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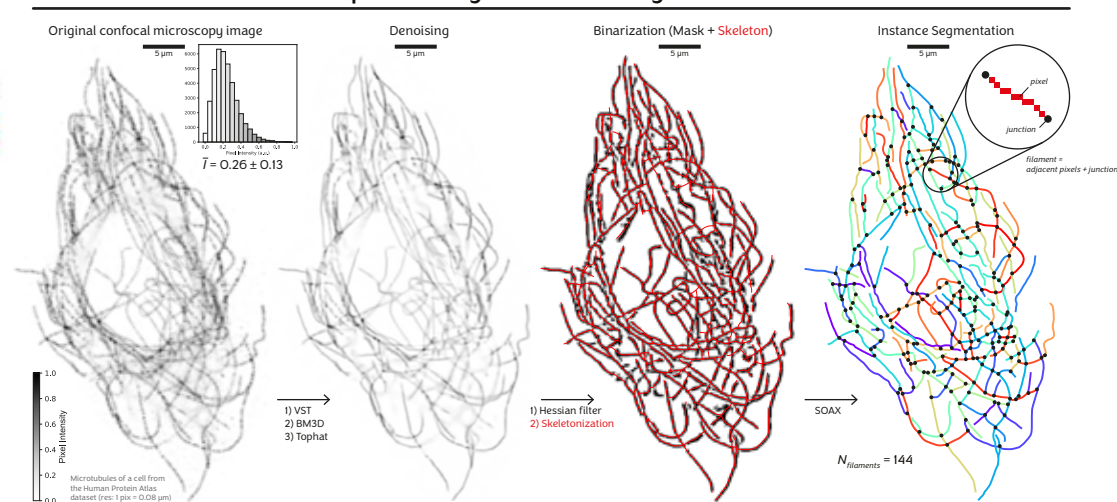


The **cytoskeleton** is a **filamentous structure** whose **architecture** is the **blueprint of cellular behavior**. Beyond its structural role, it dynamically orchestrates **many cellular processes**: morphogenesis, movement, division, mechanotransduction, adhesion and intracellular transport.

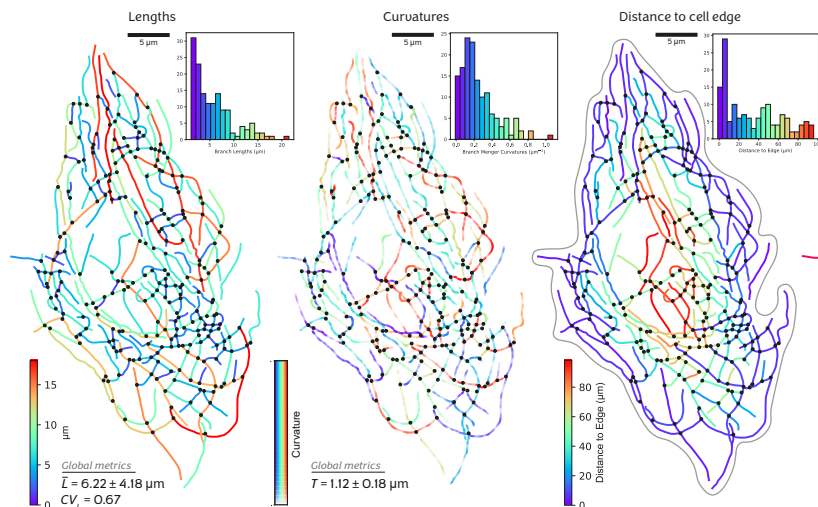
The cytoskeleton can be imaged by **confocal microscopy**, but its complex architecture makes **segmentation** and **quantification** highly challenging.

This model aims to **untangle the organization of filamentous structures into distinct architectural aspects**, focusing on the cytoskeleton, enabling direct comparison between networks and uncovering patterns linked to cell function and disease.

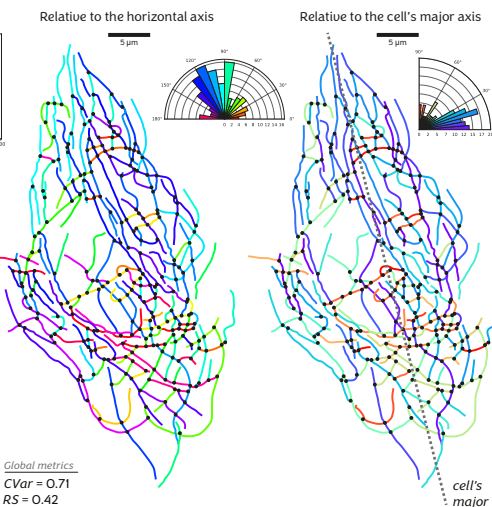
## Preprocessing & Instance Segmentation



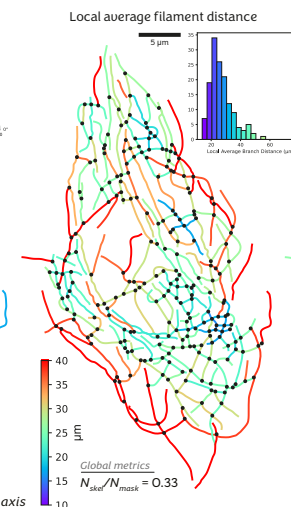
## Morphology



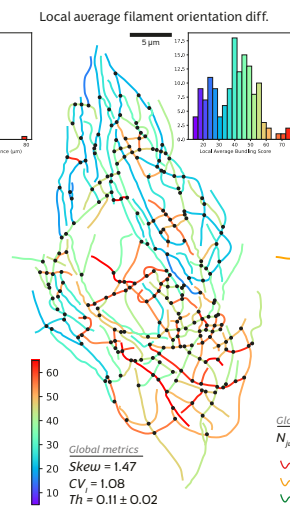
## Orientation



## Compactness / Density



## Bundling / Thickness



## Connectivity

