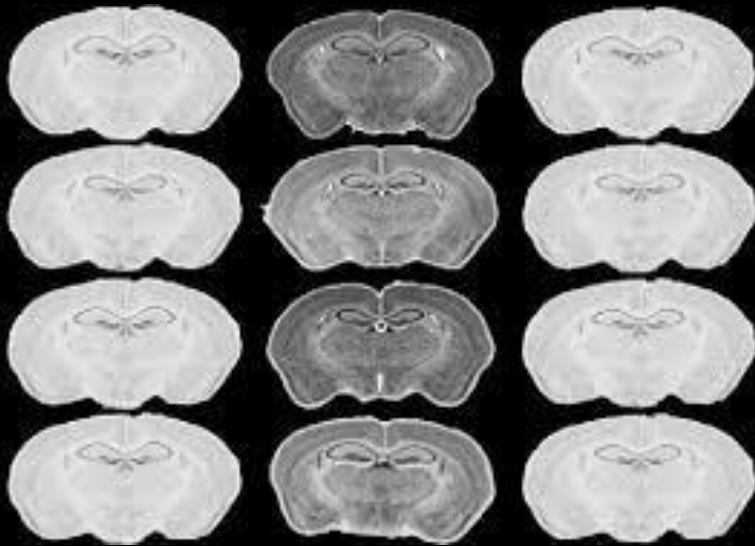
Daniel Haehn



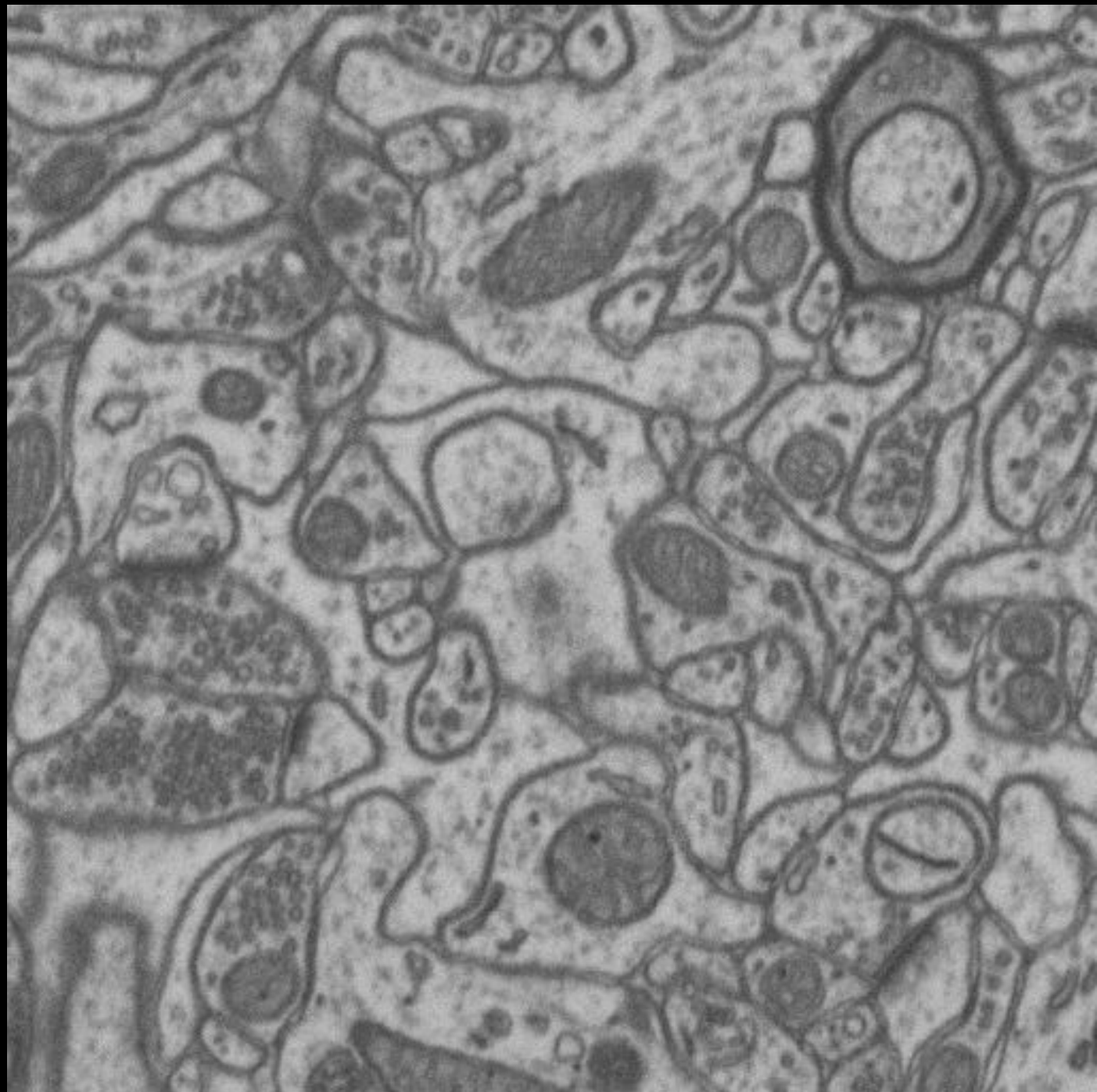
Vincent Casser

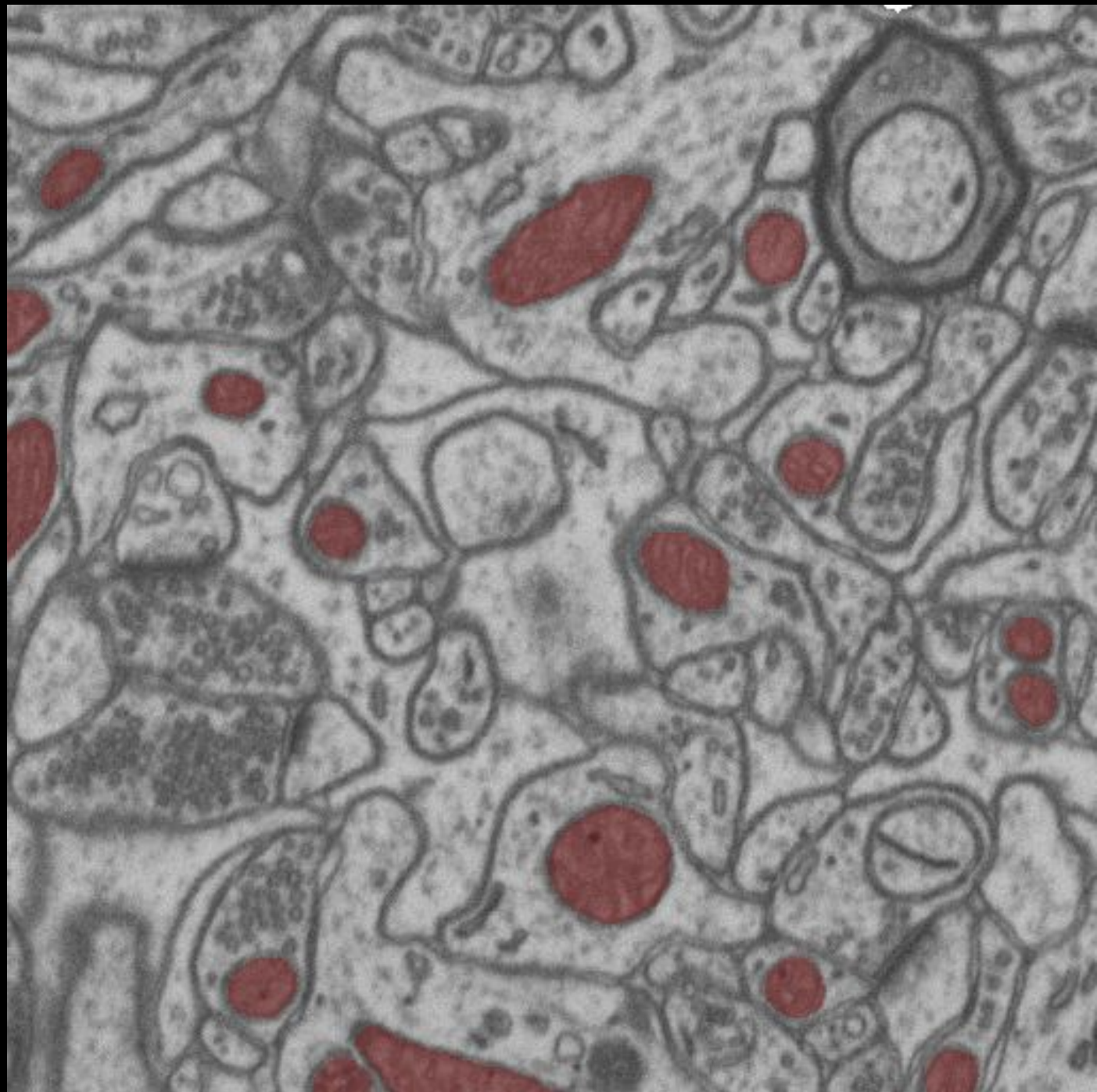
Hanspeter Pfister

# Connectomics



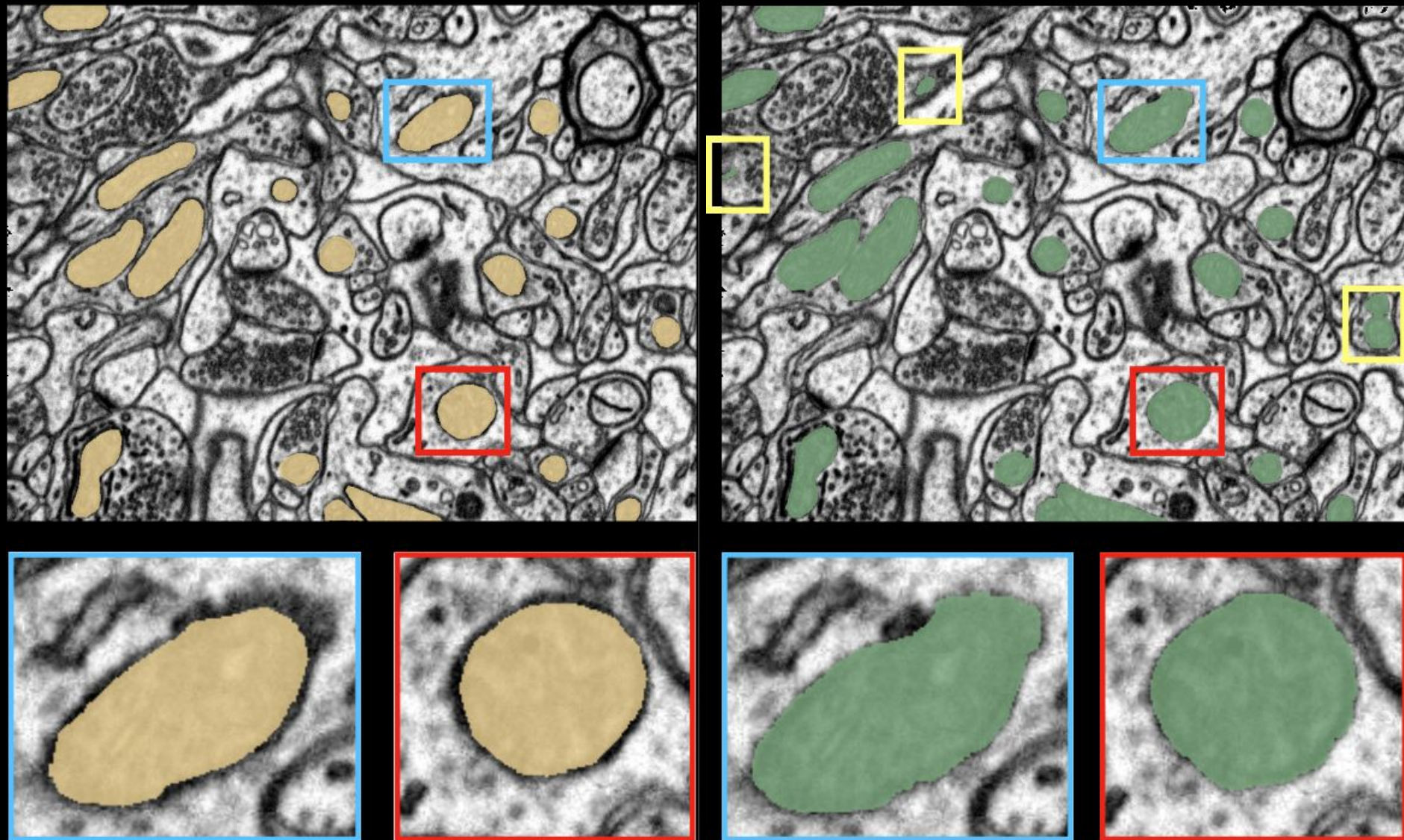


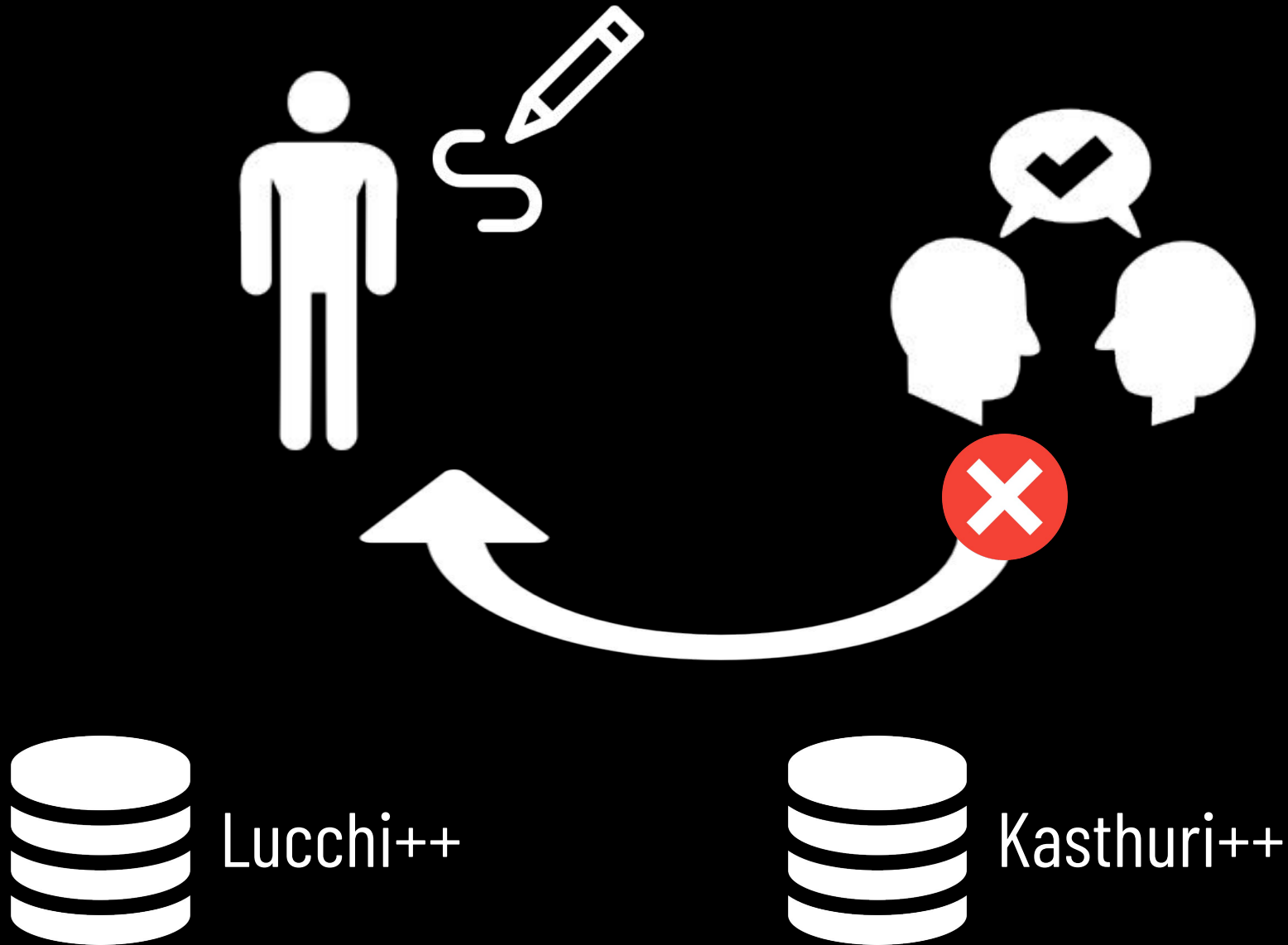






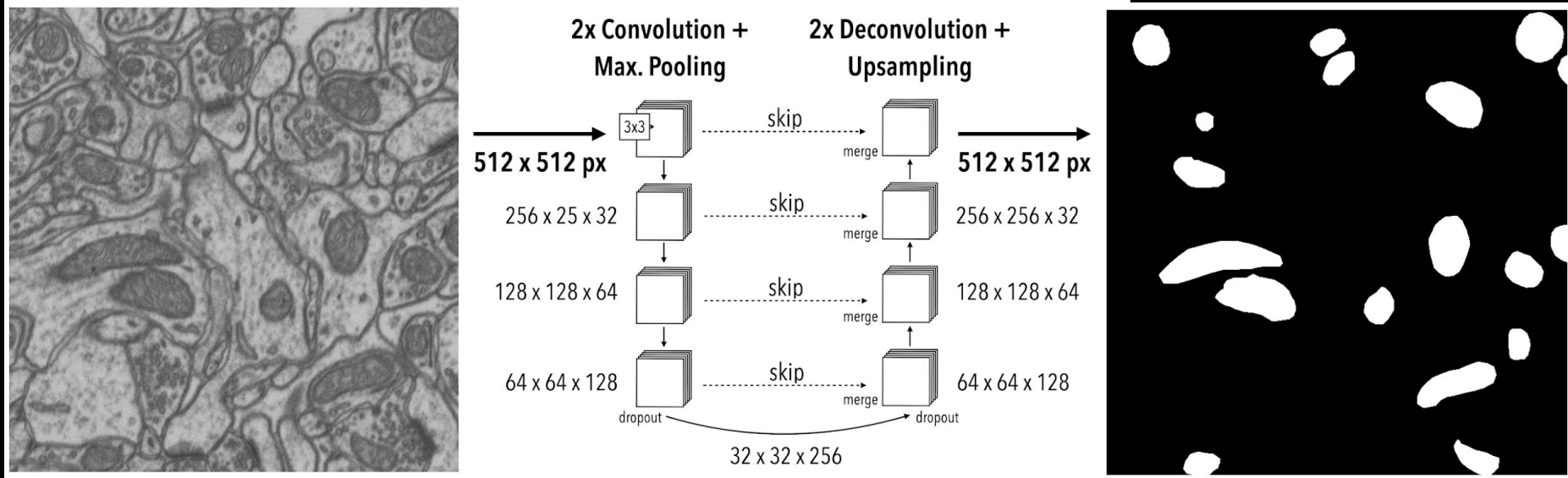
Lucchi et al. 2012a+b, 2013, 2014, 2015; Marquez-Neila et al. 2014; Cetina et al. 2018; Cheng and Varshney 2017; Xiao et al. 2018; Oztel et al. 2017







# 2D U-Net



33.53% of ReLUs were unused

Reduced number of convolutional filters

Same accuracy as original U-Net with 93.6% less parameters

	Foreground-IoU	IoU
Oztel et al. 2017	0.907	-
Xiao et al. 2018	0.900	-
Lucchi et al. 2015	0.895+	0.948
Ours	0.890	0.942
Cheng et al. 2017	0.889	0.942
Human Expert	0.884	0.938

## Throughput [MP/s]

Electron Microscope

11

Lucchi et al. 2015

0.16

Xiao et al. 2018

0.490

Ronneberger et al. 2015

5.872

Ours

15.142

Computational backlog for 1-day scan:

Ours [2020]: 0s

Ronneberger et al [2015]: 0s

Xiao et al [2018]: 0s

Lucchi et al [2015]: 0s

Data amount: 0.0MP





[bit.ly/FASTMITO](https://bit.ly/FASTMITO)