CCs' size increases. This behavior was already reported in their original paper. Contrasting these results, the throughput of our algorithm increases, if the CCs size increases. An exception to this behavior is the CC size one, where our algorithm does not extract any CS. So, our algorithm performs better, if the processed data consists of less contour-segments.

V. Conclusion

We have presented a parallel algorithm to solve 2d-image-data CCL problems in linear overall complexity. Similar to contour-tracing approaches, the extracted object-contours may also be helpful for certain applications like 2d-object recognition. Our current OpenCL-implementation performs comparable to the fastest previous approaches, when executed on a GPU, if a sufficiently high resolution is applied. Additionally, it scales superior with respect to the data-resolution in case of the tested data-set.

VI. Future Work

First and foremost, we will research alternatives to the fill contour sub-algorithm, since it limits the asymptotic running-time due to the small number of processors utilizable, when compared to our other sub-algorithms. Perhaps a per-column unification of linked-lists is a better idea. However, these would have to be re-arranged at first in order to solve problems regarding nested connected-components.

Besides, we will improve our implementation. One problem identified is the amount of OpenCL kernel calls (hundreds per processed image). And another one is the limited use of a GPU's local memory provided by OpenCL.

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