Publication List as of August 2, 2022
Dipl.-Ing. Dr.techn. Alexander Helmut Jung

Five Most Relevant Publications

- A. Jung, "Machine Learning: Basic Principles," Springer, Singapore, 2022. https://link.springer.com/book/10.1007/978-981-16-8193-6, preprint:https://mlbook.cs.aalto.fi.
- A. Jung, A.O. Hero III, A. Mara, S. Jahromi, A. Heimowitz, Y. C. Eldar, "Semi-Supervised Learning in Network-Structured Data via Total Variation Minimization," in IEEE Trans. Sig. Proc., vol. 67 , nr. 24, Dec. 2019, preprint http://arxiv.org/abs/1901.09838.
- N. Tran, O. Abramenko, A. Jung, "On the Sample Complexity of Graphical Model Selection from Non-Stationary Samples," in IEEE Trans. Sig. Proc., vol. 68, pp. 17-32, 2020. preprint https://arxiv.org/pdf/1701.04724.pdf
- A. Jung, "Networked Exponential Families for Big Data Over Networks," in IEEE Access, vol. 8, pp. 202897-202909, 2020, doi: 10.1109/ACCESS.2020.3033817.
- A. Jung and P. H. J. Nardelli, "An Information-Theoretic Approach to Personalized Explainable Machine Learning," in IEEE Signal Processing Letters, vol. 27, pp. 825-829, 2020, doi: 10.1109/LSP.2020.2993176.

Books

- A. Jung, "Machine Learning: Basic Principles," Springer, Singapore, 2022. https://link.springer.com/book/10.1007/978-981-16-8193-6
- A. Jung, "Federated Learning Over Networks for Pandemics," Manning, 2021. https://www.manning.com/liveprojectseries/federated-learning-ser

In the Pipeline

- Y. SarcheshmehPour, Y. Tian, L. Zhang, A. Jung, "Networked Federated Learning,", to be submitted to a journal, 2022. preprint: https://arxiv.org/abs/2105.12769.
- L. Zhang, G. Karakasidis, A. Odnoblyudova, L. Dogruel, A. Jung, "Explainable Empirical Risk Minimization,", to be submitted to a journal, 2022. preprint: https://arxiv.org/abs/2009.01492.

Papers at international journals (peer-reviewed)

- J. Yang, P. Fricker, A. Jung, "From Intuition to Reasoning: Analyzing Correlative Attributes of Walkability in Urban Environments with Machine Learning," in Journal of Digital Landscape Architecture, 2022, 71-81. https://doi.org/10.14627/537724008

- M. Abdar, M. Amin Fahami, L. Rundo, P. Radeva, A. Frangi, U. Rajendra Acharya, A. Khosravi, H. K. Lam, A. Jung, S. Nahavandi, "Hercules: Deep Hierarchical Attentive Multi-Level Fusion Model with Uncertainty Quantification for Medical Image Classification," in IEEE Transactions on Industrial Informatics, April, 2022. doi: 10.1109/TII.2022.3168887.

- J. Sui, Z. Liu, L. Liu, A. Jung and X. Li, "Dynamic Sparse Subspace Clustering for Evolving High-Dimensional Data Streams," in IEEE Transactions on Cybernetics, Volume: 52, Issue: 6, June 2022. doi: 10.1109/TCYB.2020.3023973.

- R. Tervo, I. Láng, A. Jung, and A. Mäkelä, "Predicting power outages caused by extratropical storms," Nat. Hazards Earth Syst. Sci., 21, 2021. https://doi.org/10.5194/nhess-21-607-2021

- A. Jung and Y. SarcheshmehPour, "Local Graph Clustering With Network Lasso," in IEEE Signal Processing Letters, vol. 28, pp. 106-110, 2021. doi: 10.1109/LSP.2020.3045832.

- H. Cao, R. Sarlin and A. Jung, "Learning Explainable Decision Rules via Maximum Satisfiability," in IEEE Access, vol. 8, pp. 218180-218185, 2020, doi: 10.1109/ACCESS.2020.3041040.

- A. Jung, "Networked Exponential Families for Big Data Over Networks," in IEEE Access, vol. 8, pp. 202897-202909, 2020, doi: 10.1109/ACCESS.2020.3033817.

- A. Jung, "On the Duality Between Network Flows and Network Lasso," in IEEE Signal Processing Letters, vol. 27, pp. 940-944, 2020, doi: 10.1109/LSP.2020.2998400.

- A. Jung and P. H. J. Nardelli, "An Information-Theoretic Approach to Personalized Explainable Machine Learning," in IEEE Signal Processing Letters, vol. 27, pp. 825-829, 2020, doi: 10.1109/LSP.2020.2993176.

- N. Tran, O. Abramenko, A. Jung "On the Sample Complexity of Graphical Model Selection from Non-Stationary Samples," in IEEE Trans. Sig. Proc., vol. 68, pp. 17-32, 2020. preprint `https://arxiv.org/pdf/1701.04724.pdf`

- A. Jung, A.O. Hero III, A. Mara, S. Jahromi, A. Heimowitz, Y. C. Eldar, "Semi-Supervised Learning in Network-Structured Data via Total Variation Minimization," in IEEE Trans. Sig. Proc., vol. 67 , nr. 24, Dec. 2019, preprint: `http://arxiv.org/abs/1901.09838`.

- R. Tervo, J. Karjalainen and A. Jung, "Short-Term Prediction of Electricity Outages Caused by Convective Storms," in IEEE Trans. on Geosc. and Rem. Sens., June 2019. DOI 10.1109/TGRS.2019.2921809

- A. Jung, N. Tran, "Localized Linear Regression in Networked Data," in IEEE Sig. Proc. Letters, July 2019. DOI: 10.1109/LSP.2019.2918933. preprint: `https://arxiv.org/abs/1903.11178`.

- J. Sui, Z. Liu, A. Jung, L. Liu, X. Li, "Dynamic Clustering Scheme for Evolving Data Streams Based on Improved STRAP," in *IEEE Access*, Aug. 2018. DOI: 10.1109/ACCESS.2018.2864553.

- A. Jung, "On the Complexity of Sparse Label Propagation," in *Front. Appl. Math. Stat.*, Jul. 2018. DOI: 10.3389/fams.2018.00022.

- A. Jung, N. Tran, A. Mara, "When Is Network Lasso Accurate?," in *Front. Appl. Math. Stat.*, Mar. 2018. DOI: 10.3389/fams.2017.00028.

- A. Jung, "A Fixed-Point of View on Gradient Methods for Big Data," in *Front. Appl. Math. Stat.*, Sept. 2017. DOI: 10.3389/fams.2017.00018.
- A. Jung, Y. C. Eldar, N. Görtz, "On the Minimax Risk of Dictionary Learning, " *IEEE Trans. Inf. Theory*, vol. 62, no. 3, p. 1501 - 1515, Mar. 2016. DOI: 10.1109/TIT.2016.2517006.
- A. Jung, "Learning the Conditional Independence Structure of Stationary Time Series: A Multitask Learning Approach, "*IEEE Trans. Sig. Proc.*, vol. 63, no. 21, p. 5677 - 5690, Nov. 2015. DOI: 10.1109/TSP.2015.2460219.
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- A. Jung, S. Schmutzhard, F. Hlawatsch, Z. Ben-Haim, Y. C. Eldar, "Minimum Variance Estimation of Sparse Vectors within the Linear Gaussian Model: An RKHS Approach, " *IEEE Trans. Inf. Theory*, vol. 60, no. 10, Oct. 2014. DOI: 10.1109/TIT.2014.2346508.
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- A. Jung, G. Tauböck, F. Hlawatsch, "Compressive Spectral Estimation for Nonstationary Random Processes," *IEEE Trans. Inf. Theory*, vol. 59, no. 5, p. 3117 - 3138, May 2013. DOI: 10.1109/TIT.2012.2237475.
- A. Jung, Z. Ben-Haim, F. Hlawatsch, Y. C. Eldar, "Unbiased Estimation of a Sparse Vector in White Gaussian Noise," *IEEE Trans. Inf. Theory*, vol. 57, no. 12, p. 7856 - 7876, Dec. 2011. DOI: 10.1109/TIT.2011.2170124

Papers at international conferences (peer-reviewed)

- Y. Sarcheshmehpour, M. Leinonen and A. Jung, "Federated Learning from Big Data Over Networks," ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021, pp. 3055-3059, doi: 10.1109/ICASSP39728.2021.9414903.
- Y. SarcheshmehPour, Y. Tian, L. Zhang, A. Jung, "Flow-Based Clustering and Spectral Clustering: A Comparison," 55th Asilomar Conference on Signals, Systems, and Computers, 2021.
- N. Tran, H. Ambos and A. Jung, "Classifying Partially Labeled Networked Data VIA Logistic Network Lasso," ICASSP 2020 - 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2020, pp. 3832-3836, doi: 10.1109/ICASSP40776.2020.9054408.
- T. Huuhtanen, A. Lankinen and A. Jung, "Target Tracking on Sensing Surface with Electrical Impedance Tomography," 2020 28th European Signal Processing Conference (EUSIPCO), 2021, pp. 1817-1821, doi: 10.23919/Eusipco47968.2020.9287805.

- T. Huuhtanen and A. Jung, "Anomaly Location Detection with Electrical Impedance Tomography Using Multilayer Perceptrons," 2020 IEEE 30th International Workshop on Machine Learning for Signal Processing (MLSP), 2020, pp. 1-6, doi: 10.1109/MLSP49062.2020.9231818.
- A. Jung, "Clustering in Partially Labeled Stochastic Block Models via Total Variation Minimization," 2020 54th Asilomar Conference on Signals, Systems, and Computers, 2020, pp. 731-735, doi: 10.1109/IEEECONF51394.2020.9443311.
- O. Abramenko, A. Jung, "Graph Signal Sampling via Reinforcement Learning," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing*, May 2019.
- T. Huuhtanen, H. Ambos and A. Jung, "Outlier Detection from Non-Smooth Sensor Data," 2019 27th European Signal Processing Conference (EUSIPCO), 2019, pp. 1-5, doi: 10.23919/EUSIPCO.2019.8903061.
- J. Sui, Z. Liu, L. Liu, A. Jung, T. Liu, B. Peng, X. Li, "Sparse Subspace Clustering for Evolving Data Streams," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing*, May 2019.
- A. Jung, N. Vesselinova, "Analysis of Network Lasso for Semi-Supervised Regression," in Proc. *22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Apr. 2019.
- J. Kahles, J. Törrönen, T. Huuhtanen, A. Jung, "Automating Root Cause Analysis via Machine Learning in Agile Software Testing Environments," in Proc. *IEEE Conference on Software Testing, Validation and Verification*, Apr. 2019.
- H. Ambos, N. Tran, A. Jung, "Classifying Big Data over Networks via the Logistic Network Lasso," in Proc. *52nd Asilomar Conf. Signals, Systems, Computers*, Nov. 2018.
- M. Hinkka, T. Lehto, K. Heljanko, A. Jung, "Classifying Process Instances Using Recurrent Neural Networks," in Proc. *Business Process Management Workshops*, Sept. 2018.
- N. Tran, H. Ambos, A. Jung, "A Network Compatibility Condition for Compressed Sensing over Complex Networks," in Proc. *IEEE Statistical Signal Processing Workshop*, Jun. 2018. DOI: 10.1109/SSP.2018.8450811.
- B. Atli, Y. Miche, A. Jung, "Network Intrusion Detection Using Flow Statistics," in Proc. *IEEE Statistical Signal Processing Workshop*, Jun. 2018. DOI: 10.1109/SSP.2018.8450709.
- T. Huuhtanen and A. Jung, "Predictive Maintenance of Photovoltaic Panels via Deep Learning," in Proc. *IEEE Data Science Workshop*, Jun. 2018. DOI: 10.1109/DSW.2018.8439898.
- R. Tervo, J. Karjalainen, A. Jung, "Predicting Electricity Outages Caused by Convective Storms," in Proc. *IEEE Data Science Workshop*, Jun. 2018. DOI: 10.1109/DSW.2018.8439906.
- M. Hulsebos, A. Jung, "The network nullspace property for compressed sensing of big data over networks," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Apr. 2018. DOI: 10.1109/ICASSP.2018.8462504.
- N. Tran, A. Jung, "On the sample complexity of graphical model selection from non-stationary samples," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Apr. 2018. DOI: 10.1109/ICASSP.2018.8462689.

- A. Mara, A. Jung, "Recovery Conditions and Sampling Strategies for Network Lasso," in Proc. *51st Asilomar Conf. Signals, Systems, Computers*, Nov. 2017 (**best student paper finalist**).
- M. Hinkka, T. Lehto, K. Heljanko, A. Jung, "Structural Feature Selection for Event Logs," in Proc. *Workshop on BP Innovations with Artificial Intelligence (BPAI)*, Sept. 2017.
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- A. Jung, A. Heimowitz, Y. C. Eldar, "The Network Nullspace Property for Compressed Sensing over Networks," in *Proc. SampTA 2017*, Tallinn, Estonia, July 2017. DOI: 10.1109/SAMPTA.2017.8024392.
- S. Basirian, A. Jung, "Random Walk Sampling for Big Data over Networks," in *Proc. SampTA 2017*, Tallinn, Estonia, July 2017. DOI: 10.1109/SAMPTA.2017.8024453.
- N. Tran Quang, A. Jung, "Learning Conditional Independence Structure for High-Dimensional Uncorrelated Vector Processes," in *Proc. IEEE ICASSP 2017*, New Orleans, LA, Mar. 2017. DOI: 10.1109/ICASSP.2017.7953292.
- G. Babazadeh-Eslamlou, A. Jung, N. Goertz, "Smooth Graph Signal Recovery via Efficient Laplacian Solvers," in *Proc. IEEE ICASSP 2017*, New Orleans, LA, Mar. 2017. DOI: 10.1109/ICASSP.2017.7953291.
- G. Hannak, P. Berger, G. Matz, A. Jung, "Efficient Graph Signal Recovery over Big Networks," in *Proc. 50th Asilomar Conf. Signals, Systems, Computers 2016*. DOI: 10.1109/ACSSC.2016.7869702.
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- G. Hannak, M. Mayer, A. Jung, G. Matz and N. Görtz, "Joint channel estimation and activity detection for multiuser communication systems," in *Proc. IEEE ICC 2015 - Workshop on Massive Uncoordinated Access Protocols*, London, UK, pp. 2086 -2091, June 2015. DOI: 10.1109/ICCW.2015.7247489.
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- S. Schmutzhard, A. Jung, F. Hlawatsch, "Minimum variance estimation for the sparse signal in noise model," in *Proc. IEEE ISIT 2011*, Saint Petersburg, Russia, pp. 124 - 128, July/Aug. 2011. DOI: 10.1109/ISIT.2011.6033735.

- A. Jung, S. Schmutzhard, F. Hlawatsch, A. O. Hero III, "Performance bounds for sparse parametric covariance estimation in Gaussian models," in *Proc. IEEE ICASSP 2011*, Prague, Czech Republic, pp. 4156 - 4159, May 2011. DOI: 10.1109/ICASSP.2011.5947268. **(best student paper award)**

- S. Schmutzhard, A. Jung, F. Hlawatsch, Z. Ben-Haim, Y. C. Eldar, "A lower bound on the estimator variance for the sparse linear model," in *Proc. 44th Asilomar Conf. Signals, Systems, Computers 2010*, pp. 1976 - 1980. DOI: 10.1109/ACSSC.2010.5757886.

- A. Jung, Z. Ben-Haim, F. Hlawatsch, Y. C. Eldar, "On unbiased estimation of sparse vectors corrupted by Gaussian noise," in *Proc. IEEE ICASSP 2010*, Dallas, TX, pp. 3990 - 3993, Mar. 2010. DOI: 10.1109/ICASSP.2010.5495781.

- A. Jung, G. Tauböck, F. Hlawatsch, "Compressive nonstationary spectral estimation using parsimonious random sampling of the ambiguity function," in *Proc. IEEE SSP-09*, Cardiff, Wales, UK, pp. 642 - 645, Aug./Sept. 2009. DOI: 10.1109/SSP.2009.5278493.

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Papers at international conferences (peer-reviewed, without proceedings entry)

- N. Tran, S. Basirian, A. Jung., "When is Network Lasso Accurate: The Vector Case," poster and lecture at *NeurIPS Workshop on Learning on Distributions, Functions, Graphs and Groups*, Dec. 2017