

# Paper Validation Report

## for microalgae\_conc



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**Correspondence:** Yes

**Percentages:** 93.5%

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### **Conclusion:**

The repository code substantially implements the methods, algorithms (classical CV and DL approaches for cell segmentation), evaluation metrics (IoU, area error, cell counts, Pearson correlation), and experimental scripts described in the paper's experiments section. The code includes classic CV segmentation, calibration, concentration calculation, benchmarking scripts, validation with ground truth, deep learning pipelines (U-Net, StarDist), and visualization/analysis scripts matching the figures and results in the text. Sample errors, time analyses, and limitations are also supported. Only minor gaps exist, such as potential lack of full dataset or certain manual annotation details, but overall, the codebase enables reproduction of nearly all reported results and figures, confirming strong compliance.