

FCCM を見た

FCCM がバーチャルで公開されて、しかも参加登録無料だったのであれこれプレゼン動画をみてみた。

キーノートは、Reconfigurable Computing with Nanophotonics .
コンピューティングのコンポーネントは、

- MRR, MZI
- Photodiode, Combiner
- Nonlinear Activations

で、アプリの例は PDE ソルバとか CNN とか。

Conclusions は、

- With reduced size and plethora of components nanophotonics make it possible to architecturally innovate
- In addition to what is possible with Silicon Photonics, Metatronics provide the ability to engineer new materials that can fit in and provide new capabilities as we saw in ROC
- All of these devices are generally programmable
- The possibilities do not stop at digital or multivalued representations but it also can bring back important element of analog computing
- It is important not to just copy a digital or an analog electronic solution as is, but rather think about what alternatives photonics can offer
- The savings in power about the range of new possibilities are worth the investment
- There are many well known challenges, many of which are being tackled
- There is new promising work
- With new devices, material, algorithms conversions between electronic and photonic domains can be cut down and many new all optical devices are emerging.

FCCM 論文読み

- FFShark: A 100G FPGA Implementation of BPF Filtering for Wireshark - <http://www.fccm.org/proceedings/2020/pdfs/FCCM2020-65FOvhMqzyMYm99lfeVKyl/580300a047/580300a047.pdf>
- Corundum: An Open-Source 100-Gbps NIC - <http://www.fccm.org/proceedings/2020/pdfs/FCCM2020-65FOvhMqzyMYm99lfeVKyl/580300a038/580300a038.pdf>
- High-Throughput Convolutional Neural Network on an FPGA by Customized JPEG Compression - <http://www.fccm.org/proceedings/2020/pdfs/FCCM2020-65FOvhMqzyMYm99lfeVKyl/580300a001/580300a001.pdf>
- Grapefruit: An Open-Source, Full-Stack, and Customizable Automata Processing on FPGAs - <http://www.fccm.org/proceedings/2020/pdfs/FCCM2020-65FOvhMqzyMYm99lfeVKyl/580300a138/580300a138.pdf>

あたりを、さらっと。