

I. IDENTIFICATION DATA

Title:	Reconstruction of Cell Images Acquired by Super-resolution Microscopy
Author's name:	Martin Kunz
Type of assignment:	Bachelor Project
Faculty:	Faculty of Nuclear Sciences and Physical Engineering (FNSPE)
Department:	Department of Mathematics
Reviewer:	Jaroslav Knotek
Reviewer's affiliation:	Czech Academy of Science – Department of Image Processing

II. ASSESSMENT OF CRITERIA

Work assignment	demanding
<i>Assess how demanding the work topic is.</i>	
The topic required substantial effort to understand and experimentally test. Therefore, the topic complexity corresponds or is greater than is demanded for bachelor thesis.	

Fulfilling the assignment	fulfilled
<i>Consider whether the work submitted meets the assignment. If necessary, give your comments on items of the assignment not fully answered, or judge whether the scope of the assignment has been broadened. If student failed to fully treat the assignment, try to assess the importance, impact and/or the reasons for the failings.</i>	
The highlight of this work is the attention put into explaining theory and subsequent application. Scope of the work seems to adhere to initial goals set.	

Chosen approach to solution	appropriate
<i>Assess whether student applied a correct approach or method of solution.</i>	
Student applied correct approach to find the solution to his task.	

Professional standard	average
<i>Assess the professional standard of the work, application of course knowledge, references, and data from practice.</i>	
The topic of the work is as interesting as it is demanding. The student succeeded in understanding and replicating existing work as well as designing and testing an improvement. However, the presentation in form of an academic text has serious issues that negatively impact otherwise interesting work.	
The most important short-coming of this work is its structure that doesn't follow established standards very well and hampers reader's understanding. The work puts substantial effort in explaining theory behind his works that could have been shortened or referenced which would improve clarity of the work. Before the reader reaches what the actual topic of this work is the reader can feel lost in details. Overall, the form of the text does not help the reader to appreciate the actual work that has been done.	

Level of formality and of the language used	excellent
<i>Assess the use of scientific formalism, the typography and language of the work.</i>	
The level of formality and language meet the standard requirements	

Choice of references, citation correctness	average
<i>Assess student's effort in finding and using study sources for completing their work. Give characteristics of the references chosen. Assess whether student made use of all the relevant sources. Verify whether all items used are properly distinguished from the results obtained by student and their deliberations, whether there are no violations of citation ethics, and whether the bibliography presented is complete and complies with the citation usage and standards.</i>	

Although the references the student picked are many and relevant, it can be argued that there is a potential for more. Mainly, the chapter about theory does not seem to add much value to the work itself. Quite the contrary. It diverges reader focus from what is already important.

Further comments and assessment

Give your opinion on the quality of the main results obtained in the work, e.g. the theoretical results, or the applicability of the engineering or programming solutions obtained, publication outputs, experimental skills, and the like.

The quality of the main result is undeniable. The potential application of this work can further knowledge about behaviour of single cells. The experiment seems to advocate for the correctness of the method rather than actual applicability but that can be attributed to the difficulties of data acquisition. More importantly, the student did not properly explain the impact that his improvement has for the consultant that student had.

III. OVERALL ASSESSMENT, QUESTIONS TO BE ASKED DURING THE WORK DEFENCE, SUGGESTED GRADE

Summarize those aspects of the work that were significantly influential for your overall assessment. Suggest questions to be answered by student during the defence of the work before the examination board.

The student understood the topic well and applied the acquired knowledge to develop and successfully test the solution to the picked super resolution algorithm. However, the presentation of his work does not present his achievements very well. The work lacks focus and proper structure.

Even though the work has textual issues, the effort put into exploration and analysis is tangible. Spending less time on putting down theory and putting into setting up a proper conclusion could make this work a great piece.

Question 1: Why is the image of Fourier spectrum in fig 4.20 different in shape to fig 4.19 - namely the position of circles?

Question 2: What is the size of the dataset you experimented with?

Suggested grade: **C - good.**

Date: 23/01/2024

Signature:

