Optimized Illumination for Overlapped Imaging

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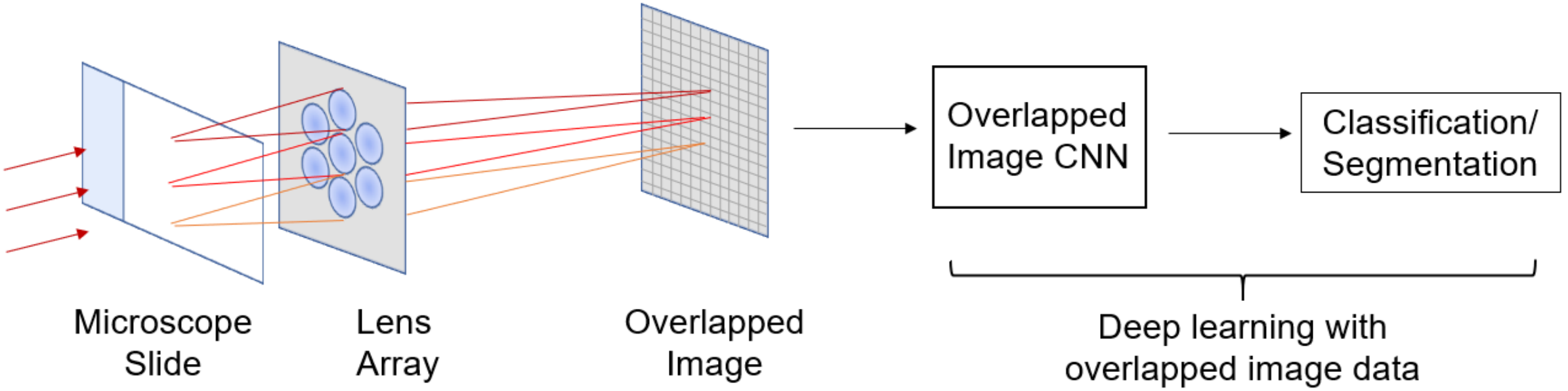
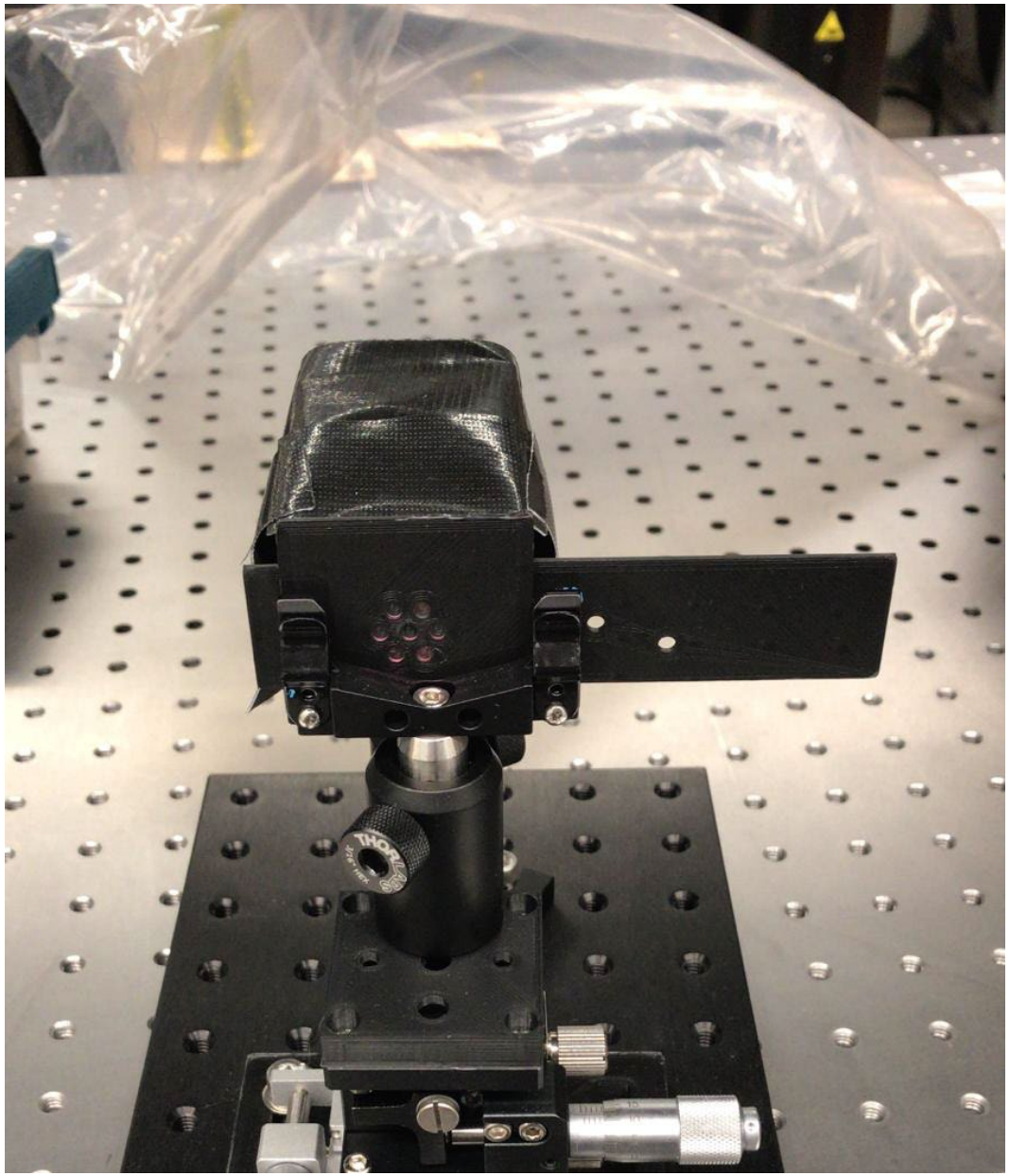
Overlapped Imaging

- One major challenge for optical systems is to image a large area at high resolution
- We can have computational solutions – but they are resource-greedy
- The end goal is use ML algorithms to obtain get few bits of information
- So we can make optical systems for computer consumption and not necessarily for human viewing

Overlapped Imaging

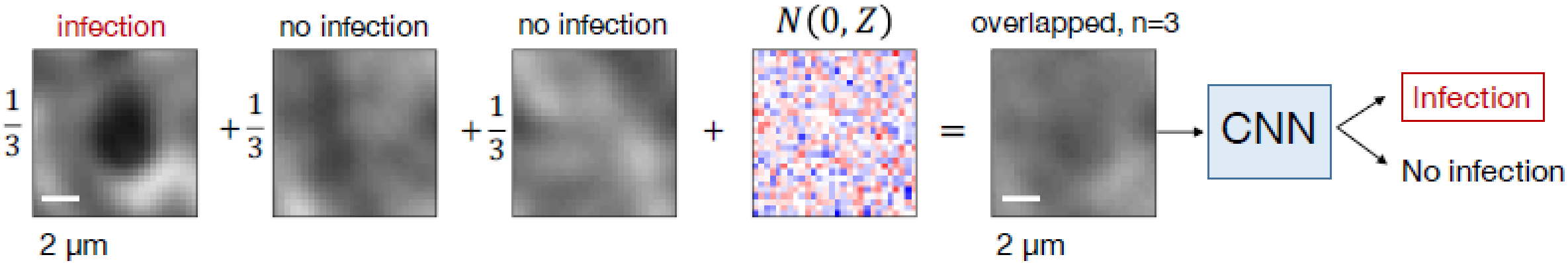


Overlapped Imaging

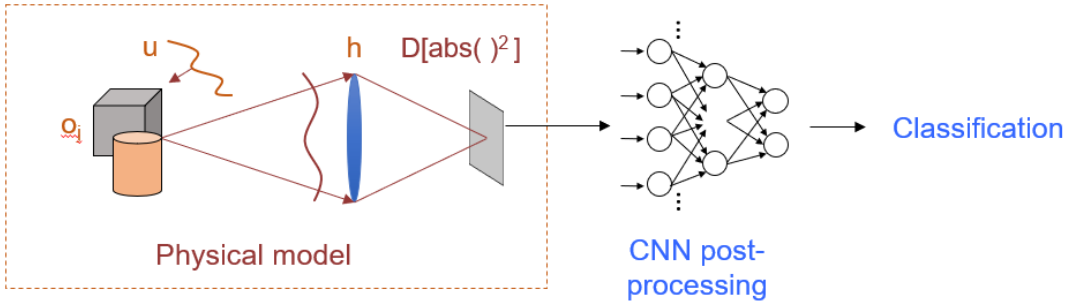


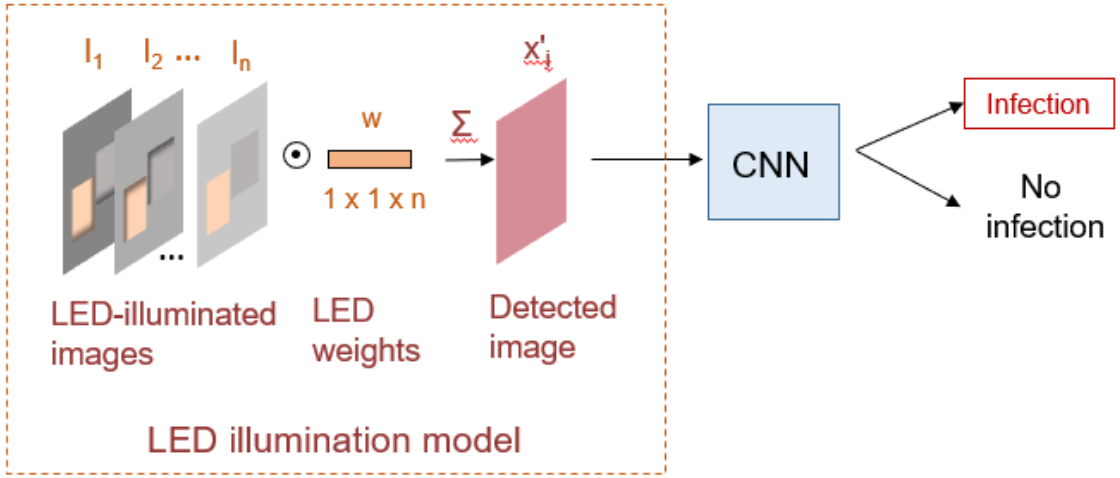
Pavan Konda

Overlapped Imaging Simulation

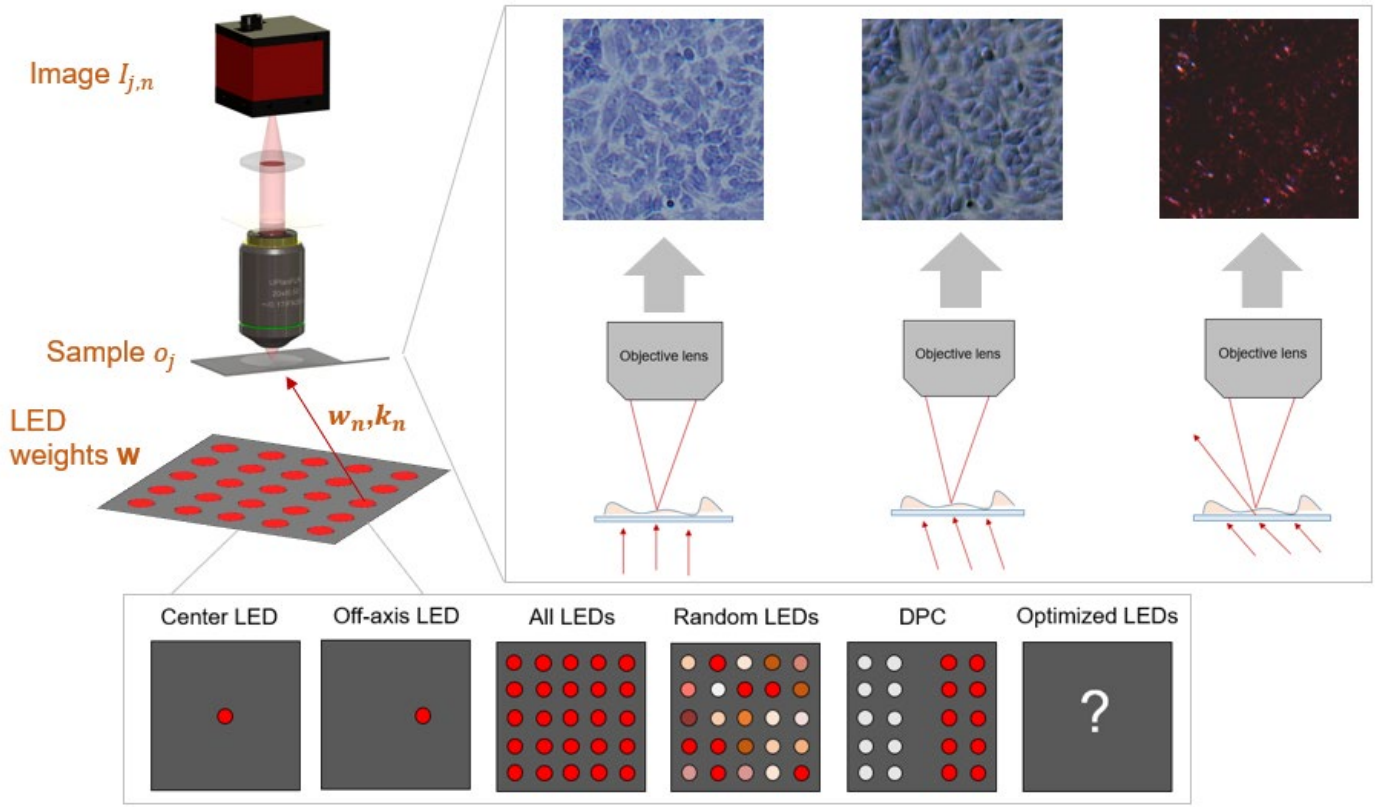


Optimized Illumination

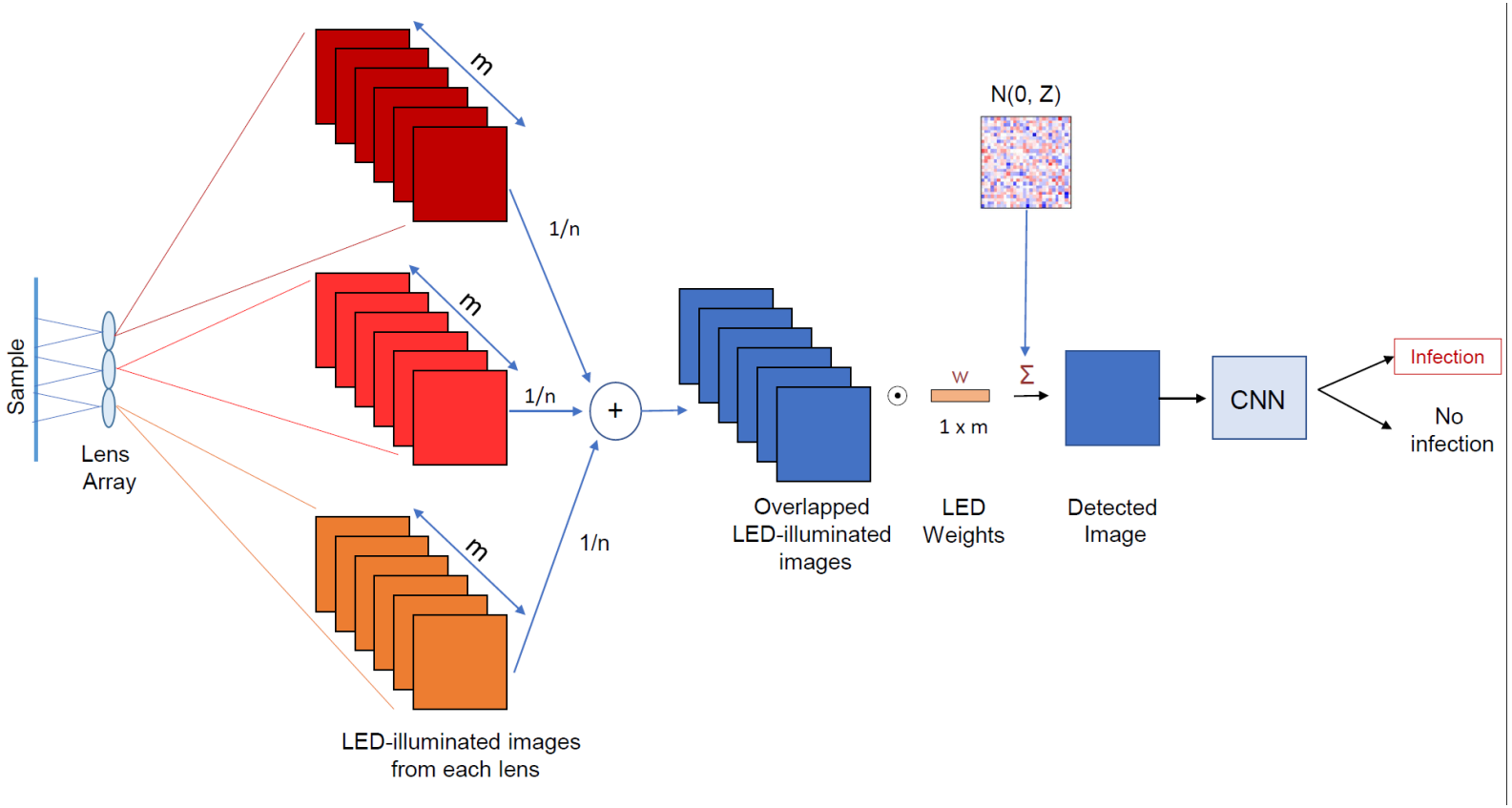




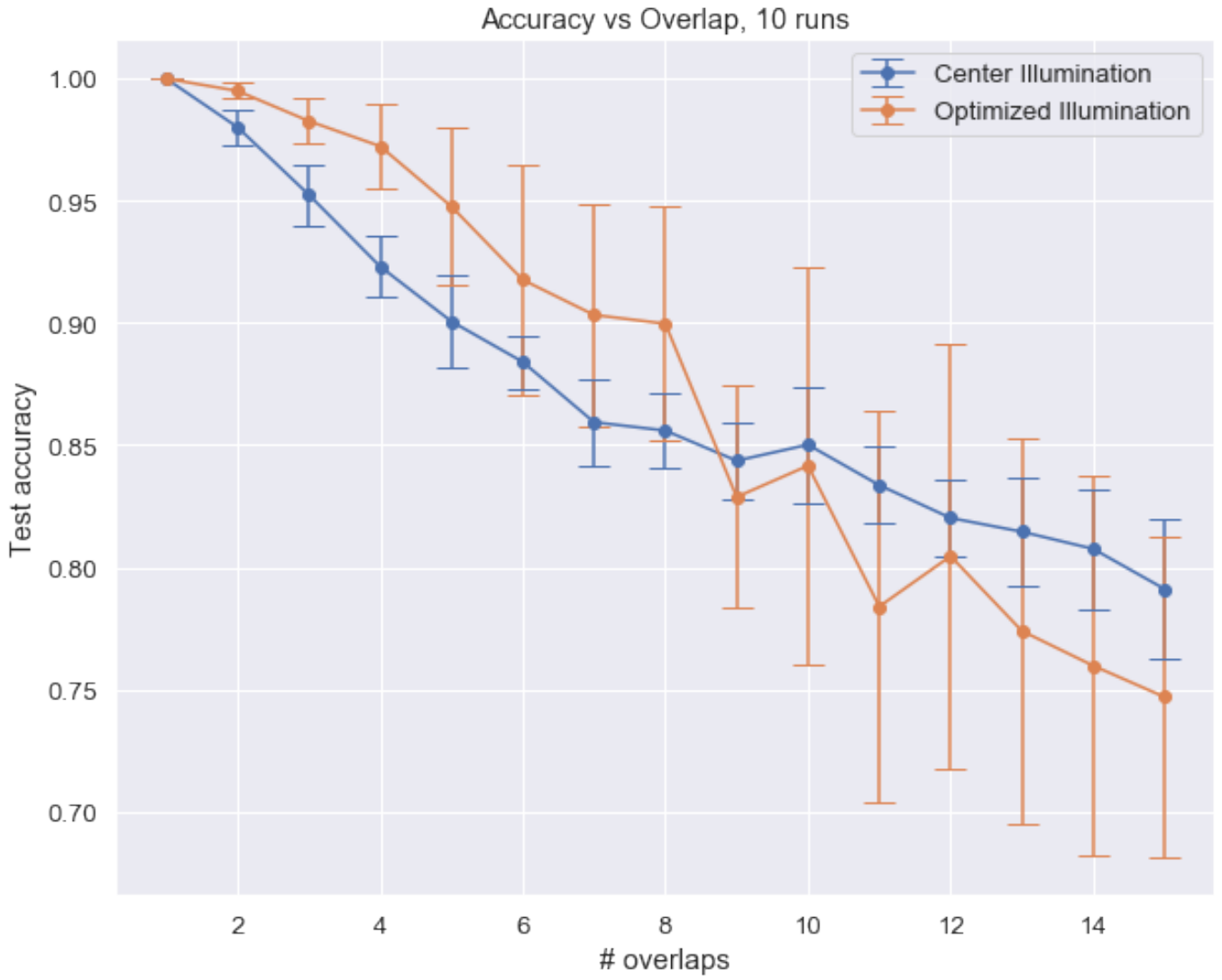
Optimized Illumination



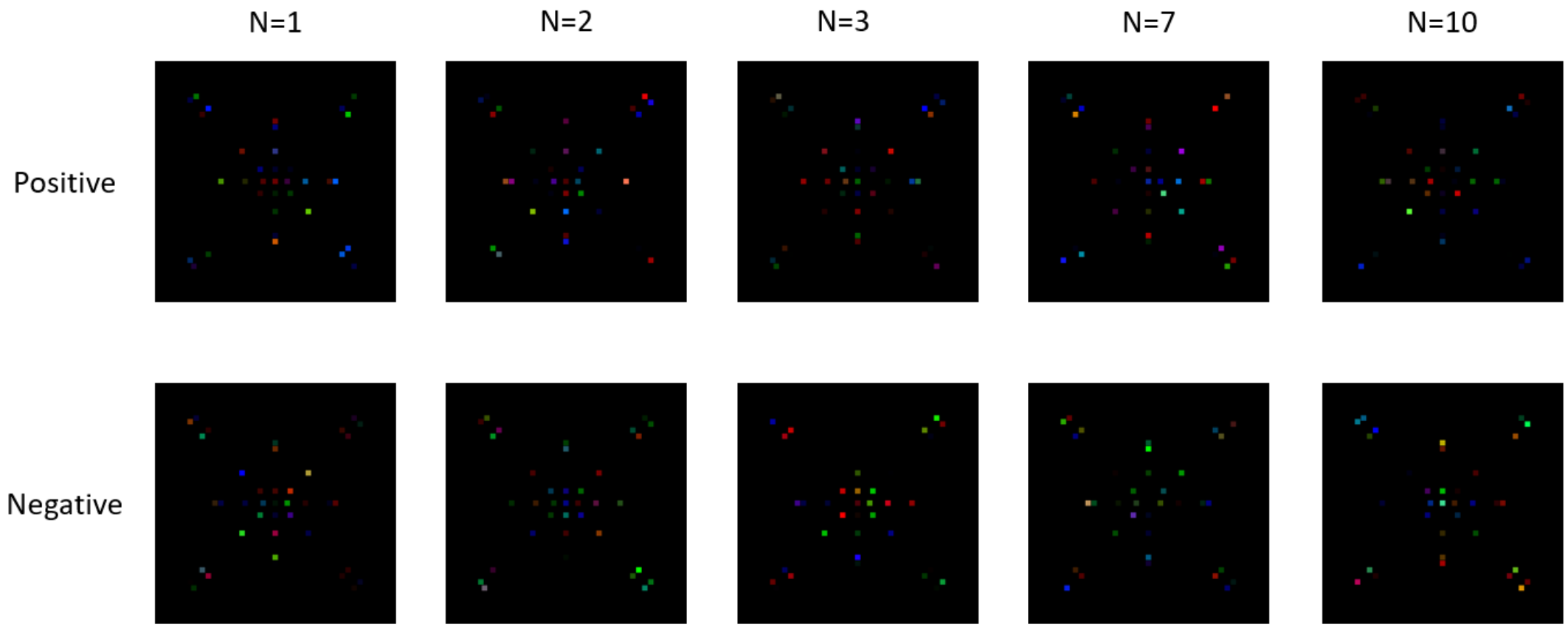
Putting them together…



Results

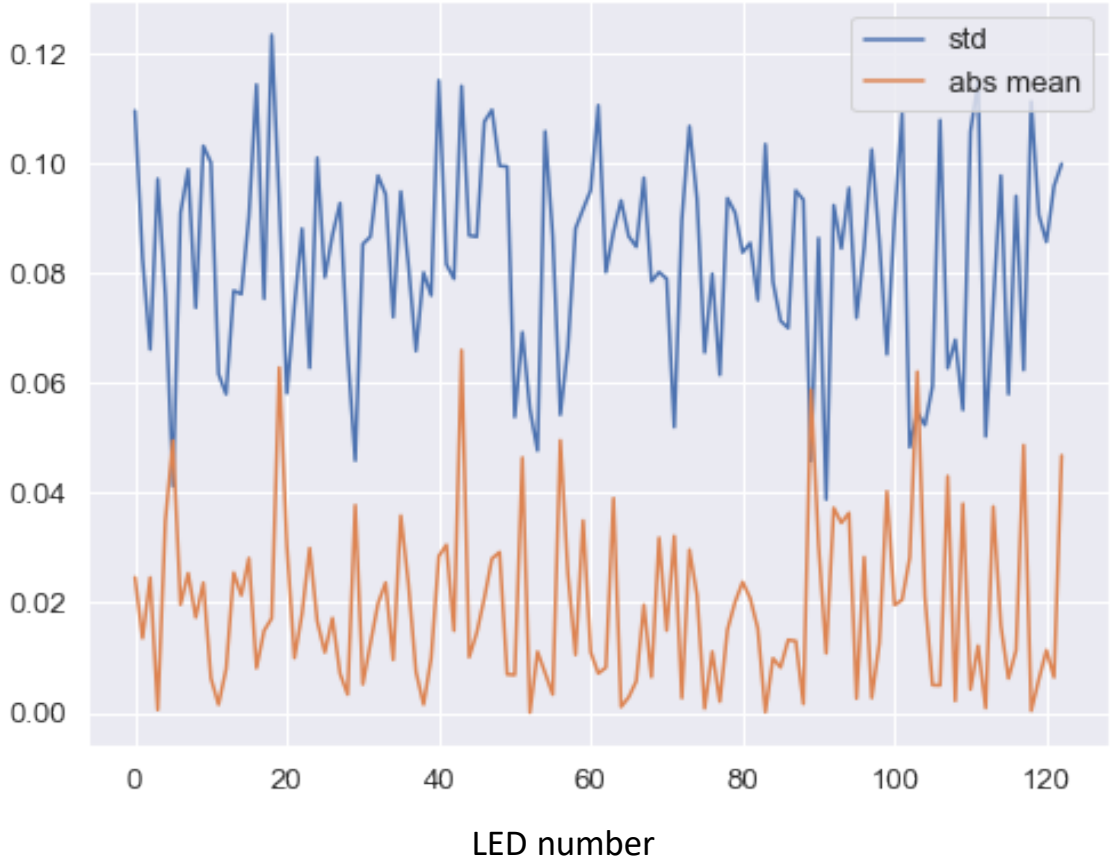

Accuracy vs Overlap, 10 runs
Center Illumination
Optimized Illumination
Test accuracy
1.00
0.95
0.90
0.85
0.80
0.75
0.70
2
4
6
8
10
12
14
overlaps

Results

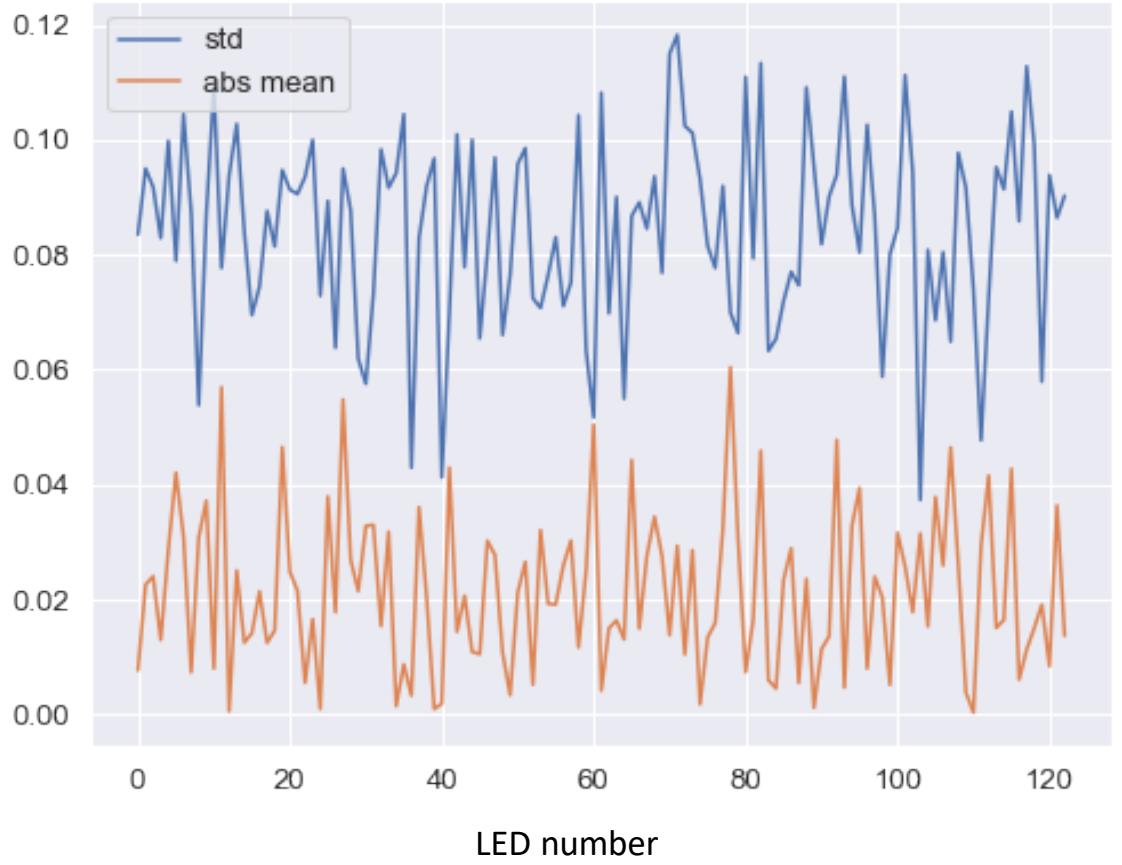


Results

N=2



N=1



Acknowledgements

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Questions?