

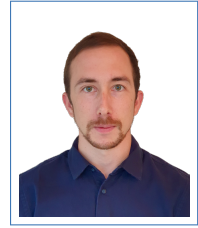
Martin Danelljan

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Google Scholar 

Citations: **14400**, H-index: **31**

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Followers: **600**, ☆ **2400**

Education and Degrees

- 2014 – 2018 **Doctor of Philosophy in Computer Vision**, *Computer Vision Laboratory, Linköping University*.
- PhD studies with Prof. Michael Felsberg and Dr. Fahad Shahbaz Khan as my advisors.
 - On the 11th of June 2018 I defended my thesis titled *Learning Convolution Operators for Visual Tracking*.
 - I received the biennial **Best Nordic Thesis Prize** for the period 2017-2018 at SCIA 2019.
 - My main research interests were machine learning, deep learning and statistical models for computer vision applications, including visual object tracking, segmentation and registration of 3D-data.
 - As a part of my PhD studies, I have taken 90 ECTS credits of graduate courses within the areas of computer vision, machine learning, statistics, mathematics, and pedagogy.
- 2008 – 2013 **Master of Science in Electrical Engineering**, *Linköping University*, average grade 5.0/5.
- A five year program in Applied Physics and Electrical Engineering.
 - The first three years includes in mathematics, physics, programming, electronics and systems engineering.
 - In the final two years, I focused on signal and image processing, with in-depth courses in signal theory, computer vision, sensor fusion, machine learning, multi-core/GPU programming and mathematics.
 - My master's thesis titled *Visual Tracking* was awarded **best thesis** by the Swedish computer society and presented at the premier conference on Computer Vision and Pattern Recognition (CVPR) 2014.

Academic Positions

- Dec. 2020 – present **Group Leader and Lecturer**, *Computer Vision Laboratory, ETH Zürich*.
Managing, coordinating, and supervising research conducted by the team.
- Jan. 2019 – Nov. 2020 **Postdoctoral Researcher**, *Computer Vision Laboratory, ETH Zürich*.
Under Prof. Luc Van Gool. The position includes supervision of several PhD and Master students.
- Mar. 2014 – Dec. 2018 **PhD Student in Computer Vision**, *Computer Vision Laboratory, Linköping University*.
The position included research, studying related graduate courses (~20%) and teaching (~20%).
- Aug. 2013 – Mar. 2014 **Research Engineer and TA**, *Computer Vision Laboratory, Linköping University*.
Continued research related to my master's thesis was combined with development of the computer vision component in the *Collaborative Unmanned Aircraft Systems* project.
- 2012 **Summer Intern**, *Computer Vision Laboratory, Linköping University*.
Implementation and further development of a state-of-the-art video stabilization method.
- 2012 **Teaching Assistant**, *Department of Electrical Engineering, Linköping University*.
Teaching assistant in a control theory course.
- 2009 **Teaching Assistant**, *Department of Mathematics, Linköping University*.
Teaching assistant in a calculus course.

Entrepreneurial Experience

- Oct. 2017 – present **Cofounder and owner**, *Singulareye*.
The company provides consultancy and commercializes research within computer vision. Projects:
- Oct. 2017 – Dec. 2018: End-to-end design and development of a deep learning based computer vision system for automotive applications. Customer: *NIRA Dynamics* (Linköping).
 - Nov. 2017 – Dec. 2018: Computer vision solution for a smartphone AR application. We deployed the visual tracking algorithms I developed during my PhD studies. Customer: *Just Football*.



Awards

- 2020 Among top 12 reviewers for the *European Conference on Computer Vision (ECCV)*.
- 2019 **Best Nordic Thesis Prize** for the period 2017-2018, awarded at SCIA 2019.
- 2019 Best student paper award at the *British Machine Vision Conference (BMVC)*.
- 2016 Best paper award at the *International Conference on Pattern Recognition (ICPR)*.
- 2016 Top rank in the *Visual Object Tracking (VOT) Challenge 2016* at the ECCV 2016 VOT workshop.
- 2015 Top rank in the *VOT Thermal Infrared Challenge 2015* at the ICCV 2015 VOT workshop.
- 2015 Winner of the *OpenCV State-of-the-Art Vision Challenge in Tracking*.
- 2014 Winner of the *Visual Object Tracking (VOT) Challenge 2014*.
- 2014 The *Swedish Computer Society* award for **best master's thesis**.
- 2014 The *Tryggve Holm* medal for outstanding student achievements and grades.

Organized Workshops and Tutorials




- 2021 **AIM 2021: Advances in Image Manipulation**, Co-organizer, Workshop at ICCV 2021, Montreal, Canada (online event).
- 2021 **VOT 2021: Visual Object Tracking Challenge**, Co-organizer, Workshop at ICCV 2021, Montreal, Canada (online event).
- 2021 **NTIRE 2021: New Trends in Image Restoration and Enhancement**, Co-organizer, Workshop at CVPR 2021, USA (online event).
- 2020 **AIM 2020: Advances in Image Manipulation**, Co-organizer, Workshop at ECCV 2020, Glasgow, UK (online event).
- 2020 **VOT 2020: Visual Object Tracking Challenge**, Co-organizer, Workshop at ECCV 2020, Glasgow, UK (online event).
- 2020 **NTIRE 2020: New Trends in Image Restoration and Enhancement**, Co-organizer, Workshop at CVPR 2020, Seattle, USA (online event).
- 2019 **AIM 2019: Advances in Image Manipulation**, Co-organizer, Workshop at ICCV 2019, Seoul, South Korea.
- 2019 **FIRE: From Image Restoration to Enhancement and Beyond**, Co-organizer, Tutorial at ICCV 2019, Seoul, South Korea.
- 2018 **Discriminative Correlation Filters for Visual Tracking**, Sole organizer, Tutorial at GCPR 2018, Stuttgart, Germany.

Open Source Projects

- ☆ 1700 **PyTracking**  github.com/visionml/pytracking
- ☆ 500 **ECO**  github.com/martin-danelljan/ECO
- ☆ 170 **Continuous-ConvOp**  github.com/martin-danelljan/Continuous-ConvOp

Supervision

PhD students (active co-supervisor)

- 2020 – present **Prune Truong**, ETH Zürich.  prunetruong.com
- 2019 – present **Goutam Bhat**, ETH Zürich.  goutamgmb.github.io
- 2019 – present **Andreas Lugmayr**, ETH Zürich.  linkedin.com/in/andreaslugmayr
- 2019 – present **Ardhendu Shekhar Tripathi**, ETH Zürich.
- 2019 – present **Fredrik K. Gustafsson**, Uppsala University.  fregu856.com
- 2018 – present **Joakim Johnander**, Linköping University.

Master's Thesis students

I have supervised 10 MSc students at ETH Zürich and 14 at Linköping University. These include:

- 2020 **Valentin Wolf**, *ETH Zürich*.
The thesis work *DeFlow* was published at CVPR 2021 as oral presentation.
- 2020 **Alexandre Carlier**, *ETH Zürich*, github.com/alexandre01.
The thesis work *DeepSVG* was accepted at NeurIPS 2020 github.com/alexandre01/deepsvg.
- 2019 **Prune Truong**, *ETH Zürich*, PhD student at ETH. prunetruong.com.
The thesis work *GLU-Net* was published at CVPR 2020 as oral presentation.
- 2019 **Sohyeong Kim**, *ETH Zürich*, PhD student at EPFL.
- 2018 **Goutam Bhat**, *Linköping University*, PhD student at ETH.
Parts of the work was published at ECCV 2018 and CVPR 2019 as oral presentation.
- 2016 **Joakim Johnander**, *Linköping University*, PhD student at LiU.
- 2016 **Susanna Ahlberg (Gladh)**, *Linköping University*, Cybercom.
The thesis work was published at ICPR 2016 and received best paper award.
- 2014 **Gustav Häger**, *Linköping University*, PhD student at LiU.
Parts of the thesis work was published at BMVC 2014 and TPAMI.

Teaching

- 2020 **Deep Learning for Image Manipulation**, *ETH Zurich*, lecturer.
Lecturer and design of the course.
- 2017 – 2018 **Introductory Project Course in Engineering (TFYY51)**, *Linköping University*, lecturer.
Lecturer, along with design and organization of the projects.
- 2014 – 2018 **Computer Vision (TSBB15)**, *Linköping University*, labs and projects.
Assistant at labs and supervisor of course projects.
- 2013 – 2018 **Signals and Systems (TSBT18/84)**, *Linköping University*, lessons, labs and exams.
Also performing a short lecture with example exercises as introduction to each lesson.
- 2018 **Image Analysis (TSBB08)**, *Linköping University*, labs.
- 2014 – 2018 **Linear Systems (TSKS09/06)**, *Linköping University*, lessons, labs and exams.
Teaching assistant at lessons and labs along with correcting exams.
- 2012 **Control Theory (TSRT12/22)**, *Linköping University*, lessons, labs and exams.
Teaching assistant at lessons and labs along with correcting exams.
- 2009 **Calculus in one Variable (TAIU10)**, *Linköping University*, lessons.

Invited Speaker and Talks

- 2021 **Keynote speaker at Swedish Symposium on Deep Learning.**
- 2019 **FIRE: From Image Restoration to Enhancement and Beyond**,
Tutorial at ICCV 2019, Seoul, South Korea.
- 2019 **The 45th Pattern Recognition and Computer Vision Colloquium**,
Czech Technical University, Prague, Czech Republic.
- 2018 **Discriminative Correlation Filters for Visual Tracking**,
Tutorial at GCPR 2018, Stuttgart, Germany.
- 2018 **Invited talk at Tobii**, *Stockholm, Sweden.*
- 2016 **Visual Object Tracking Challenge**, *Workshop at ECCV 2016, Amsterdam, Netherlands.*
- 2016 **Invited talk at Kapsch**, *Jönköping, Sweden.*
- 2015 **Visual Object Tracking Challenge**, *Workshop at ICCV 2015, Santiago, Chile.*
- 2014 **Visual Object Tracking Challenge**, *Workshop at ECCV 2014, Zürich, Switzerland.*

Languages

Swedish (native), English (fluent), Armenian (spoken)

Selected Publications

- NeurIPS 2021 **Prototypical Cross-Attention Networks for Multiple Object Tracking and Segmentation**.
Spotlight, top 3.0%
Lei Ke, Xia Li, **Martin Danelljan**, Yu-Wing Tai, Chi-Keung Tang, Fisher Yu.
Conference on Neural Information Processing Systems (**NeurIPS**), 2021.
- ICCV 2021 **Warp Consistency for Unsupervised Learning of Dense Correspondences**.
Oral, top 3.0%
Prune Truong, **Martin Danelljan**, Fisher Yu, Luc Van Gool.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- ICCV 2021 **Deep Reparametrization of Multi-Frame Super-Resolution and Denoising**.
Oral, top 3.0%
Goutam Bhat, **Martin Danelljan**, Fisher Yu, Luc Van Gool, Radu Timofte.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- ICCV 2021 **Generating Masks from Boxes by Mining Spatio-Temporal Consistencies in Videos**.
Bin Zhao, Goutam Bhat, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- ICCV 2021 **Learning Target Candidate Association to Keep Track of What Not to Track**.
Christoph Mayer, **Martin Danelljan**, Danda Pani Paudel, Luc Van Gool.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- ICCV 2021 **Hierarchical Conditional Flow: A Unified Framework for Image Super-Resolution and Image Rescaling**.
Jingyun Liang, Andreas Lugmayr, Kai Zhang, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- ICCV 2021 **Scaling Semantic Segmentation Beyond 1K Classes on a Single GPU**.
Shipra Jain, Danda Pani Paudel, **Martin Danelljan**, Luc Van Gool.
IEEE International Conference on Computer Vision (**ICCV**), 2021.
- CVPR 2021 **Learning Accurate Dense Correspondences and When to Trust Them**.
Oral, top 4.0%
Prune Truong, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
- CVPR 2021 **DeFlow: Learning Complex Image Degradations from Unpaired Data with Conditional Flows**.
Oral, top 4.0%
Valentin Wolf, Andreas Lugmayr, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
- CVPR 2021 **Deep Burst Super-Resolution**.
Goutam Bhat, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
- CVPR 2021 **The Heterogeneity Hypothesis: Finding Layer-Wise Dissimilated Network Architecture**.
Yawei Li, Wen Li, **Martin Danelljan**, Kai Zhang, Shuhang Gu, Luc Van Gool, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
- ICRA 2021 **Few-Shot Classification By Few-Iteration Meta-Learning**.
Ardhendu Tripathi, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
International Conference on Robotics and Automation (**ICRA**), 2021.
- NeurIPS 2020 **DeepSVG: A Hierarchical Generative Network for Vector Graphics Animation**.
Alexandre Carlier, **Martin Danelljan**, Alexandre Alahi, Radu Timofte.
Conference on Neural Information Processing Systems (**NeurIPS**), 2020.
- NeurIPS 2020 **GOCor: Bringing Globally Optimized Correspondence Volumes into Your Neural Network**.
Prune Truong, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
Conference on Neural Information Processing Systems (**NeurIPS**), 2020.
- ECCV 2020 **Learning What to Learn for Video Object Segmentation**.
Oral, top 2.1%
Goutam Bhat, Felix Järemo Lawin, **Martin Danelljan**, Andreas Robinson, Michael Felsberg, Luc Van Gool, Radu Timofte.
European Conference on Computer Vision (**ECCV**), 2020.
- ECCV 2020 **SRFlow: Learning the Super-Resolution Space with Normalizing Flow**.
Cited by 50
Spotlight
top 5.3%
Andreas Lugmayr, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
European Conference on Computer Vision (**ECCV**), 2020.

- ECCV 2020 **Energy-Based Models for Deep Probabilistic Regression.**
Fredrik K Gustafsson, **Martin Danelljan**, Goutam Bhat, Thomas B Schön.
European Conference on Computer Vision (ECCV), 2020.
- ECCV 2020 **Know Your Surroundings: Exploiting Scene Information for Object Tracking.**
Goutam Bhat, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
European Conference on Computer Vision (ECCV), 2020.
- ECCV 2020 **Video object segmentation with episodic graph memory networks.**
Spotlight
Xinkai Lu, Wenguan Wang, **Martin Danelljan**, Tianfei Zhou, Jianbing Shen, Luc Van Gool.
European Conference on Computer Vision (ECCV), 2020.
top **5.3%**
- BMVC 2020 **How to Train Your Energy-Based Model for Regression.**
Fredrik K Gustafsson, **Martin Danelljan**, Radu Timofte, Thomas B Schön.
British Machine Vision Conference (BMVC), 2020.
- CVPR 2020 **GLU-Net: Global-Local Universal Network for Dense Flow and Correspondences.**
Oral, top **5.7%**
Prune Truong, **Martin Danelljan**, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.
- CVPR 2020 **Learning Fast and Robust Target Models for Video Object Segmentation.**
Oral, top **5.7%**
Andreas Robinson, Felix Järemo Lawin, **Martin Danelljan**, Fahad Khan, Michael Felsberg.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.
- CVPR 2020 **Probabilistic Regression for Visual Tracking.**
Cited by **70**
Martin Danelljan, Luc Van Gool, Radu Timofte.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.
- CVPR 2020 **Learning Human-Object Interaction Detection using Interaction Points.**
Cited by **40**
Tiancai Wang, Tong Yang, **Martin Danelljan**, Fahad Khan, Xiangyu Zhang, Jian Sun.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.
- ICCV 2019 **Learning Discriminative Model Prediction for Tracking.**
Cited by **270**
Goutam Bhat, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
Oral, top **4.3%**
IEEE International Conference on Computer Vision (ICCV), 2019.
- ICCV 2019 **Learning the model update for siamese trackers.**
Cited by **70**
Lichao Zhang, Abel Gonzalez-Garcia, Joost van de Weijer, **Martin Danelljan**, Fahad Shahbaz Khan.
IEEE International Conference on Computer Vision (ICCV), 2019.
- BMVC 2019 **Tracking the Known and the Unknown by Leveraging Semantic Information.**
Oral, top **4.7%**
Ardhendu Shekhar Tripathi, **Martin Danelljan**, Luc Van Gool, Radu Timofte.
British Machine Vision Conference (BMVC), 2019. **Best student paper award.**
- CVPR 2019 **ATOM: Accurate Tracking by Overlap Maximization.**
Cited by **350**
Martin Danelljan, Goutam Bhat, Fahad Khan, Michael Felsberg.
Oral, top **5.6%**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.
- CVPR 2019 **A Generative Appearance Model for End-to-end Video Object Segmentation.**
Cited by **70**
Joakim Johnander, **Martin Danelljan**, Emil Brissman, Fahad Khan, Michael Felsberg.
Oral, top **5.6%**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.
- ECCV 2018 **Unveiling the Power of Deep Tracking.**
Cited by **260**
Goutam Bhat, Joakim Johnander, **Martin Danelljan**, Fahad Khan, Michael Felsberg.
European Conference on Computer Vision (ECCV), 2018.
- CVPR 2018 **Density Adaptive Point Set Registration.**
Oral, top **2.1%**
Felix Järemo Lawin, **Martin Danelljan**, Fahad Khan, Per-Erik Forssén, Michael Felsberg.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.
- PRL 2018 **Deep motion and appearance cues for visual tracking.**
Martin Danelljan, Goutam Bhat, Susanna Gladh, Fahad Shahbaz Khan, Michael Felsberg.
Pattern Recognition Letters, 2018. Special issue invited paper.
- TIP 2018 **Synthetic data generation for end-to-end thermal infrared tracking.**
Cited by **50**
Lichao Zhang, Abel Gonzalez-Garcia, Joost van de Weijer, **Martin Danelljan**, Fahad Shahbaz Khan.
IEEE Transactions on Image Processing, 2018.
- CVPR 2017 **ECO: Efficient Convolution Operators for Tracking.**
Cited by **1510**
Martin Danelljan, Goutam Bhat, Fahad Khan, Michael Felsberg.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

- PAMI 2017 **Discriminative Scale Space Tracking.**
Cited by **870** **Martin Danelljan**, Gustav Häger, Fahad Khan, Michael Felsberg.
IEEE Transactions on Pattern Analysis and Machine Intelligence, 2017.
- CAIP 2017 **Deep projective 3D semantic segmentation.**
Cited by **140** Felix Järemo Lawin, **Martin Danelljan**, Patrik Tosteberg, Goutam Bhat, Fahad Khan, Michael Felsberg.
Oral International Conference on Computer Analysis of Images and Patterns (**CAIP**), 2017.
- ECCV 2016 **Beyond Correlation Filters: Learning Continuous Convolution Operators for Visual Tracking.**
Cited by **1360** **Martin Danelljan**, Andreas Robinson, Fahad Khan, Michael Felsberg.
Oral, top 1.8% European Conference on Computer Vision (**ECCV**), 2016.
- ICPR 2016 **Deep Motion Features for Visual Tracking.**
Cited by **80** Susanna Gladh, **Martin Danelljan**, Fahad Khan, Michael Felsberg.
Oral International Conference on Pattern Recognition (**ICPR**), 2016. **Best paper award.**
- ICPR 2016 **Aligning the Dissimilar: A Probabilistic Method for Feature-Based Point Set Registration.**
Oral **Martin Danelljan**, Giulia Meneghetti, Fahad Shahbaz Khan, Michael Felsberg.
International Conference on Pattern Recognition (**ICPR**), 2016.
- CVPR 2016 **A Probabilistic Framework for Color-Based Point Set Registration.**
Martin Danelljan, Giulia Meneghetti, Fahad Khan, Michael Felsberg.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2016.
- CVPR 2016 **Adaptive Decontamination of the Training Set: A Unified Formulation for Discriminative Visual Tracking.**
Cited by **350** **Martin Danelljan**, Gustav Häger, Fahad Khan, Michael Felsberg.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2016.
- ICCV 2015 **Learning Spatially Regularized Correlation Filters for Visual Tracking.**
Cited by **1630** **Martin Danelljan**, Gustav Häger, Fahad Khan, Michael Felsberg.
IEEE International Conference on Computer Vision (**ICCV**), 2015.
- ICCVW 2015 **Convolutional Features for Correlation Filter Based Visual Tracking.**
Cited by **820** **Martin Danelljan**, Gustav Häger, Fahad Khan, Michael Felsberg.
ICCV workshop on the Visual Object Tracking (VOT) Challenge, 2015.
- BMVC 2014 **Accurate Scale Estimation for Robust Visual Tracking.**
Cited by **2010** **Martin Danelljan**, Gustav Häger, Fahad Khan, Michael Felsberg.
British Machine Vision Conference (**BMVC**), 2014.
- CVPR 2014 **Adaptive Color Attributes for Real-Time Visual Tracking.**
Cited by **1510** **Martin Danelljan**, Fahad Shahbaz Khan, Michael Felsberg, Joost van de Weijer.
Oral, top 5.8% IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**).