

Publications of Kim Steenstrup Pedersen

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Ph.D. thesis:

- **Kim S. Pedersen**. Statistics of Natural Image Geometry. Ph.D. Thesis, Department of Computer Science, University of Copenhagen, Denmark, January 2003. Published as DIKU tech. report no. 2003/04.

Scientific journal papers: (16)

- Xiao Hu, F. Lauze, **K. Steenstrup Pedersen**. Refractive Pose Refinement: Generalising the Geometric Relation between Camera and Refractive Interface. *International Journal of Computer Vision*, 2023. Accepted for publication. JIF: 11,478. DataDOI: 10.17894/ucph.5d1b9bea-b105-4d43-aefb-c53df7806c2a
- E. Schou Dreier, K. M. Sørensen, T. Lund-Hansen, B. Møller Jespersen, **K. Steenstrup Pedersen**. Hyperspectral imaging for classification of bulk grain samples with deep convolutional neural networks. *Journal of Near Infrared Spectroscopy*, 30(3): 107–121, April 2022. DOI: 10.1177/09670335221078356. DataDOI: 10.17894/ucph.f8c7feeb-3b27-4bd2-ba6d-6d44a4ab4330, JIF: 1,863.
- J. Rasmussen, J. Nielsen, J. C. Streibig, J. E. Jensen, **K. S. Pedersen**, S. I. Olsen. Pre-harvest weed mapping of *Cirsium arvense* in wheat and barley with off-the-shelf UAVs. *Precision Agriculture*, pp. 1 – 17, 2019. BFI: 1, JIF: 4,454.
- Jan Kremer, Kristoffer Stensbo-Smidt, Fabian Gieseke, **Kim Steenstrup Pedersen**, Christian Igel. Big universe, big data: Machine learning and image analysis for astronomy. *IEEE Intelligent Systems*, 32(2): 16–22, 2017. BFI: 2, JIF: 2,596.
- K. Stensbo-Smidt, F. Gieseke, C. Igel, A. Zirm, **K. S. Pedersen**. Sacrificing information for the greater good: How to select photometric bands for optimal accuracy. *Monthly Notices of the Royal Astronomical Society*, 464 (3): 2577–2596, 2017. BFI: 2, JIF: 5,194.
- Jan Kremer, Fabian Gieseke, **Kim Steenstrup Pedersen**, Christian Igel. Nearest neighbor density ratio estimation for large-scale applications in astronomy. *Astronomy and Computing*, Vol. 12: 67–72, 2015. JIF: 1,92.
- Jan Kremer, **Kim Steenstrup Pedersen**, Christian Igel. Active learning with support vector machines. *Wiley Interdisciplinary Reviews. Data Mining and Knowledge Discovery*, Vol. 4 (4):313–326, 2014. JIF: 1,594.
- Søren Hauberg, Francois Lauze, and **Kim Steenstrup Pedersen**. Unscented Kalman Filtering on Riemannian Manifolds. *Journal of Mathematical Imaging and Vision*, 46(1): 103–120, 2013. BFI: 2, JIF: 2,33.
- Henrik Aanæs, Anders L. Dahl and **Kim S. Pedersen**. Interesting Interest Points: A Comparative Study of Interest Point Performance on a Unique Data Set. *International Journal of Computer Vision*, Vol. 97(1): 18–35, 2012. BIF: 2, JIF: 3,62.
- Søren Hauberg, Stefan Sommer and **Kim S. Pedersen**. Natural metrics and least-committed priors for articulated tracking. *Image and Vision Computing*, 30(6-7):453-461, June 2012. BIF: 2, JIF: 1,96.
- Søren Hauberg and **Kim S. Pedersen**. Predicting Articulated Human Motion from Spatial Processes. *International Journal of Computer Vision*. Vol. 94 (3): 317–334, 2011. BIF: 2, JIF: 3,741.
- Anne Cuzol, **Kim S. Pedersen** and Mads Nielsen. Field of Particle Filters for Image Inpainting. *Journal of Mathematical Imaging and Vision*, Vol. 31(2-3): 147-156, 2008. BFI: 2, JIF: 1,331.

- Bo Markussen, **Kim S. Pedersen** and Marco Loog. Second Order Structure of Scale-Space Measurements. *Journal of Mathematical Imaging and Vision*, Vol. 31(2-3): 207–220, 2008. BFI: 2, JIF: 1,331.
- Mads Nielsen, Marleen de Bruijne, Camilla Jørgensen, Søren I. Olsen, **Kim Steenstrup Pedersen**, and Jon Sporring. Special issue on tribute workshop for peter johansen (editorial). *Journal of Mathematical Imaging and Vision*, 31(2-3):119-120, July 2008. BFI: 2, JIF: 1,331.
- Ann B. Lee, **Kim S. Pedersen** and David Mumford. The Nonlinear Statistics of High-Contrast Patches in Natural Images. In *International Journal of Computer Vision*, 54 (1 / 2): 83-103, August / September 2003.
- **Kim S. Pedersen** and Mads Nielsen: The Hausdorff Dimension and Scale-Space Normalisation of Natural Images. In *Journal of Visual Communication and Image Representation*, 11(2):266–277, 2000.

Peer reviewed conference papers: (37)

- Roberta Hunt and **Kim Steenstrup Pedersen**. Rove-Tree-11: The not-so-Wild Rover, A hierarchically structured image dataset for deep metric learning research. In *Proceedings of Asian Conference on Computer Vision (ACCV)*, p. 2967-2983, 2022. https://openaccess.thecvf.com/content/ACCV2022/html/Hunt_Rove-Tree-11_The_not-so-Wild_Rover_A_hierarchically_structured_image_dataset_for_ACCV_2022_paper.html. DataDOI: 10.17894/ucph.39619bba-4569-4415-9f25-d6a0ff64f0e3
- Ole-Christian Galbo Engstrøm, Erik Schou Dreier, and **Kim Steenstrup Pedersen**. Predicting Protein Content in Grain Using Hyperspectral Deep Learning. 7th Workshop on Computer Vision in Plant Phenotyping and Agriculture (CVPPA), *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*. IEEE, p. 1372-1380, 2021.
- Xiao Hu, François Lauze, **Kim Steenstrup Pedersen**, and Jean Mélou. Absolute and Relative Pose Estimation in Refractive Multi View. 1st Workshop on Traditional Computer Vision in the Age of Deep Learning (TradiCV), *Proceedings of the 2021 IEEE/CVF International Conference on Computer Vision Workshop (ICCVW)*. IEEE, p. 2569-2578, 2021.
- Georgios Karagiannis, Søren Ingvor Olsen, **Kim Steenstrup Pedersen**. Deep Learning for Detection of Railway Signs and Signals. In *Advances in Computer Vision - Proceedings of the 2019 Computer Vision Conference, CVC 2019, Las Vegas, Nevada, USA, Vol. 943*, pp. 1–15, 2020.
- Wouter M. Kouw, Silas N. Ørting, Jens Petersen **Kim S. Pedersen**, and Marleen de Bruijne. A Cross-Center Smoothness Prior for Variational Bayesian Brain Tissue Segmentation. In *Proceedings of International Conference on Information Processing in Medical Imaging — IPMI 2019: Information Processing in Medical Imaging*. Springer, LNCS 11492, pp. 360–371, 2019.
- **Kim Steenstrup Pedersen**, Kristoffer Stensbo-Smidt, Andrew Zirm, and Christian Igel. Shape Index Descriptors Applied to Texture-Based Galaxy Analysis. In *Proceedings of International Conference on Computer Vision (ICCV 2013)*, pp. 2440 – 2447, 2013.
- Kristoffer Stensbo-Smidt, Christian Igel, Andrew Zirm, and **Kim Steenstrup Pedersen**. Nearest Neighbour Regression Outperforms Model-based Prediction of Specific Star Formation Rate. In *Proceedings of IEEE Big Data 2013 Workshop on Scalable Machine Learning*, 2013.
- Cristina Manfredotti, **Kim Steenstrup Pedersen**, Howard J. Hamilton, and Sandra Zilles. Learning Models of Activities Involving Interacting Objects. In *Advances in Intelligent Data Analysis XII, 12th International Symposium, IDA 2013, London, UK, October 17-19, 2013, Proceedings (IDA 2013)*, volume 8207 of *Lecture Notes in Computer Science*, 2013.
- Anders Boesen Lindbo Larsen, Sune Darkner, Anders Lindbjerg Dahl and **Kim Steenstrup Pedersen**. Jet-Based Local Image Descriptors. In *Proceedings of European Conference on Computer Vision (ECCV)*, volume 7574 of *Lecture Notes in Computer Science*, pages 638-650. Springer Berlin / Heidelberg, 2012.
- Søren Hauberg and **Kim Steenstrup Pedersen**. Spatial Measures between Human Poses for Classification and Understanding. In *Articulated Motion and Deformable Objects (AMDO)*, volume 7378 of *Lecture Notes in Computer Science*, pages 26-36. Springer Berlin / Heidelberg, 2012.
- Søren Hauberg and **Kim S. Pedersen**. Data-Driven Importance Distributions for Articulated Tracking. In *Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR) 2011. Lecture Notes in Computer Science 6819*, pp. 287–299, 2011.
- Peter Myslning, Søren Hauberg and **Kim S. Pedersen**. An Empirical Study on the Performance of Spectral Manifold Learning Techniques. In *Proceedings of International Conference on Artificial Neural Networks (ICANN'11)*. Springer Lecture Notes in Computer Science 6791, pp. 347–354, 2011.

- Anders Lindbjerg Dahl, Henrik Aanæs, and **Kim Steenstrup Pedersen**. Finding the Best Feature Detector-Descriptor Combination. Proceedings of 3DIMPVT 2011. 2011.
- Anders Boesen Linbo Larsen, Søren Hauberg, **Kim Steenstrup Pedersen**. Unscented Kalman Filtering for Articulated Human Tracking. Proceedings of SCIA 2011. Lecture Notes in Computer Science 6688, pp. 228–237 2011.
- Søren Hauberg and **Kim Steenstrup Pedersen**. Stick It! Articulated Tracking using Spatial Rigid Object Priors. Proceedings of ACCV. Springer Lecture notes 6494, pp. 758–769. 2011.
- Søren Hauberg, Stefan H. Sommer, and **Kim Steenstrup Pedersen**. Gaussian-like Spatial Priors for Articulated Tracking. Computer Vision - ECCV 2010: 11th European Conference on Computer Vision, Heraklion, Crete, Greece, September 5–11, 2010, Proceedings, Part I. Daniilidis, K., Maragos, P. & Paragios, N. (Ed.). Springer pp. 425–437. (Lecture Notes in Computer Science; 6311). 2010,
- Henrik Aanæs, Anders Lindbjerg Dahl, and **Kim Steenstrup Pedersen**. On Recall Rate of Interest Point Detectors. Electronic Proceedings of 3DPVT'10: The Fifth International Symposium on 3D Data Processing, Visualization and Transmission. pp. 1–8. 2010.
- Morten Engell-Nørregård, Søren Hauberg, Jerome Lapuyade, Kenny Erleben, and **Kim Steenstrup Pedersen**. Interactive Inverse Kinematics for Monocular Motion Estimation. In Proceedings of VRIPHYS 2009.
- Søren Hauberg, Jerome Lapuyade, Morten Engell-Nørregård, Kenny Erleben, and **Kim Steenstrup Pedersen**. Three dimensional monocular human motion analysis in end-effector space. In Daniel Cremers et al., editors, Energy Minimization Methods in Computer Vision and Pattern Recognition, Lecture Notes in Computer Science, pages 235–248. Springer, August 2009.
- David Gustavsson, **Kim S. Pedersen**, Francois Lauze, and Mads Nielsen. On the rate of structural change in scale spaces. Proceedings of Scale Space and Variational Methods in Computer Vision (SSVM), 2009.
- David Gustavsson, **Kim S. Pedersen**, and Mads Nielsen. A SVD Based Image Complexity Measure. International Conference on Computer Vision Theory and Applications (VISAPP), 2009.
- **Kim S. Pedersen**, Marco Loog, and Pieter van Dorst. Salient Point and Scale Detection by Minimum Likelihood. *JMLR: Workshop and Conference Proceedings: Gaussian Processes in Practice*, 1: 59–72, 2007.
- **Kim S. Pedersen**, Marco Loog, and Bo Markussen. Generic Maximum Likely Scale Selection. *1st International Conference on Scale Space and Variational Methods in Computer Vision*, Springer LNCS 4485, p. 362–373, 2007.
- **Kim S. Pedersen** and Peter Johansen. A Curious Robot: An Explorative-Exploitive Inference Algorithm. In *Proceedings of Workshop on Robotics and Mathematics (ROBOMAT 2007)*, 2007.
- David Gustavsson, **Kim S. Pedersen**, and Mads Nielsen. Geometric and Texture Inpainting by Gibbs Sampling. *Swedish Symposium on Image Analysis (SSBA '07)*, 2007.
- David Gustavsson, **Kim S. Pedersen**, and Mads Nielsen. Image Inpainting by Cooling and Heating. *15th Scandinavian Conference on Image Analysis*, Springer LNCS 4522, p. 591–600, 2007.
- Sune Høgild Keller, **Kim S. Pedersen**, and Francois Lauze. Detecting Interlaced or Progressive Source of Video. In *IEEE International Workshop on Multimedia Signal Processing (MMSP05)*, p. 181 – 184, 2005.
- Bo Markussen, **Kim S. Pedersen**, Marco Loog: A Scale Invariant Covariance Structure on Jet Space. In *Proceedings of International Workshop on Deep Structure, Singularities and Computer Vision*, p. 12 – 23, LNCS 3753, Springer-Verlag, June, 2005.
- Marco Loog, **Kim S. Pedersen**, Bo Markussen: Maximum Likely Scale Estimation. In *Proceedings of International Workshop on Deep Structure, Singularities and Computer Vision*, p. 146 – 156, LNCS 3753, Springer-Verlag, June, 2005.
- **Kim S. Pedersen**, Remco Duits, and Mads Nielsen: On Alpha Kernels, Levy Processes, and Natural Image Statistics. In *Proceedings of the 5th International Scale-Space conference*, p. 468 – 479, LNCS 3459, Springer-Verlag, April, 2005.
- Martin Lillholm and **Kim S. Pedersen**: Jet Based Feature Classification. In *Proceedings of International Conference on Pattern Recognition*, Cambridge, United Kingdom, p. 787 – 790, August 2004.
- **Kim S. Pedersen** and Martin Lillholm: Brownian Images: A Generic Background Model. In *Proceedings of Workshop on Statistical Learning in Computer Vision (SLCV)*, Prague, Czech Republic. pp. 107–121, May 2004.

- **Kim S. Pedersen**: Properties of Brownian Image Models in Scale-Space. *In Scale Space Methods in Computer Vision: Proceedings of the 4th Scale-Space conference*, Isle of Skye, Scotland. LNCS 2695, p. 281-296, Springer-Verlag, June 2003.
- **Kim S. Pedersen** and Ann B. Lee: Toward a Full Probability Model of Edges in Natural Images. *In Proceedings of the 7th European Conference on Computer Vision, ECCV'02*, Copenhagen, Denmark. Vol. I, p. 328 – 342, LNCS 2350, Springer-Verlag, May, 2002.
- Ann B. Lee, **Kim S. Pedersen** and David Mumford: The Complex Statistics of High-Contrast Patches in Natural Images. *In WWW Proceedings of Second International IEEE Workshop on Statistical and Computational Theories of Vision*. Vancouver, Canada, July 2001.
- **Kim S. Pedersen** and Mads Nielsen: Computing Optic Flow by Scale-Space Integration of Normal Flow. *In Scale-Space and Morphology in Computer Vision: Proceedings of Scale-Space 2001*, p. 14 – 25, LNCS 2106, Springer Verlag, July 2001.
- **Kim S. Pedersen** and Mads Nielsen: The Hausdorff Dimension and Scale-Space Normalisation of Natural Images. *Scale-Space Theory in Computer Vision: Scale-Space'99, Proceedings*, p. 271 – 282, LNCS 1682, Springer Verlag, 1999.

Books, proceedings, and journal special issues: (5)

- **Kim Steenstrup Pedersen**, Rasmus Reinhold Paulsen. Special section on 19th Scandinavian conference on image analysis (SCIA 2015). *Pattern Recognition Letters*, Vol. 80, pages 238, September 2016.
- Rasmus Reinhold Paulsen, **Kim Steenstrup Pedersen** (Eds.). *Image analysis : 19th Scandinavian Conference, SCIA 2015*, Copenhagen, Denmark, June 15-17, 2015. *Proceedings*. Springer, 2015.
- Smith Lygum, Anne Kirstine; Skjødt Nielsen, Jacob; Bang Bådum, Nicklas; La Cour-Harbo, Anders; Paulin Hansen, John; **Pedersen, Kim Steenstrup**; Larsen, Lars Michael ; Kessing, Peter Vedel; Madsen Almdal, Thomas; Ploug, Thomas; Grønbaek, David. *Civile droner i Danmark : potentialer, udfordringer og anbefalinger*. Teknologirådet, 2014. 103 p.
- Mads Nielsen, Marleen de Bruijne, Camilla Jørgensen, Søren I. Olsen, **Kim Steenstrup Pedersen**, and Jon Sporring. Special Issue on Tribute Workshop for Peter Johansen. *Journal of Mathematical Imaging and Vision*, volume 31(2-3). Springer, July 2008.
- Bjarne Kjær Ersbøll and **Kim S. Pedersen** (Eds.). *Proceedings of the 15th Scandinavian Conference on Image Analysis SCIA 2007*. Springer LNCS 4522, 2007.

Non peer reviewed conference publications and abstracts: (10)

- J. Rasmussen, J. Nielsen, S. I. Olsen, **K. S. Pedersen**, J. E. Jensen, R. Horfarer. From image acquisition with unmanned aerial vehicles (UAV) to patch spraying in farmer's fields. *European Weed Research Society Symposium*, 2018.
- Egilsson, Jon; **Pedersen, Kim Steenstrup**; Olsen, Søren Ingvor; Nielsen, Jon ; Ntakos, George; Rasmussen, Jesper. Pre-harvest assessment of perennial weeds in cereals based on images from unmanned aerial systems (UAS). *17th European Weed Research Society Symposium – Weed Managing in Changing Environments*. Montpellier, France, June 2015.
- Søren Hauberg and **Kim Steenstrup Pedersen**. A Physically Natural Metric for Human Motion and the Associated Brownian Motion Model. Abstract at 1st IEEE Workshop on Kernels and Distances for Computer Vision (ICCV workshop), 2011.
- Søren Hauberg, Bente Rona Jensen, Morten Engell-Nørregård, Kenny Erleben, and **Kim Steenstrup Pedersen**. Dense Marker-less Three Dimensional Motion Capture. *Virtual Vistas; Eleventh International Symposium on the 3D Analysis of Human Movement*. 2010.
- David Gustavsson, **Kim Steenstrup Pedersen**, and Mads Nielsen. Multi-scale natural images: a database and some statistics. In Søren I. Olsen, editor, *Proceedings of 16th Danish Conference on Pattern Recognition and Image Analysis (DSAGM) 2008*, DIKU Technical Report 08-10. Department of Computer Science, University of Copenhagen, Denmark, 2008. Extended abstract.
- Bjarne Kjær Ersbøll and **Kim S. Pedersen**. Preface. (Eds.). *Proceedings of the 15th Scandinavian Conference on Image Analysis SCIA 2007*. Springer LNCS 4522, 2007.

- **Kim S. Pedersen**, Pieter van Dorst, and Marco Loog. Minimum Likelihood Image Feature and Scale Detection Based on the Brownian Image Model. *Gaussian Processes in Practice Workshop*, England, June, 2006. Extended abstract Web Publication: <http://www.dcs.shef.ac.uk/ml/gpip/schedule.html>.
- Peter Johansen and **Kim S. Pedersen**. Generalized Context Learning. In Proceedings of DSAGM'03, Copenhagen, Denmark, August 2003.
- **Kim S. Pedersen** and Mads Nielsen: Computing Optic Flow by Scale-Space Integration of Normal Flow. In *Proceedings of DSAGM'01, Den 10. Danske Konference om Mønstergenkendelse og Billedanalyse*. Technical Report DIKU-01-04, p. 124 – 135. Copenhagen, Denmark. August, 2001.
- **Kim S. Pedersen** and Mads Nielsen: The Hausdorff Dimension and Scale-Space Normalization of 'Natural Images'. In *Proceedings of Øresyn'99, Öresund workshop för datamatsyn*. Matematikcentrum, Lunds Universitet, January 15, 1999.

Technical Reports: (6)

- J. Rasmussen, J. Nielsen, J. C. Streibig, S. I. Olsen, **K. S. Pedersen**, and J. E. Jensen: Droner til monitorering af flerårigt ukrudt i korn. Miljøstyrelsen, 2016.
- Søren Hauberg and **Kim S. Pedersen**: HUMIM Software for Articulated Tracking. Technical report. Datalogisk Institut, Københavns Universitet, 2012.
- **Kim S. Pedersen** and Ann B. Lee: Toward a Full Probability Model of Edges in Natural Images. *APPTS Report #02-1*, Division of Applied Mathematics Technical Reports on Applied Probability, Pattern Theory, and Statistics, Brown University, USA. January 2002.
- Ann B. Lee, **Kim S. Pedersen** and David Mumford: The Nonlinear Statistics of High-Contrast Patches in Natural Images. *APPTS Report #01-3*, Division of Applied Mathematics Technical Reports on Applied Probability, Pattern Theory, and Statistics, Brown University, USA. June 2001. Revised December 2001.
- **Kim S. Pedersen**: Turbulence in Optical Flow Fields. *Technical Report DIKU-00-3*, DIKU, Department of Computer Science, University of Copenhagen, Universitetsparken 1, DK-2100 Copenhagen, Denmark. January 2001.
- **Kim S. Pedersen**: Normalisering af billedafledte i skalarum ved hjælp af den fraktale dimension. *Technical Report DIKU-99-2*, Department of Computer Science, University of Copenhagen, Universitetsparken 1, DK-2100 Copenhagen, Denmark, January 1999.