Thomas Verelst

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🔗 https://thomasverelst.github.io   in linkedin.com/in/tverelst

PhD Researcher in computer vision and deep learning - ESAT-PSI, KU Leuven

Realizing efficient deep learning for various computer vision applications.
Publications at top computer vision conferences and AI/ML internship at Apple.

EDUCATION

PhD candidate in Engineering Science
Computer vision and deep learning

📅 Oct 2018 - Jan 2023 (est.)   📍 KU Leuven, Belgium

- PhD promotor: Prof. Tinne Tuytelaars
- Dynamic neural networks to reduce the computational cost of CNNs for classification, segmentation, human & hand pose estimation, and object detection.
- First-author publications at top computer vision conferences such as ICCV and CVPR
- Best short paper award at ECCV'20 Embedded Vision Workshop
- ICVSS 2019 summer school in Italy
- Program committee member of ICML'22 workshop on Dynamic Neural Nets `https://dynn-icml2022.github.io/`
- Implementation of CV algorithms for industry partners

Master of Science: Electrical Engineering
Embedded systems and multimedia

📅 Sept 2016 – June 2018   📍 KU Leuven, Belgium

- Magna Cum Laude (81.28%)
- one-year exchange to EPFL Lausanne, Switzerland

Bachelor of Science
Electrical engineering - computer science

📅 Sept 2013 – June 2016   📍 KU Leuven, Belgium

- Magna Cum Laude (82.67%)

EXTRACURRICULAR

Avid participant in tech events such as hackathons and workshops. Taking time off with photography, hiking and music.

- **Hackathons**: building prototypes in 48 hours
  - HackJunction2020 Connected: challenge winner - smart shopping assistant app
  - HackZurich 2018 (Europe's largest hackathon): finalist and IBM challenge winner - risk forecasting app
  - HackTheAlps2018: public award and challenge winner - ski area estimation from aerial imaging
- **AFC Participant and Student Consultant** (2015-2017): IT consulting in a multi-disciplinary team of 5. Leadership, presentation & productivity workshop tracks. 4th place (out of 50) for the ING Innovation Case at the Leuven Case Competition.
- **Full-stack web developer** (2012-2015): development and support of a templating framework. PageRank 5 with 500.000 visitors   `http://metro-webdesign.info/`

REFERENCES

PhD promotor: Prof. Tinne Tuytelaars
`tinne.tuytelaars@esat.kuleuven.be`

INTERNSHIPS

AI/ML R&D Internship at Apple

📅 April - August 2021   📍 Zürich, Switzerland

5-month internship, working on data-efficient deep learning for the Siri AI/ML team in Switzerland

Internship (master) at Nokia Networks

📅 6 weeks, Summer 2017   📍 Antwerp, Belgium

Internship (bachelor) at Semicon Sp. z o.o.

📅 6 weeks, Summer 2016   📍 Warsaw, Poland

SKILLS

Machine learning & data science

- **Deep learning**: experience with classification, segmentation, human and hand pose estimation, object detection
- **Efficient neural networks**: model compression, quantization, dynamic neural networks, custom CUDA operations
- **Data-efficient** transfer learning, multi-task learning and semi-supervised learning
- **Machine learning**: knowledge of fundamentals such as dimensionality reduction, decision trees, unsupervised learning

Programming languages & libraries

- Proficient: Python, PyTorch, Numpy, OpenCV, git, Matplotlib, Numba
- Familiar: Bash, CUDA, Scikit-learn, C/C++, Pandas, MATLAB, MLflow
- Novice: Tensorflow, Keras, Plotly, .NET C#

Tools & others

- Visual Studio Code, PyCharm, Excel, LaTeX, Inkscape
- Electronics (novice): VHDL, PCB design, FPGA, microcontrollers
- WebDev: HTML5, PHP, CSS3, Javascript, SQL, jQuery, Wordpress, Flask, Bootstrap

Languages

Dutch: native, English: fluent, French: fair, German: basic

LEAD AUTHOR PUBLICATIONS

Paper details, PDFs, and other co-publications on
`https://thomasverelst.github.io/`

- BlockCopy: High-Resolution Video Processing with Block-Sparse Feature Propagation and Online Policies, *T. Verelst, T. Tuytelaars*, ICCV'21
- SegBlocks: Towards Block-Based Adaptive Resolution Networks for Fast Segmentation, *T. Verelst, T. Tuytelaars* ECCV'20 workshop
- Dynamic Convolutions: Exploiting Spatial Sparsity for Faster Inference, *T. Verelst, T. Tuytelaars*, CVPR'20
- Generating Superpixels using Deep Representations , *T. Verelst, M. Blaschko, M. Berman*, CVPR'18 workshop