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Texture-based analysis of mitochondrial microscopy scans

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We present a work-in-progress study on mitochondrial fluorescence microscopy scans using classical image-processing techniques. The workflow combines morphological and intensity-based segmentation with the extraction of descriptive textural features that capture structural variability of mitochondria. To identify the most informative characteristics, we apply systematic feature selection and evaluate their ability to distinguish experimental conditions. Reflection-invariant representations, including co-occurrence statistics of local binary patterns (LBP), are further explored to ensure consistent measurements across mirrored or rotated scans. The study aims to develop an interpretable and computationally efficient framework for quantitative assessment of mitochondrial morphology, providing a foundation for future large-scale analyses and methodological comparisons.

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Department of Applied Informatics

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Authors: HLADŮVKA, Jiří; KOČALKA, Matúš; HODOROVÁ, Viktória; RICHNÁKOVÁ, Xénia

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