Siavash Bigdeli

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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 Technology*, Tehran.

Work Experience

2019–present **Data Science Researcher**, *Swiss Center for Electronics and Microtechnology SA*, Neuchâtel.

2018–2019 **Postdoctoral Researcher**, *École Polytechnique Fédérale de Lausanne*, Lausanne.

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

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

Honors and Awards

2019 **Top 10% paper**, *IEEE International Conference on Image Processing (ICIP)*.

2018 **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)*.

Grants and Acquisitions

2021 **Industrial Project**, *Deep learning to optimize nano-structure glasses for AR*.
CHF$97'000$; Co-PI

2021 **Marie-Curie PhD Fund**, *Machine learning for 3D scans of newborn piglets*.
CHF$6'000$; Co-PI

2020 **UC-MORE Research Fund**, *Multi-spectral imaging with deep neural networks*.
CHF$494'000$; Co-PI

2019 **Industrial Project**, *Recurrent neural nets for embedded temperature classification*.
CHF$91'400$; PI

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, Azad University and Amir Kabir University of Technology

Publications

Conferences

8 **GramGAN: Deep 3D Texture Synthesis from 2D Exemplars**, *Tiziano Portenier, Siavash A Bigdeli, and Orçun Göksel*, 2020, Advances in Neural Information Processing Systems (Neurips).

7 **AIM 2020 Challenge on Image Extreme Inpainting**, *Evangelos Ntavelis, Andrés Romero, Siavash Bigdeli, Radu Timofte, and others*, 2020, European Conference on Computer Vision Workshops (ECCV).

6 **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).

5 **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).

4 **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).

3 **Deep Semantic Segmentation using NIR as Extra Physical Information**, *Siavash A Bigdeli and Sabine Süsstrunk*, 2019, IEEE International Conference on Image Processing (ICIP, oral).

2 **Deep Mean-Shift Priors for Image Restoration**, *Siavash A Bigdeli, Meiguang Jin, Paolo Favaro, and Matthias Zwicker*, 2019, International Advances in Neural Information Processing Systems (NIPS, spotlight).

1 **Image Restoration using Autoencoding Priors**, *Siavash A Bigdeli and Matthias Zwicker*, 2018, International Conference on Computer Vision Theory and Applications (VISAPP, oral).

Journals

4 **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* , 2021, PloS one 2021.

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.

Workshops

1 **Image denoising via MAP estimation using deep neural networks**, *Siavash A Bigdeli and Sabine Süsstrunk*, 2019, International Biomedical and Astronomical Signal Processing (BASP) Frontiers Workshop.

Non-peer-reviewed articles

2 **Learning Generative Models using Denoising Density Estimators**, *Siavash A Bigdeli, Geng Lin, Tiziano Portenier, L Andrea Dunbar, and Matthias Zwicker*, 2020, arXiv:2001.02728.

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

Invited Talks

2021 **Deep Statistical Image Modeling**, *Télécom Paris*.

2020 **Denoising Density Estimators and Applications**, *University of Bern*.

2019 **Deep Density Approximation for Bayesian Image Restoration**, *Zurich University of Applied Sciences/ZHAW*.

2019 **Unsupervised Image Restoration**, *CSEM, AIBeer workshop*.

2019 **Unsupervised Learning to Overcome the Data Labeling Challenges for Industrial Vision Applications**, *Swiss Data Alliance, MLClinic*.

2019 **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**, *EPFL, Visual Computing Seminar*.

2018 **Learning to Mean-Shift in O(1) for Bayesian Image Restoration**, *Computational and Methodological Statistics (CMStatistics)*.

2018 **Learning to Mean-Shift in O(1) for Bayesian Image Restoration**, *SIAM Conference on Imaging Science*.

Teaching

Lecturer	**Babysitting Neural Nets**, *2020-*, CSEM, Deep learning onboarding course.
Co-lecturer	**Computational Photography**, *2018*, EPFL, CS Master's course.
TA	**Computational Photography**, *2014/16*, University of Bern, CS Master's course.
Co-supervisor	**PhD thesis**, *2020-*, Simon Narduzzi, Ultra-low-power neural networks.
Co-supervisor	**Master's thesis**, *2020*, Samuel Collins, 3D CNNs for remote vital signs monitoring.
Co-supervisor	**Bachelor's thesis**, *2017*, Adrian Wälchli, Optimization of light-field display layers.
Mentor	**PhD thesis**, *2021*, Roberta Ruggeri, CNN training for animal health prediction.
Mentor	**PhD thesis**, *2019-*, David Honzátko, Deep unsupervised photometric-stereo.
Mentor	**Master's thesis**, *2019*, Simon Narduzzi, Optimization of low-power CNNs for face detection.

Outreach

Co-PI	**EU COST Action (submitted)**, *2020-*, delegating AI in precision agriculture, Pushing the boundaries of Animal Monitoring for Precision Livestock Farming.
Partner	**Data Program**, *2019-*, several engagements with local SMEs and RTOs in AI platforms for human and livestock monitoring.
Mentor	**Business games**, *2019*, Neuchâtel university course on entrepreneurship. Winner team secured 5kCHF funding to use our technology in their startup.
Mentor	**Largo Films**, *2018-*, a Swiss-based startup active in AI for movie industry.
Mentor	**Abakino**, *2018-*, a US-based startup working on interactive AI for education.

Academic Services

PC member	**NTIRE: New Trends in Image Restoration and Enhancement workshop and challenges**, *CVPR 2021*, Url.
Co-organizer	**Benchmarking for Neuromorphic Neural Networks**, *ANDANTE Workshop 2021*, Url.
Topic editor	**Electronics journal**, *MDPI*, Url.
Co-organizer	**Rio Data Challenge: Anomaly Detection & Predictive Maintenance**, *phme 2021*, Url.
Co-organizer	**AIM: Advances in Image Manipulation workshop and challenges**, *ECCV 2020*, Url.
Session chair	**VISAPP**, *2018*, Url.
Reviewer	**Neurips, ICML, PAMI, CVPR, ECCV, MEDIA, MDPI, JSTSP**.