

ASCI-EDL winterschool on Efficient Deep Learning

Nov 22-25 (Monday – Thursday)

Kasteel Oud Poelgeest, Poelgeesterweg 1, 2341 NM Oegstgeest

Slot	Speakers	Topics
Monday Nov 22		Introduction DL and Mapping Optimizations
2	Henk Corporaal (TUE)	Welcome and introduction to course and the DL field
3	Jan van Gemert (TUD)	Intro DL
4		Intro DL
Lunch break		
5	Floran de Putter / Sun Wei (TUE) / Maurice Peemen (ThermoFischer / Sebastian Vogel (NXP)	Inference Optimization: Pruning
6		Inference Opt: Quantization
7		Inference Opt: Quantization, incl TNN & BNN architectures
8	Jan van Gemert (TUD)	Reproducibility Assignment Introduction
Tuesday Nov 23		Data reuse / Data efficient learning / Mapping
1	Pascal Mettes (UD UvA) (Tu1,2/Th)	Hyperbolic Deep Neural Networks (Data eff learning)
2		Hyperbolic Deep Neural Networks
3	Barry de Bruin / Henk Corporaal (TUE)	Inference Opt: Data reuse / scheduling / loop transformations
4		Inference Opt: Data reuse / scheduling / Halide? + ANN processors & Accelerators
Lunch break		
5	Floran (TUE)	Mapping exploration Zig/Zag / Timeloops
6-8		Social event
Wednesday Nov 24		DL at the Edge, NAS + ANN architectures
1	Lydia Chen (TUD) ??	Accelerating Gossip-Based DL for Heterogeneous Edge
2		Pipetune: pipeline par of hyper par tuning for DL clusters
3	Willem Sanberg / Sebastian Vogel / Hiram Rodriguez (NXP) (We/Th)	Challenges of scaling and applying NAS for embedded systems
4	spare	
Lunch break		
5	Damian Podareanu (SURFsara)	Efficient DL in the cloud: on CPUs, GPUs, etc.
6	Giuseppe Sarda (IMEC/KUL)	Diana & Ania chips: SRAM based Computing-in-Memory for DL
7	Lin Wang (VU) (>2pm We/Th)	DL at the Edge
8		DL at the Edge
Thursday Nov 25		SNN models&architectures / Transformers (eff. training)
1	Bojian Yin / Sander Bohte (UvA)	Introduction into SNNs
2		Introduction into SNNs
3	Paul Detterer / Federico Corradi (IMEC)	IMEC SNN architecture: μ Brain chip
4	Julien Dupeyroux / Guido de Croon (TUD)	SNNs in Drones: Event-based vision for tiny systems
Lunch break		
5	Jan van Gemert (TUD)	Transformers (incl. intro to RNN, LSTM, TCN: recurrent networks)
6		Transformers: efficient training
7	Students	Pitch presentations on selected topics / assignments
8		Q&A
END of Winterschool 2021		

Spare	Henk Dreuning (UvA)	data, model & pipeline parallelism for memory efficiency
	Dolly Sapra (UvA) (Tuesday)	NAS for edge-based CNNs

Daily schedule:

- 9.00– 10.45: slot 1,2
- break
- 11.00 – 12.45: slot 3,4
- lunch
- 14.00 – 15.45: slot 5,6
- break
- 16.00 – 17.45: slot 7,8
- 18.30 dinner

Extra Material:

1. Hyperbolic Deep Neural Networks: A Survey
Wei Peng, Tuomas Varanka, Abdelrahman Mostafa, Henglin Shi, Guoying Zhao
<https://arxiv.org/abs/2101.04562>
2. Intelligent Architecture course at TUE (slides can be downloaded):
<https://www.es.ele.tue.nl/~heco/courses/IA-5LIL0>
3. Reproducing papers:
 - a. <https://reproducedpapers.org/>
 - b. ReproducedPapers.org: Openly teaching and structuring machine learning reproducibility, Burak Yildiz e.a.: <https://arxiv.org/abs/2012.01172>