



# Silicon photonics for AI or AI for silicon photonics? – an industry perspective

T. Van Vaerenbergh, S. Hooten, P. Sun,  
S. Kumar, J. P. Strachan, N. Tezak, J. Pelc, G. Mendoza, D. Kielpinski, R. Beausoleil

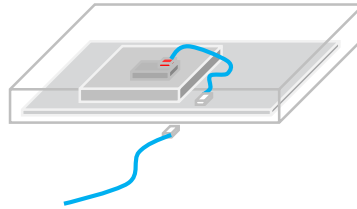
February 5, 2021

# Conclusion

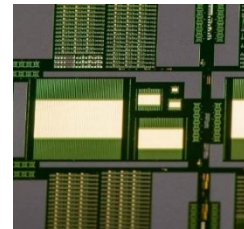
Note: Full slide deck can be obtained by contacting [Thomas.Van-Vaerenbergh@hpe.com](mailto:Thomas.Van-Vaerenbergh@hpe.com)

References can be found on next slide

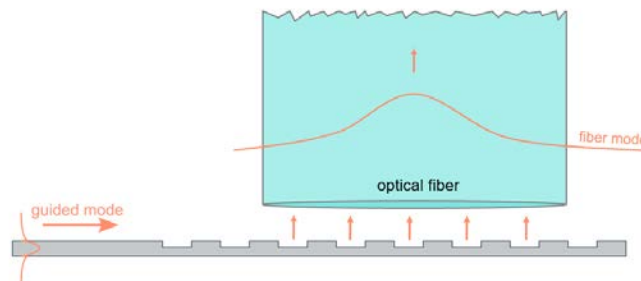
Silicon photonic networks will change distributed AI training on HPC, GPU clusters



Silicon photonics, just like analog electronics, outperforms quantum annealers



Machine learning *might* help with global optimization of ‘new’ photonic devices





# Questions?

Ising:

N. Tezak et al, JSTQE (2019)

mem-HNN:

F. Bohm et al, <https://arxiv.org/abs/2012.10430> (2020)

Adjoint design:

F. Cai et al, Nature Electronics (2020)

S. Kumar et al, ICRC (2020)

P. Sun et al, Optics Express (2020)

S. Hooten et al, JLT (2020)

## Silicon photonics for AI and AI for silicon photonics! – an industry perspective

[thomas.van-vaerenbergh@hpe.com](mailto:thomas.van-vaerenbergh@hpe.com), S. Hooten, P. Sun,  
S. Kumar, J. P. Strachan, N. Tezak, J. Pelc, G. Mendoza, D. Kielpinski, R. Beausoleil

February 5, 2021

Upcoming special issue:

APL photonics – Photonics and AI in IT, deadline July 9