

Siavash A. Bigdeli

Curriculum Vitae

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Education

2014–2018 **Ph.D. in Computer Science**, *University of Bern*, Bern
summa cum laude

2012–2014 **M.Sc. in Computer Science**, *University of Neuchâtel*, Neuchâtel
Specialization in advanced information processing

2008–2011 **B.Eng. in Software Engineering**, *Azad University*, Tehran

2006–2008 **A.Eng. in Software Engineering**, *University of Applied Science and Tech.*, Tehran

Work Experience

2022–present **Associate professor**, *Denmark Technical University*, Lyngby, Denmark

2019–2022 **Senior Scientist**, *Swiss Center for Electronics and Microtechnology (CSEM) SA*, Neuchâtel, Switzerland

2018–2019 **Postdoctoral Researcher**, *École Polytechnique Fédérale de Lausanne (EPFL)*, Lausanne, Switzerland

2014–2018 **Teaching Assistant**, *University of Bern*, Bern, Switzerland

2012–2014 **R&D Engineer**, *3D Impact Media AG*, Bern, Switzerland

Honors and Awards

2018 **Summa Cum Laude**, Graduated PhD with highest honors from University of Bern
Best Student Paper Award, *International Conference on Computer Vision Theory and Applications (VISAPP)*

2014 **Best Master Thesis Award**, *Joint Alumni Association in Computer Science (JAACS) of Universities Bern, Neuchâtel, and Fribourg*

Thesis

Doctoral Thesis

Title Advanced Restoration Techniques for Images and Disparity Maps
Supervisor Matthias Zwicker, University of Bern and University of Maryland
summa cum laude

Master Thesis

Title Hand-Held 3D Light Field Photography and Applications
Supervisor Philippe Robert, 3D Impact Media AG, and Matthias Zwicker, University of Bern
Award Best Master Thesis Award (JAACS)

Bachelor Thesis

Title Obstacle Removal Methods from Stereo Images
Supervisor Alireza Bagheri, Amir Kabir University of Technology and Azad University

Invited Talks

2023 **Novelty in Generative AI**, *D³A conference*
2023 **The Epistemology of Explainable AI**, *International Conference on Artificial Intelligence*, Copenhagen
2022 **Deep Statistical Image Modeling**, ①Danish Pioneer Center for AI, ②Linköping University, ③Wien Technical University
2021 **Deep Statistical Image Modeling**, ①Swede ELLIIT Center, ②Télécom Paris
2020 **Denoising Density Estimators and Applications**, University of Bern
2019 **Deep Density Approximation for Bayesian Image Restoration**, Zurich University of Applied Sciences/ZHAW
Unsupervised Image Restoration, CSEM, AIBeer workshop
Unsupervised Learning to Overcome the Data Labeling Challenges for Industrial Vision Applications, Swiss Data Alliance, MLClinic
Image Denoising via MAP Estimation Using Deep Neural Networks, International Biomedical and Astronomical Signal Processing (BASP)
2018 **Learning to Mean-Shift in O(1) for Bayesian Image Restoration**, Computational and Methodological Statistics (CMStatistics), SIAM Conference on Imaging Science, EPFL Visual Computing Seminar

Teaching

2022-now **Generative Methods for Computer Graphics**, DTU, two lectures, MSc
Responsible AI, DTU, BSc, MSc
Creating Digital Visual Experiences, DTU, BSc, MSc
Geometric Data Analysis and Processing, DTU, one lecture, MSc
2022-2023 **Introduction to Programming and Data Structures**, DTU, BSc (430 students)
2020-2022 **Babysitting Neural Nets**, CSEM, Deep learning onboarding course
2014-2018 **Computational Photography**, University of Bern and EPFL, MSc

Services

2022-now **DTU Compute Diversity Working Group member**
Program chair
2026 **European Conference on Computer Vision (ECCV)**
2021-now **Computer Vision and Pattern Recognition (CVPR) NTIRE workshop**
2020-now **International Conference on Computer Vision (ICCV) and ECCV AIM workshops**
2018 **Computer Vision Theory and Applications (VISAPP)**, *session chair*

Area chair

2024 **International Conference on Learning Representations (ICCV)**

2023-2024 **International Conference on Computer Vision and Pattern Recognition (CVPR)**

2023 **Conference on Neural Information Processing Systems (NeurIPS)**

2017-now **Reviewer**, *Journals: MEDIA, MDPI, JSTSP. Conferences: Neurips, ICML, PAMI, CVPR, ECCV*

Co-organizer

2024 **Conference on Danish Digitalization, Data Science and AI (D³A)**, conference session on *Explainability, Fairness, and Causality for Machine Learning (ML)*

2021 **ANDANTE Workshop**, *Benchmarking Neuromorphic Neural Networks European conference of the prognostics and health management (phme), Rio Data Challenge*

2021-2023 **MDPI Electronics journal**, *Topic Editor*

Publications

Summary of last 5 years, 460 citations, h-index:9, i10-index:8 (Google scholar)

Acceptance rate, top 3% at Neurips 2017, top 10% at ICIP 2019, top 5% at CVPR 2020

Journals

- 8 *Learning Generative Models using Denoising Density Estimators*, **Siavash A Bigdeli**, Geng Lin, Tiziano Portenier, L Andrea Dunbar, and Matthias Zwicker, 2023, IEEE Transactions on Neural Networks and Learning Systems 34(10),
- 7 *Noninvasive Material Anisotropy Estimation using Oblique Incidence Reflectometry and Machine Learning*, Lezhong Wang, **Siavash A Bigdeli**, Anders Nymark Christensen, Milena Corredig, Riccardo Tonello, Anders BJORHOLM Dahl, Jeppe Revall Frisvad, 2023, Optical Materials Express 13:1457–1474,
- 6 *Machine Learning Algorithms can Predict Tail Biting Outbreaks in Pigs using Feeding Behaviour Records*, Catherine Ollagnier, Claudia Kasper, Anna Wallenbeck, Linda Keeling, **Siavash A Bigdeli**, 2023, PloS one 18(1),
- 5 *Real time eye gaze tracking for human machine interaction in the cockpit*, Engin Türetken, Sareh Saeedi, **Siavash A Bigdeli**, Patrick Stadelmann, Nicolas Cantale, Luis Lutnyk, Martin Raubal, L Andrea Dunbar, 2022, AI and Optical Data Sciences III,
- 4 *Defect Segmentation for Multi-Illumination Quality Control Systems*, David Honzátko, Engin Türetken, **Siavash A Bigdeli**, L Andrea Dunbar, Pascal Fua, 2021, Machine Vision and Applications 32,
- 3 *Faceshop: Deep Sketch-based Face Image Editing*, Tiziano Portenier, Qiyang Hu, Attila Szabo, **Siavash A Bigdeli**, Paolo Favaro, Matthias Zwicker, 2018, ACM Transactions on Graphics (SIGGRAPH),

- 2 *Temporally Coherent Disparity Maps using CRFs with Fast 4D Filtering*, **Siavash A Bigdeli**, Gregor Budweiser, and Matthias Zwicker, 2016, IPSJ Transactions on Computer Vision and Applications, 8(1):1–14,
- 1 *Hand-held 3D Light Field Photography and Applications*, Daniel Donatsch, **Siavash A Bigdeli**, Philippe Robert, and Matthias Zwicker, 2014, The Visual Computer, 30(6-8):897–907,

Conferences

- 13 *Are Sex-based Physiological Differences the Cause of Gender Bias for Chest X-ray Diagnosis?*, Nina Wang, **Siavash A Bigdeli**, Eike Petersen, Feragen, 2023, International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) Workshop,
- 12 *Early Exiting with Compressible Activations for Efficient Neural Network Inference*, Jona Beysens, Martin Sénéclauze, Philippe Dallemane, **Siavash A Bigdeli**, 2023, Smart Systems Integration (SSI),
- 11 *Optimizing the Consumption of Spiking Neural Networks with Activity Regularization*, Simon Narduzzi, **Siavash A Bigdeli**, Shih-Chii Liu, L Andrea Dunbar, 2022, International Conference on Acoustics, Speech, and Signal Processing (ICASSP),
- 10 *Real Time Feedback using Edge AI Vision System for Human-Machine Interaction in the Cockpit*, Sareh Saeedi, Engin Turetken, **Siavash A Bigdeli**, Halla Sigurthorsdottir, Patrick Stadelmann, Nicolas Cantale, L Andrea Dunbar, 2022, SPIE Photonics West,
- 9 *GramGAN: Deep 3D Texture Synthesis from 2D Exemplars*, Tiziano Portenier, **Siavash A Bigdeli**, and Orçun Göksel, 2020, Advances in Neural Information Processing Systems (Neurips),
- 8 *AIM 2020 Challenge on Image Extreme Inpainting*, Evangelos Ntavelis, Andrés Romero, **Siavash A Bigdeli**, Radu Timofte, and others, 2020, European Conference on Computer Vision Workshops (ECCV),
- 7 *Efficient Neural Vision Systems Based on Convolutional Image Acquisition*, Pedram Pad, Simon Narduzzi, Clement Kundig, Engin Turetken, **Siavash A Bigdeli**, and L Andrea Dunbar, 2020, IEEE Conference on Computer Vision and Pattern Recognition (CVPR, oral),
- 6 *Efficient Blind-Spot Neural Network Architecture for Image Denoising*, David Honzátko, **Siavash A Bigdeli**, Engin Türetken, and L Andrea Dunbar, 2020, Swiss Conference on Data Science (SDS),
- 5 *Image Restoration using Plug-and-Play CNN MAP Denoisers*, **Siavash A Bigdeli**, David Honzátko, Sabine Süsstrunk, and L Andrea Dunbar, 2019, International Conference on Computer Vision Theory and Applications (VISAPP, oral),
- 4 *Deep Semantic Segmentation using NIR as Extra Physical Information*, **Siavash A Bigdeli**, Sabine Süsstrunk, 2019, IEEE International Conference on Image Processing (ICIP, oral),
- 3 *Image Denoising via MAP Estimation using Deep Neural Networks*, **Siavash A Bigdeli**, Sabine Süsstrunk, 2019, International Biomedical and Astronomical Signal Processing (BASP) Frontiers Workshop,

- 2 *Image Restoration using Autoencoding Priors*, **Siavash A Bigdeli**, Matthias Zwicker, 2018, International Conference on Computer Vision Theory and Applications (VISAPP, oral),
- 1 *Deep Mean-Shift Priors for Image Restoration*, **Siavash A Bigdeli**, Meiguang Jin, Paolo Favaro, and Matthias Zwicker, 2017, International Advances in Neural Information Processing Systems (NIPS, spotlight),

Non-peer-reviewed articles

- 1 *Detecting Memorization in ReLU Networks*, Edo Collins, **Siavash A Bigdeli**, and Sabine Süsstrunk, 2018, arXiv:1810.03372,

White papers

- 5 *UC-MORE—Ultra-compact Multispectral Snapshot Camera based on Optical Resonant Nanostructures*, C. Gimkiewicz, **Siavash A Bigdeli**, C. Schneider, L. A. Dunbar, R. Ferrini, B. Gallinet, 2020, CSEM Scientific & Technical Report, Url-p10,
- 4 *Efficient Un-supervised Neural Network Learning for Image Restoration and Generation*, D. Honzátko, **Siavash A Bigdeli**, E. Türetken, L. A. Dunbar, 2020, CSEM Scientific & Technical Report, Url-p103,
- 3 *Efficient Neural Vision Systems Based on Convolutional Image Acquisition*, P. Pad, S. Narduzzi, C. Kündig, E. Türetken, **Siavash A Bigdeli**, L. A. Dunbar, 2020, CSEM Scientific & Technical Report, Url-p104,
- 2 *AI-based Hand Gesture Recognition System for Improved Human Machine Interaction in Cockpits*, H. Sigurthorsdottir, **Siavash A Bigdeli**, S. Saeedi, E. Türetken, L. A. Dunbar, 2020, CSEM Scientific & Technical Report, Url-p105,
- 1 *Deep Learning Architectures for Detecting Surface Defects using Multiple illuminations*, D. Honzátko, E. Türetken, **Siavash A Bigdeli**, M. Kozinski, P. Fua, L. A. Dunbar, 2019, CSEM Scientific & Technical Report, Url-p115,