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Automated machine learning for dynamic energy management using time-series data

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Citation

Wang, C. (2024, May 28). *Automated machine learning for dynamic energy management using time-series data*. Retrieved from <https://hdl.handle.net/1887/3754765>

Version: Publisher's Version

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Downloaded from: <https://hdl.handle.net/1887/3754765>

Note: To cite this publication please use the final published version (if applicable).

Bibliography

- Mohamed S. Abdelfattah, Abhinav Mehrotra, Lukasz Dudziak, and Nicholas Donald Lane. Zero-Cost Proxies for Lightweight NAS. In *Proceedings of the 9th International Conference on Learning Representations, Virtual Event, Austria, May 3-7, 2021*.
- Fredrik Ahlgren and Marcus Thern. Auto Machine Learning for predicting Ship Fuel Consumption. In *Proceedings of the 31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, Guimarães, June 17-21, 2018*.
- Amr AbdelFatah Ahmed, Saad M Saad Darwish, and Mohamed M El-Sherbiny. A novel automatic CNN architecture design approach based on genetic algorithm. In *Proceedings of the 5th International Conference on Advanced Intelligent Systems and Informatics, Cairo, Egypt, October 26-28, 2019*, pages 473–482.
- Karim Ahmed and Lorenzo Torresani. MaskConnect: Connectivity Learning by Gradient Descent. In *Proceedings of the 15th European Conference on Computer Vision, Munich, Germany, September 8-14, 2018*, pages 362–378.
- Takuya Akiba, Shotaro Sano, Toshihiko Yanase, Takeru Ohta, and Masanori Koyama. Optuna: A Next-generation Hyperparameter Optimization Framework. In *Proceedings of the 25th ACM International Conference on Knowledge Discovery & Data Mining, Anchorage, AK, USA, August 4-8, 2019*, pages 2623–2631.
- Alexander Alexandrov, Konstantinos Benidis, Michael Bohlke-Schneider, Valentin Flunkert, Jan Gasthaus, Tim Januschowski, Danielle C Maddix, Syama Sundar Rangapuram, David Salinas, Jasper Schulz, et al. GluonTS: Probabilistic and Neural Time Series Modeling in Python. *Journal of Machine Learning Research*, 21 (116):1–6, 2020.
- Hesham K Alfares and Mohammad Nazeeruddin. Electric load forecasting: literature survey and classification of methods. *International Journal of Systems Science*, 33: 23–34, 2002.
- Ayman Amin, Lars Grunske, and Alan Colman. An approach to software reliability prediction based on time series modeling. *Journal of Systems and Software*, 86(7): 1923–1932, 2013.

Bibliography

- Nima Amjady. Short-term hourly load forecasting using time-series modeling with peak load estimation capability. *IEEE Transactions on Power Systems*, 16(3):498–505, 2001.
- Theodore W Anderson and Donald A Darling. Asymptotic theory of certain ”goodness of fit” criteria based on stochastic processes. *The annals of mathematical statistics*, pages 193–212, 1952.
- Peter J. Angeline, Gregory M. Saunders, and Jordan B. Pollack. An evolutionary algorithm that constructs recurrent neural networks. *IEEE Transactions on Neural Networks*, 5(1):54–65, 1994.
- Ilya A Antonov and VM Saleev. An economic method of computing $LP\tau$ -sequences. *USSR Computational Mathematics and Mathematical Physics*, 19(1):252–256, 1979.
- Filipe Assunção, Nuno Lourenço, Bernardete Ribeiro, and Penousal Machado. Evolution of Scikit-Learn Pipelines with Dynamic Structured Grammatical Evolution. In *Proceedings of the 23rd International Conference on the Applications of Evolutionary, Seville, Spain, April 15-17, 2020*, pages 530–545.
- Thomas Bäck, David B Fogel, and Zbigniew Michalewicz. Handbook of evolutionary computation. *Release*, 97(1):B1, 1997.
- Thomas Bäck, David B Fogel, and Zbigniew Michalewicz. *Evolutionary computation 1: Basic algorithms and operators*. CRC press, 2018.
- Bowen Baker, Otkrist Gupta, Nikhil Naik, and Ramesh Raskar. Designing Neural Network Architectures using Reinforcement Learning. In *Proceedings of the 5th International Conference on Learning Representations, Toulon, France, April 24-26, 2017*.
- Bowen Baker, Otkrist Gupta, Ramesh Raskar, and Nikhil Naik. Accelerating Neural Architecture Search using Performance Prediction. In *Workshop Track proceedings of the 6th International Conference on Learning Representations, Vancouver, BC, Canada, April 30 - May 3, 2018*.
- Arjun Baliyan, Kumar Gaurav, and Sudhansu Kumar Mishra. A review of short term load forecasting using artificial neural network models. *Procedia Computer Science*, 48:121–125, 2015.
- Mitra Baratchi, Can Wang, Steffen Limmer, Jan N. van Rijn, Holger H. Hoos, Thomas Bäck, and Markus Olhofer. Automated Machine Learning: Past, Present and Future. *Artificial Intelligence Review*, 2024.
- Paolo Baronti, Prashant Pillai, Vince WC Chook, Stefano Chessa, Alberto Gotta, and Y Fun Hu. Wireless sensor networks: A survey on the state of the art and the 802.15. 4 and ZigBee standards. *Computer communications*, 30(7):1655–1695, 2007.

- Enrique Barreiro, Cristian R Munteanu, Maykel Cruz-Monteagudo, Alejandro Pazos, and Humbert González-Díaz. Net-net Auto machine learning (AutoML) prediction of complex ecosystems. *Scientific reports*, 8(1):12340, 2018.
- Tasarruf Bashir, Chen Haoyong, Muhammad Faizan Tahir, and Zhu Liqiang. Short term electricity load forecasting using hybrid prophet-LSTM model optimized by BPNN. *Energy Reports*, 8:1678–1686, 2022.
- Gabriel Bender, Pieter-Jan Kindermans, Barret Zoph, Vijay Vasudevan, and Quoc V. Le. Understanding and Simplifying One-Shot Architecture Search. In *Proceedings of the 35th International Conference on Machine Learning, Stockholm, Sweden, July 10-15, 2018*, pages 549–558.
- Yoshua Bengio. Gradient-based optimization of hyperparameters. *Neural computation*, 12(8):1889–1900, 2000.
- Yoshua Bengio. Practical recommendations for gradient-based training of deep architectures. In *Neural networks: Tricks of the trade*, pages 437–478. Springer, 2012.
- Yoav Benjamini and Yosef Hochberg. Controlling the false discovery rate: a practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, 57(1):289–300, 1995.
- James Bergstra and Yoshua Bengio. Random Search for Hyper-Parameter Optimization. *Journal of Machine Learning Research*, 13:281–305, 2012.
- James Bergstra, Rémi Bardenet, Yoshua Bengio, and Balázs Kégl. Algorithms for Hyper-parameter Optimization. In *Proceedings of the 24th Annual Conference on Neural Information Processing Systems, Sierra Nevada, Spain, December 16-17, 2011*, pages 2546–2554.
- James Bergstra, Daniel Yamins, and David D. Cox. Making a Science of Model Search: Hyperparameter Optimization in Hundreds of Dimensions for Vision Architectures. In *Proceedings of the 30th International Conference on Machine Learning, Atlanta, GA, USA, June 16-21, 2013*, pages 115–123.
- Martin Binder, Florian Pfisterer, and Bernd Bischl. Collecting empirical data about hyperparameters for data driven automl. In *Proceedings of the 7th International Conference on Machine Learning Workshop on Automated Machine Learning, Virtual Event, 13-18 July 2020*.
- Mauro Birattari, Thomas Stützle, Luís Paquete, and Klaus Varrentrapp. A Racing Algorithm for Configuring Metaheuristics. In *Proceedings of the Genetic and Evolutionary Computation Conference, New York, USA, July 9-13, 2002*, pages 11–18.
- Ekaba Bisong. Google AutoML: cloud vision. In *Building Machine Learning and Deep Learning Models on Google Cloud Platform*, pages 581–598. Springer, 2019.
- George EP Box, Gwilym M Jenkins, Gregory C Reinsel, and Greta M Ljung. *Time series analysis: forecasting and control*. John Wiley & Sons, 2015.

Bibliography

- Stephen Boyd, Neal Parikh, Eric Chu, Borja Peleato, and Jonathan Eckstein. Distributed Optimization and Statistical Learning via the Alternating Direction Method of Multipliers. *Foundations and Trends in Machine Learning*, 3(1):1–122, 2011.
- Antonio Bracale, Guido Carpinelli, Pasquale De Falco, and Tao Hong. Short-term industrial load forecasting: A case study in an Italian factory. In *Proceedings of the 2017 IEEE PES Innovative Smart Grid Technologies Conference Europe, Torino, Italy, September 26-29, 2017*, pages 1–6.
- Leo Breiman. Random Forests. *Machine Learning*, 45(1):5–32, 2001.
- Andrew Brock, Theodore Lim, James M. Ritchie, and Nick Weston. SMASH: One-Shot Model Architecture Search through HyperNetworks. In *Proceedings of the 6th International Conference on Learning Representations, Vancouver, BC, Canada, April 30 - May 3, 2018*.
- Bostjan Brumen, Ales Cernezal, and Leon Bosnjak. Overview of Machine Learning Process Modelling. *Entropy*, 23(9):1123, 2021.
- Lars Buitinck, Gilles Louppe, Mathieu Blondel, Fabian Pedregosa, Andreas Mueller, Olivier Grisel, Vlad Niculae, Peter Prettenhofer, Alexandre Gramfort, Jaques Grobler, Robert Layton, Jake VanderPlas, Arnaud Joly, Brian Holt, and Gaël Varoquaux. API design for machine learning software: experiences from the scikit-learn project. In *Proceedings of the 2013 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases Workshop: Languages for Data Mining and Machine Learning, Prague, Cheque Republic, September 23-27, 2013*, pages 108–122.
- Han Cai, Tianyao Chen, Weinan Zhang, Yong Yu, and Jun Wang. Efficient Architecture Search by Network Transformation. In *Proceedings of the 32nd AAAI Conference on Artificial Intelligence, New Orleans, LA, USA, February 2-7, 2018*, pages 2787–2794.
- Han Cai, Jiacheng Yang, Weinan Zhang, Song Han, and Yong Yu. Path-Level Network Transformation for Efficient Architecture Search. In *Proceedings of the 35th International Conference on Machine Learning, Stockholmsmässan, Stockholm, Sweden, July 10-15, 2018*, pages 677–686.
- Han Cai, Ligeng Zhu, and Song Han. ProxylessNAS: Direct Neural Architecture Search on Target Task and Hardware. In *Proceedings of the 7th International Conference on Learning Representations, New Orleans, LA, USA, May 6-9, 2019*.
- Luis M. Candanedo. Data driven prediction models of energy use of appliances in a low-energy house. <https://github.com/LuisM78/Appliances-energy-prediction-data>, 2017.

- Luis M. Candanedo, Véronique Feldheim, and Dominique Deramaix. Data driven prediction models of energy use of appliances in a low-energy house. *Energy and Buildings*, 140:81 – 97, 2017.
- Rich Caruana, Alexandru Niculescu-Mizil, Geoff Crew, and Alex Ksikes. Ensemble selection from libraries of models. In *Proceedings of the 21st International Conference on Machine Learning, Banff, Alberta, Canada, July 4-8, 2004*.
- Gavin C. Cawley and Nicola L. C. Talbot. On Over-fitting in Model Selection and Subsequent Selection Bias in Performance Evaluation. *Journal of Machine Learning Research*, 11(70):2079–2107, 2010.
- Bilge Celik and Joaquin Vanschoren. Adaptation Strategies for Automated Machine Learning on Evolving Data. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 43(9):3067–3078, 2021.
- Fi-John Chang, Yen-Ming Chiang, and Li-Chiu Chang. Multi-step-ahead neural networks for flood forecasting. *Hydrological sciences journal*, 52(1):114–130, 2007.
- Guillaume Chaslot, Sander Bakkes, Istvan Szita, and Pieter Spronck. Monte-Carlo Tree Search: A New Framework for Game AI. In *Proceedings of the 4th Artificial Intelligence and Interactive Digital Entertainment*, page 216–217.
- Guillaume M JB Chaslot, Mark HM Winands, H Jaap van den Herik, Jos WHM Uiterwijk, and Bruno Bouzy. Progressive strategies for Monte-Carlo tree search. *New Mathematics and Natural Computation*, 4(03):343–357, 2008b.
- Boyuan Chen, Harvey Wu, Warren Mo, Ishanu Chattopadhyay, and Hod Lipson. Autostacker: a compositional evolutionary learning system. In *Proceedings of the Genetic and Evolutionary Computation Conference, Kyoto, Japan, July 15-19, 2018*, pages 402–409.
- Jiann-Fuh Chen, Wei-Ming Wang, and Chao-Ming Huang. Analysis of an adaptive time-series autoregressive moving-average (ARMA) model for short-term load forecasting. *Electric Power Systems Research*, 34(3):187–196, 1995.
- Pudi Chen, Shenghua Liu, Chuan Shi, Bryan Hooi, Bai Wang, and Xueqi Cheng. NeuCast: Seasonal Neural Forecast of Power Grid Time Series. In *Proceedings of the 27th International Joint Conference on Artificial Intelligence, Stockholm, July 13-19, 2018, Sweden.*, pages 3315–3321.
- Tianqi Chen and Carlos Guestrin. XGBoost: A Scalable Tree Boosting System. In *Proceedings of the 22nd ACM International Conference on Knowledge Discovery & Data Mining, San Francisco, CA, USA, August 13-17, 2016*, pages 785–794.
- Tianqi Chen, Ian J. Goodfellow, and Jonathon Shlens. Net2Net: Accelerating Learning via Knowledge Transfer. In *Proceedings of the 4th International Conference on Learning Representations, San Juan, Puerto Rico, May 2-4, 2016*.

Bibliography

- Xiangning Chen, Bo Qiao, Weiyi Zhang, Wei Wu, Murali Chintalapati, Dongmei Zhang, Qingwei Lin, Chuan Luo, Xudong Li, Hongyu Zhang, Yong Xu, Yingnong Dang, Kaixin Sui, and Xu Zhang. Neural Feature Search: A Neural Architecture for Automated Feature Engineering. In *Proceedings of the 19th IEEE International Conference on Data Mining, Beijing, China, November 8-11, 2019*, pages 71–80.
- Xin Chen, Lingxi Xie, Jun Wu, and Qi Tian. Progressive Differentiable Architecture Search: Bridging the Depth Gap Between Search and Evaluation. In *Proceedings of the 2019 IEEE International Conference on Computer Vision, Seoul, Korea (South), October 27 - November 2, 2019*, pages 1294–1303.
- Xu Chen and Brett Wujek. AutoDAL: Distributed Active Learning with Automatic Hyperparameter Selection. In *Proceedings of the 34th AAAI Conference on Artificial Intelligence, New York, NY, USA, February 7-12, 2020*, pages 3537–3544.
- Yukang Chen, Gaofeng Meng, Qian Zhang, Shiming Xiang, Chang Huang, Lisen Mu, and Xinggang Wang. RENAS: Reinforced Evolutionary Neural Architecture Search. In *Proceedings of the 2019 IEEE Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, June 16-20, 2019*, pages 4787–4796.
- Zefeng Chen, Yuren Zhou, and Zhengxin Huang. Auto-creation of effective neural network architecture by evolutionary algorithm and ResNet for image classification. In *Proceedings of the 2019 IEEE international conference on systems, man and cybernetics, Bari, Italy, October 6-9, 2019*, pages 3895–3900.
- Davide Chicco, Matthijs J. Warrens, and Giuseppe Jurman. The coefficient of determination R-squared is more informative than SMAPE, MAE, MAPE, MSE and RMSE in regression analysis evaluation. *PeerJ Computer Science*, 7:e623, 2021.
- Patryk Chrabaszcz, Ilya Loshchilov, and Frank Hutter. A Downsampled Variant of ImageNet as an Alternative to the CIFAR datasets. *CoRR*, abs/1707.08819, 2017.
- Maximilian Christ, Nils Braun, Julius Neuffer, and Andreas W. Kempa-Liehr. Time Series Feature Extraction on basis of Scalable Hypothesis tests (tsfresh – A Python package). *Neurocomputing*, 307:72–77, 2018.
- Xiangxiang Chu, Tianbao Zhou, Bo Zhang, and Jixiang Li. Fair DARTS: Eliminating unfair advantages in differentiable architecture search. In *Proceedings of the 16th European conference on computer vision, Glasgow, UK, August 23-28, 2020*, pages 465–480.
- Marc Claesen, Jaak Simm, Dusan Popovic, Yves Moreau, and Bart De Moor. Easy Hyperparameter Search Using Optunity. *CoRR*, abs/1412.1114, 2014.
- European Commission. 2050 long-term strategy. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en.
- Damien Coyle, Girijesh Prasad, and Thomas Martin McGinnity. A time-series prediction approach for feature extraction in a brain-computer interface. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 13(4):461–467, 2005.

- Jiequan Cui, Pengguang Chen, Ruiyu Li, Shu Liu, Xiaoyong Shen, and Jiaya Jia. Fast and practical neural architecture search. In *Proceedings of the 2019 IEEE International Conference on Computer Vision, Seoul, Korea (South), October 27 - November 2, 2019*, pages 6509–6518.
- DataCanvas. Hypernets. <https://github.com/DataCanvasIO/Hypernets>, 2021. Accessed: 2021-11-04.
- Hoang Anh Dau, Anthony J. Bagnall, Kaveh Kamgar, Chin-Chia Michael Yeh, Yan Zhu, Shaghayegh Gharghabi, Chotirat Ann Ratanamahatana, and Eamonn J. Keogh. The UCR Time Series Archive. *CoRR*, abs/1810.07758, 2018.
- Tijl De Bie, Luc De Raedt, José Hernández-Orallo, Holger H Hoos, Padhraic Smyth, and Christopher KI Williams. Automating data science. *Communications of the ACM*, 65(3):76–87, 2022.
- Alex Guimarães Cardoso de Sá, Walter José G. S. Pinto, Luiz Otávio Vilas Boas Oliveira, and Gisele L. Pappa. RECIPE: A Grammar-Based Framework for Automatically Evolving Classification Pipelines. In *Proceedings of the 20th Genetic Programming European Conference, Amsterdam, The Netherlands, April 19-21, 2017*, pages 246–261.
- Kalyanmoy Deb, Samir Agrawal, Amrit Pratap, and T. Meyarivan. A fast and elitist multiobjective genetic algorithm: NSGA-II. *IEEE Transactions on Evolutionary Computation*, 6(2):182–197, 2002.
- David Dempsey, Shane J Cronin, Samuel Mei, and Andreas W Kempa-Liehr. Automatic precursor recognition and real-time forecasting of sudden explosive volcanic eruptions at Whakaari, New Zealand. *Nature Communications*, 11(1):1–8, 2020.
- Boyang Deng, Junjie Yan, and Dahua Lin. Peephole: Predicting Network Performance Before Training. *CoRR*, abs/1712.03351, 2017.
- Xuzhi Deng, Aoshuang Ye, Jiashi Zhong, Dong Xu, Wangwang Yang, Zhaofang Song, Zitong Zhang, Jin Guo, Tao Wang, Yifan Tian, et al. Bagging-XGBoost algorithm based extreme weather identification and short-term load forecasting model. *Energy Reports*, 8:8661–8674, 2022.
- Thomas Desautels, Andreas Krause, and Joel W. Burdick. Parallelizing Exploration-Exploitation Tradeoffs in Gaussian Process Bandit Optimization. *Journal of Machine Learning Research*, 15(119):4053–4103, 2014.
- Daniel Dimanov, Emili Balaguer-Ballester, Colin Singleton, and Shahin Rostami. MONCAE: Multi-Objective Neuroevolution of Convolutional Autoencoders. In *Proceedings of the 9th International Conference on Learning Representations workshop on Neural Architecture Search, Virtual Event, May 3-7, 2021*.

Bibliography

- Yuhui Ding, Quanming Yao, Huan Zhao, and Tong Zhang. Diffmg: Differentiable meta graph search for heterogeneous graph neural networks. In *Proceedings of the 27th ACM International Conference on Knowledge Discovery & Data Mining, Virtual Event, Singapore, August 14-18, 2021*, pages 279–288.
- Tobias Domhan, Jost Tobias Springenberg, and Frank Hutter. Speeding Up Automatic Hyperparameter Optimization of Deep Neural Networks by Extrapolation of Learning Curves. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence, Buenos Aires, Argentina, July 25-31, 2015*, pages 3460–3468.
- Xuanyi Dong and Yi Yang. Network pruning via transformable architecture search. *Advances in Neural Information Processing Systems*, 32:760–771, 2019.
- Xuanyi Dong and Yi Yang. NAS-Bench-201: Extending the Scope of Reproducible Neural Architecture Search. In *Proceedings of the 8th International Conference on Learning Representations, Addis Ababa, Ethiopia, April 26-30, 2020*.
- Xuanyi Dong, Lu Liu, Katarzyna Musial, and Bogdan Gabrys. NATS-Bench: Benchmarking NAS algorithms for architecture topology and size. *IEEE transactions on pattern analysis and machine intelligence*, 44:3634–3646, 2021.
- Anna Veronika Dorogush, Vasily Ershov, and Andrey Gulin. CatBoost: gradient boosting with categorical features support. *CoRR*, abs/1810.11363, 2018.
- Dheeru Dua and Casey Graff. UCI Machine Learning Repository. <https://archive.ics.uci.edu/>, 2017.
- Katharina Eggenberger, Matthias Feurer, Frank Hutter, James Bergstra, Jasper Snoek, Holger H. Hoos, and Kevin Leyton-Brown. Towards an empirical foundation for assessing bayesian optimization of hyperparameters. In *Proceedings of the 26th Annual Conference on Neural Information Processing Systems workshop on Bayesian Optimization in Theory and Practice, Lake Tahoe, NV, USA, December 5-8, 2013*, page 3.
- Thomas Elsken, Jan Hendrik Metzen, and Frank Hutter. Simple and efficient architecture search for Convolutional Neural Networks. In *Workshop track proceedings of the 6th International Conference on Learning Representations, Vancouver, BC, Canada, April 30 - May 3, 2018*.
- Thomas Elsken, Jan Hendrik Metzen, and Frank Hutter. Efficient Multi-Objective Neural Architecture Search via Lamarckian Evolution. In *Proceedings of the 7th International Conference on Learning Representations, New Orleans, LA, USA, May 6-9, 2019*.
- Thomas Elsken, Jan Hendrik Metzen, and Frank Hutter. Neural architecture search: A survey. *The Journal of Machine Learning Research*, 20(1):1997–2017, 2019b.

- Thomas Elsken, Benedikt Staffler, Jan Hendrik Metzen, and Frank Hutter. Meta-learning of neural architectures for few-shot learning. In *Proceedings of the 2020 IEEE conference on computer vision and pattern recognition, Seattle, WA, USA, June 13-19, 2020*, pages 12365–12375.
- Nick Erickson, Jonas Mueller, Alexander Shirkov, Hang Zhang, Pedro Larroy, Mu Li, and Alexander J. Smola. AutoGluon-Tabular: Robust and Accurate AutoML for Structured Data. In *Proceedings of the 37th International Conference on Machine Learning Workshop on Automated Machine Learning, Virtual Event, 13-18 July 2020*.
- Kutluhan Erol, James A. Hendler, and Dana S. Nau. UMCP: A Sound and Complete Procedure for Hierarchical Task-network Planning. In *Proceedings of the 2nd International Conference on Artificial Intelligence Planning Systems, University of Chicago, Chicago, IL, USA, June 13-15, 1994*, pages 249–254.
- Stefan Falkner, Aaron Klein, and Frank Hutter. BOHB: Robust and Efficient Hyperparameter Optimization at Scale. In *Proceedings of the 35th International Conference on Machine Learning, Stockholmsmässan, Stockholm, Sweden, July 10-15, 2018*, pages 1436–1445.
- Guo-Feng Fan, Liu-Zhen Zhang, Meng Yu, Wei-Chiang Hong, and Song-Qiao Dong. Applications of random forest in multivariable response surface for short-term load forecasting. *International Journal of Electrical Power & Energy Systems*, 139: 108073, 2022.
- Lucas Borges Ferreira and Fernando França da Cunha. Multi-step ahead forecasting of daily reference evapotranspiration using deep learning. *Computers and Electronics in Agriculture*, 178:105728, 2020.
- Matthias Feurer and Frank Hutter. Hyperparameter optimization. In *Automated machine learning*, pages 3–33. Springer, 2019.
- Matthias Feurer, Aaron Klein, Katharina Eggersperger, Jost Tobias Springenberg, Manuel Blum, and Frank Hutter. Efficient and Robust Automated Machine Learning. In *Proceedings of the 29th Annual Conference on Neural Information Processing Systems, Montreal, Quebec, Canada, December 7-12, 2015*, pages 2962–2970.
- Matthias Feurer, Katharina Eggersperger, Stefan Falkner, Marius Lindauer, and Frank Hutter. Practical Automated Machine Learning for the AutoML Challenge 2018. In *Proceedings of the 35th International Conference on Machine Learning Workshop on Automated Machine Learning, Stockholm, Sweden, July 10-15, 2018*.
- Matthias Feurer, Katharina Eggersperger, Stefan Falkner, Marius Lindauer, and Frank Hutter. Auto-Sklearn 2.0: Hands-free AutoML via Meta-Learning. *Journal of Machine Learning Research*, 23(261):1–61, 2022.
- Jean-Yves Franceschi, Aymeric Dieuleveut, and Martin Jaggi. Unsupervised Scalable Representation Learning for Multivariate Time Series. *CoRR*, abs/1901.10738, 2019.

Bibliography

- Luca Franceschi, Michele Donini, Paolo Frasconi, and Massimiliano Pontil. Forward and reverse gradient-based hyperparameter optimization. In *Proceedings of the 34th International Conference on Machine Learning, Sydney, NSW, Australia, August 6-11, 2017*, pages 1165–1173.
- Ben D. Fulcher and Nick S. Jones. hctsa: A computational framework for automated time-series phenotyping using massive feature extraction. *Cell Systems*, 5(5):527–531, 2017.
- Ben D. Fulcher, Carl Henning Lubba, Sarab S. Sethi, and Nick S. Jones. CompEngine: a self-organizing, living library of time-series data. *CoRR*, abs/1905.01042, 2019.
- Feng Gao, Bin Song, Dan Wang, and Hao Qin. MR-DARTS: Restricted Connectivity Differentiable Architecture Search in Multi-Path Search Space. *Neurocomputing*, 482:27–39, 2022.
- Yang Gao, Hong Yang, Peng Zhang, Chuan Zhou, and Yue Hu. Graph Neural Architecture Search. In *Proceedings of the 29th International Joint Conference on Artificial Intelligence, Virtual Event, January 7-15, 2021*, pages 1403–1409.
- Eduardo C. Garrido-Merchán and Daniel Hernández-Lobato. Dealing with categorical and integer-valued variables in Bayesian Optimization with Gaussian processes. *Neurocomputing*, 380:20–35, 2020.
- Johnu George, Ce Gao, Richard Liu, Hou Gang Liu, Yuan Tang, Ramdoot Pydi-paty, and Amit Kumar Saha. A Scalable and Cloud-Native Hyperparameter Tuning System. *CoRR*, abs/2006.02085, 2020.
- Pieter Gijsbers and Joaquin Vanschoren. GAMA: A General Automated Machine Learning Assistant. In *Proceedings of the 2020 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Ghent, Belgium, September 14-18, 2020*, pages 560–564.
- Pieter Gijsbers, Joaquin Vanschoren, and Randal S. Olson. Layered TPOT: Speeding up Tree-based Pipeline Optimization. In *Proceedings of the International Workshop on Automatic Selection, Configuration and Composition of Machine Learning Algorithms co-located with the 2017 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Skopje, Macedonia, September 22, 2017*, pages 49–68.
- Pieter Gijsbers, Marcos L. P. Bueno, Stefan Coors, Erin LeDell, Sébastien Poirier, Janek Thomas, Bernd Bischl, and Joaquin Vanschoren. AMLB: an AutoML Benchmark. *CoRR*, abs/2207.12560, 2022.
- David Ginsbourger, Rodolphe Le Riche, and Laurent Carraro. Kriging is well-suited to parallelize optimization. In *Proceedings of the Computational intelligence in expensive optimization problems*, pages 131–162.

- David Ginsbourger, Janis Janusevskis, and Rodolphe Le Riche. Dealing with asynchronicity in parallel Gaussian Process based global optimization. Research report, Mines Saint-Etienne, 2011.
- David E. Goldberg and Kalyanmoy Deb. A Comparative Analysis of Selection Schemes Used in Genetic Algorithms. In *Proceedings of the 1st Workshop on Foundations of Genetic Algorithms. Bloomington Campus, IN, USA, July 15-18 1990*, pages 69–93.
- Ian Goodfellow, Yoshua Bengio, and Aaron Courville. *Deep Learning*. MIT Press, 2016. <http://www.deeplearningbook.org>.
- Yannig Goude, Raphael Nedellec, and Nicolas Kong. Local Short and Middle Term Electricity Load Forecasting With Semi-Parametric Additive Models. *IEEE Transactions on Smart Grid*, 5(1):440–446, 2014.
- Riccardo Grazi, Luca Franceschi, Massimiliano Pontil, and Saverio Salzo. On the Iteration Complexity of Hypergradient Computation. In *Proceedings of the 37th International Conference on Machine Learning, Virtual Event, 13-18 July 2020*, pages 3748–3758.
- Yuchao Gu, Lijuan Wang, Yun Liu, Yi Yang, Yu-Huan Wu, Shao-Ping Lu, and Ming-Ming Cheng. DOTS: Decoupling Operation and Topology in Differentiable Architecture Search. In *Proceedings of the 2021 IEEE Conference on Computer Vision and Pattern Recognition, Virtual Event, June 19-25, 2021*, pages 12311–12320.
- Isabelle Guyon, Amir Saffari, Gideon Dror, and Gavin Cawley. Model Selection: Beyond the Bayesian/Frequentist Divide. *Journal of Machine Learning Research*, 11:61–87, 2010.
- H2O.ai. H2O AutoML. <http://docs.h2o.ai/h2o/latest-stable/h2o-docs/automl.html>, June 2017. Accessed: 2022-11-04.
- Martin T. Hagan and Suzanne M. Behr. The Time Series Approach to Short Term Load Forecasting. *IEEE Transactions on Power Systems*, pages 785–791, 1987.
- Mark Hall, Eibe Frank, Geoffrey Holmes, Bernhard Pfahringer, Peter Reutemann, and Ian H. Witten. The WEKA Data Mining Software: An Update. *SIGKDD Explorations Newsletter*, 11(1):10–18, 2009.
- Dongyoon Han, Jiwhan Kim, and Junmo Kim. Deep Pyramidal Residual Networks. In *Proceedings of the 2017 IEEE Conference on Computer Vision and Pattern Recognition, Honolulu, HI, USA, July 21-26, 2017*, pages 6307–6315.
- Nikolaus Hansen, Sibylle D. Müller, and Petros Koumoutsakos. Reducing the Time Complexity of the Derandomized Evolution Strategy with Covariance Matrix Adaptation (CMA-ES). *Evolutionary Computation*, 11(1):1–18, 2003.

Bibliography

- Kaiming He, Xiangyu Zhang, Shaoqing Ren, and Jian Sun. Deep Residual Learning for Image Recognition. In *Proceedings of the 2016 IEEE Conference on Computer Vision and Pattern Recognition, Las Vegas, NV, USA, June 27-30, 2016*, pages 770–778.
- Tim Head, Manoj Kumar, Holger Nahrstaedt, Gilles Louppe, and Iaroslav Shcherbatyi. Sequential model-based optimization in Python. <https://scikit-optimize.github.io/stable>, 2017.
- Philipp Hennig and Christian J. Schuler. Entropy Search for Information-Efficient Global Optimization. *Journal of Machine Learning Research*, 13:1809–1837, 2012.
- Matthew W Hoffman and Bobak Shahriari. Modular mechanisms for Bayesian optimization. In *Proceedings of the 28th Annual Conference on Neural Information Processing Systems workshop on Bayesian optimization, Montréal, QC, Canada, December 8-13, 2014*, pages 1–5.
- Tao Hong and Shu Fan. Probabilistic electric load forecasting: A tutorial review. *International Journal of Forecasting*, 32(3):914–938, 2016.
- Tao Hong and Pu Wang. Fuzzy interaction regression for short term load forecasting. HSC Research Reports HSC/13/14, Hugo Steinhaus Center, Wroclaw University of Technology, 2013.
- Tao Hong, Pierre Pinson, and Shu Fan. Global Energy Forecasting Competition 2012. *International Journal of Forecasting*, 30(2):357 – 363, 2014.
- Weijun Hong, Guilin Li, Weinan Zhang, Ruiming Tang, Yunhe Wang, Zhenguo Li, and Yong Yu. DropNAS: Grouped Operation Dropout for Differentiable Architecture Search. In *Proceedings of the 29th International Joint Conference on Artificial Intelligence, Virtual Event, January 7-15, 2021*, pages 2326–2332.
- Holger H. Hoos. Programming by Optimization. *Communications of the ACM*, 55(2): 70–80, 2012.
- Richard G. Hoptroff. The Principles and Practice of Time Series Forecasting and Business Modelling Using Neural Nets. *Neural Computing and Applications*, 1(1): 59–66, 1993.
- Yuan-Yih Hsu and Chien-Chuen Yang. Design of artificial neural networks for short-term load forecasting. I. Self-organising feature maps for day type identification. *IEEE Proceedings - Generation, Transmission and Distribution*, pages 407–413, 1991.
- Yi-Qi Hu, Yang Yu, Wei-Wei Tu, Qiang Yang, Yuqiang Chen, and Wenyuan Dai. Multi-fidelity automatic hyper-parameter tuning via transfer series expansion. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence, Honolulu, HI, USA, January 27 - February 1, 2019*, pages 3846–3853.

- Gao Huang, Zhuang Liu, Laurens van der Maaten, and Kilian Q. Weinberger. Densely Connected Convolutional Networks. In *Proceedings of the 2017 IEEE Conference on Computer Vision and Pattern Recognition, Honolulu, HI, USA, July 21-26, 2017*, pages 2261–2269.
- Anne Humeau, Benjamin Buard, François Chapeau-Blondeau, David Rousseau, Guillaume Mahe, and Pierre Abraham. Multifractal analysis of central (electrocardiography) and peripheral (laser Doppler flowmetry) cardiovascular time series from healthy human subjects. *Physiological Measurement*, 30(7):617, 2009.
- Andrew Hundt, Varun Jain, and Gregory D. Hager. sharpDARTS: Faster and More Accurate Differentiable Architecture Search. *CoRR*, abs/1903.09900, 2019.
- Frank Hutter, Holger H. Hoos, and Kevin Leyton-Brown. Sequential Model-based Optimization for General Algorithm Configuration. In *Proceedings of the 5th International Conference on Learning and Intelligent Optimization, Lille, France, January 12-15, 2015*, pages 507–523.
- Frank. Hutter, Holger H. Hoos, and Kevin Leyton-Brown. An efficient approach for assessing hyperparameter importance. In *Proceedings of the 31st International Conference on Machine Learning, Beijing, China, 21-26 June 2014*, pages 754–762.
- Frank Hutter, Lars Kotthoff, and Joaquin Vanschoren. *Automated machine learning: methods, systems, challenges*. Springer, 2019.
- William Irwin-Harris, Yanan Sun, Bing Xue, and Mengjie Zhang. A graph-based encoding for evolutionary convolutional neural network architecture design. In *Proceedings of the 2019 IEEE Congress on Evolutionary Computation, Wellington, New Zealand, June 10-13, 2019*, pages 546–553.
- Roxana Istrate, Florian Scheidegger, Giovanni Mariani, Dimitrios S. Nikolopoulos, Constantine Bekas, and Adelmo Cristiano Innocenza Malossi. TAPAS: Train-Less Accuracy Predictor for Architecture Search. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence, Honolulu, HI, USA, January 27 - February 1, 2019*, pages 3927–3934.
- Kevin G. Jamieson and Ameet Talwalkar. Non-stochastic Best Arm Identification and Hyperparameter Optimization. In *Proceedings of the International Conference on Artificial Intelligence and Statistics, Cadiz, Spain, May 9-11, 2016*, pages 240–248.
- Eric Jang, Shixiang Gu, and Ben Poole. Categorical Reparameterization with Gumbel-Softmax. In *Proceedings of the 5th International Conference on Learning Representations, Toulon, France, April 24-26, 2017*.
- Tim Januschowski, Jan Gasthaus, Yuyang Wang, David Salinas, Valentin Flunkert, Michael Bohlke-Schneider, and Laurent Callot. Criteria for classifying forecasting methods. *International Journal of Forecasting*, 36(1):167–177, 2020. M4 Competition.

Bibliography

- Zbigniew Jedrzejewski-Szmek, Karina P. Abrahao, Joanna Jedrzejewska-Szmek, David M. Lovinger, and Kim T. Blackwell. Parameter Optimization Using Covariance Matrix Adaptation - Evolutionary Strategy (CMA-ES), an Approach to Investigate Differences in Channel Properties Between Neuron Subtypes. *Frontiers Neuroinformatics*, 12:47, 2018.
- Haifeng Jin, Qingquan Song, and Xia Hu. Auto-Keras: An Efficient Neural Architecture Search System. In *Proceedings of the 25th ACM International Conference on Knowledge Discovery & Data Mining, Anchorage, AK, USA, August 4-8, 2019*, pages 1946–1956.
- Hadi S. Jomaa, Josif Grabocka, and Lars Schmidt-Thieme. Hyp-RL : Hyperparameter Optimization by Reinforcement Learning. *CoRR*, abs/1906.11527, 2019.
- Donald R. Jones, Matthias Schonlau, and William J. Welch. Efficient Global Optimization of Expensive Black-Box Functions. *Journal of Global Optimization*, 13(4): 455–492, 1998.
- Kirthevasan Kandasamy, Willie Neiswanger, Jeff Schneider, Barnabás Póczos, and Eric P. Xing. Neural Architecture Search with Bayesian Optimisation and Optimal Transport. In *Proceedings of the 32nd Annual Conference on Neural Information Processing Systems, Montréal, Canada, December 3-8, 2018*, pages 2020–2029.
- Guolin Ke, Qi Meng, Thomas Finley, Taifeng Wang, Wei Chen, Weidong Ma, Qiwei Ye, and Tie-Yan Liu. LightGBM: A Highly Efficient Gradient Boosting Decision Tree. In *Proceedings of the 31st Annual Conference on Neural Information Processing Systems, Long Beach, CA, USA, December 4-9, 2017*, pages 3146–3154.
- Marios Kefalas, Mitra Baratchi, Asteris Apostolidis, Dirk Van Den Herik, and Thomas Bäck. Automated machine learning for remaining useful life estimation of aircraft engines. In *Proceedings of the 2021 IEEE International conference on prognostics and health management*, pages 1–9.
- James Kennedy and Russell Eberhart. Particle swarm optimization. In *Proceedings of the International Conference on Neural Networks, Perth, WA, Australia, November 27 - December 1, 1995*, pages 1942–1948.
- Alireza Khotanzad, Reza Afkhami-Rohani, Tsun-Liang Lu, and Alireza Abaye. ANNSTLF-a neural-network-based electric load forecasting system. *IEEE Transactions on Neural Networks*, 8(4):835–846, 1997.
- Aaron Klein and Frank Hutter. Tabular Benchmarks for Joint Architecture and Hyperparameter Optimization. *CoRR*, abs/1905.04970, 2019.
- Aaron Klein, Stefan Falkner, Simon Bartels, Philipp Hennig, and Frank Hutter. Fast Bayesian Optimization of Machine Learning Hyperparameters on Large Datasets. In *Proceedings of the 20th International Conference on Artificial Intelligence and Statistics, Fort Lauderdale, FL, USA, 20-22 April, 2017*, pages 528–536.

- Aaron Klein, Stefan Falkner, Numair Mansur, and Frank Hutter. RoBO: A Flexible and Robust Bayesian Optimization Framework in Python. In *Proceedings of the 31st Annual Conference on Neural Information Processing Systems Bayesian Optimization Workshop, Long Beach, CA, USA, December 4-9, 2017*.
- Aaron Klein, Stefan Falkner, Jost Tobias Springenberg, and Frank Hutter. Learning Curve Prediction with Bayesian Neural Networks. In *Proceedings of the 5th International Conference on Learning Representations, Toulon, France, April 24-26, 2017*.
- Nikita Klyuchnikov, Ilya Trofimov, Ekaterina Artemova, Mikhail Salnikov, Maxim V. Fedorov, Alexander Filippov, and Evgeny Burnaev. NAS-Bench-NLP: Neural Architecture Search Benchmark for Natural Language Processing. *IEEE Access*, 10: 45736–45747, 2022.
- Levente Kocsis and Csaba Szepesvári. Bandit Based Monte-Carlo Planning. In *Proceedings of the 2006 European Conference on Machine Learning, Berlin, Germany, September 18-22, 2006*, pages 282–293.
- Brent Komer, James Bergstra, and Chris Eliasmith. Hyperopt-sklearn: automatic hyperparameter configuration for scikit-learn. In *Proceedings of the 31st International Conference on Machine Learning workshop on Automated Machine Learning, Beijing, China, June 21-26, 2014*, page 50.
- Matthias König, Holger H. Hoos, and Jan Nicolaas van Rijn. Towards Algorithm-Agnostic Uncertainty Estimation: Predicting Classification Error in an Automated Machine Learning Setting. In *Proceedings of the 37th International Conference on Machine Learning Workshop on Automated Machine Learning, Virtual Event, 13-18 July 2020*.
- Matthias König, Holger H. Hoos, and Jan Nicolaas van Rijn. Speeding up neural network robustness verification via algorithm configuration and an optimised mixed integer linear programming solver portfolio. *Machine Learning*, 111(9):4565–4584, 2022.
- Lars Kotthoff, Chris Thornton, Holger H. Hoos, Frank Hutter, and Kevin Leyton-Brown. Auto-WEKA 2.0: Automatic model selection and hyperparameter optimization in WEKA. *Journal of Machine Learning Research*, 18(25):1–5, 2017.
- John R. Koza. Genetic programming as a means for programming computers by natural selection. *Statistics and Computing*, 4(2):87–112, 1994.
- Tim Kraska. Northstar: An Interactive Data Science System. *Proceedings of the VLDB Endowment*, 11(12):2150–2164, 2018.
- Alex Krizhevsky, Vinod Nair, and Geoffrey Hinton. CIFAR-10 (Canadian Institute for Advanced Research). (4):1, 2010.

Bibliography

- Miron B. Kursa and Witold R. Rudnicki. The All Relevant Feature Selection using Random Forest. *CoRR*, abs/1106.5112, 2011.
- Alexandre Lacoste, Mario Marchand, François Laviolette, and Hugo Larochelle. Agnostic Bayesian Learning of Ensembles. In *Proceedings of the 31th International Conference on Machine Learning, Beijing, China, June 21-26, 2014*, pages 611–619.
- Hugo Larochelle, Dumitru Erhan, Aaron Courville, James Bergstra, and Yoshua Bengio. An empirical evaluation of deep architectures on problems with many factors of variation. In *Proceedings of the 24th international conference on Machine learning, Corvallis, Oregon, USA, June 20-24, 2007*, pages 473–480.
- LasagneContributors. Lasagne. <https://github.com/Lasagne/Lasagne>, 2022. Accessed: 2022-11-04.
- Erin LeDell and Sebastien Poirier. H2O AutoML: Scalable Automatic Machine Learning. *Proceedings of the 37th International Conference on Machine Learning Workshop on Automated Machine Learning, Virtual Event, July 13-18, 2020*, 2020.
- Rui Leite and Pavel Brazdil. Predicting relative performance of classifiers from samples. In *Proceedings of the 22nd International Conference on Machine Learning, Bonn, Germany, August 7-11, 2005*, pages 497–503.
- Rui Leite and Pavel Brazdil. Active Testing Strategy to Predict the Best Classification Algorithm via Sampling and Metalearning. In *Proceedings of the 19th European Conference on Artificial Intelligence, Lisbon, Portugal, August 16-20, 2010*, pages 309–314.
- Julien-Charles Lévesque. *Bayesian hyperparameter optimization: overfitting, ensembles and conditional spaces*. PhD thesis, Université Laval, 2018.
- Hui Li, Qingqing Liang, Mei Chen, Zhenyu Dai, Huanjun Li, and Ming Zhu. Pruning SMAC search space based on key hyperparameters. *Concurrency and Computation: Practice and Experience*, 34(9), 2022.
- Liam Li and Ameet Talwalkar. Random Search and Reproducibility for Neural Architecture Search. In *Proceedings of the 35th Conference on Uncertainty in Artificial Intelligence, Tel Aviv, Israel, July 22-25, 2019*, page 129.
- Liam Li, Kevin G. Jamieson, Afshin Rostamizadeh, Ekaterina Gonina, Jonathan Bentzur, Moritz Hardt, Benjamin Recht, and Ameet Talwalkar. A System for Massively Parallel Hyperparameter Tuning. In *Proceedings of the Machine Learning and Systems, Austin, TX, USA, March 2-4, 2020*.
- Ling Li, Sida Dai, Zhiwei Cao, Jinghui Hong, Shu Jiang, and Kunmeng Yang. Using improved gradient-boosted decision tree algorithm based on Kalman filter (GBDT-KF) in time series prediction. *The Journal of Supercomputing*, 76(9):6887–6900, 2020b.

- Lisha Li, Kevin G. Jamieson, Giulia DeSalvo, Afshin Rostamizadeh, and Ameet Talwalkar. Hyperband: A Novel Bandit-Based Approach to Hyperparameter Optimization. *Journal of Machine Learning Research*, 18:185:1–185:52, 2017.
- Ting Li, Junbo Zhang, Kainan Bao, Yuxuan Liang, Yexin Li, and Yu Zheng. Autost: Efficient neural architecture search for spatio-temporal prediction. In *Proceedings of the 26th ACM International Conference on Knowledge Discovery & Data Mining, Virtual Event, August 23-27, 2020*, pages 794–802.
- Yanxi Li, Zean Wen, Yunhe Wang, and Chang Xu. One-shot Graph Neural Architecture Search with Dynamic Search Space. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence, Virtual Event, February 2-9, 2021*, pages 8510–8517.
- Yu-Feng Li, Hai Wang, Tong Wei, and Wei-Wei Tu. Towards automated semi-supervised learning. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence, Virtual Event, February 2-9, 2021*, pages 4237–4244.
- Zhihang Li, Teng Xi, Jiankang Deng, Gang Zhang, Shengzhao Wen, and Ran He. GP-NAS: Gaussian Process Based Neural Architecture Search. In *Proceedings of the 2020 IEEE Conference on Computer Vision and Pattern Recognition, Seattle, WA, USA, June 13-19, 2020*, pages 11930–11939.
- Hanwen Liang, Shifeng Zhang, Jiacheng Sun, Xingqiu He, Weiran Huang, Kechen Zhuang, and Zhenguo Li. DARTS+: Improved Differentiable Architecture Search with Early Stopping. *CoRR*, abs/1909.06035, 2019.
- Richard Liaw, Eric Liang, Robert Nishihara, Philipp Moritz, Joseph E. Gonzalez, and Ion Stoica. Tune: A Research Platform for Distributed Model Selection and Training. *CoRR*, abs/1807.05118, 2018.
- Jun Lin, Jin Ma, Jianguo Zhu, and Yu Cui. Short-term load forecasting based on LSTM networks considering attention mechanism. *International Journal of Electrical Power & Energy Systems*, 137:107818, 2022.
- Marius Lindauer and Frank Hutter. Best practices for scientific research on neural architecture search. *Journal of Machine Learning Research*, 21(243):1–18, 2020.
- Marius Lindauer, Katharina Eggensperger, Matthias Feurer, André Biedenkapp, Difan Deng, Carolin Benjamins, Tim Ruhkopf, René Sass, and Frank Hutter. SMAC3: A Versatile Bayesian Optimization Package for Hyperparameter Optimization. *Journal of Machine Learning Research*, 23:54:1–54:9, 2022.
- LinuxFoundation. PyTorch. <https://pytorch.org>, 2022. Accessed: 2022-11-04.
- Chenxi Liu, Barret Zoph, Maxim Neumann, Jonathon Shlens, Wei Hua, Li-Jia Li, Li Fei-Fei, Alan L. Yuille, Jonathan Huang, and Kevin Murphy. Progressive Neural Architecture Search. In *Proceedings of the 15th European Conference on Computer Vision, Munich, Germany, September 8-14, 2018*, pages 19–35.

Bibliography

- Chenxi Liu, Liang-Chieh Chen, Florian Schroff, Hartwig Adam, Wei Hua, Alan L Yuille, and Li Fei-Fei. Auto-deeplab: Hierarchical neural architecture search for semantic image segmentation. In *Proceedings of the 2019 IEEE Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, June 16-20, 2019*, pages 82–92.
- Hanxiao Liu, Karen Simonyan, Oriol Vinyals, Chrisantha Fernando, and Koray Kavukcuoglu. Hierarchical Representations for Efficient Architecture Search. In *Proceedings of the 6th International Conference on Learning Representations, Vancouver, BC, Canada, April 30 - May 3, 2018*.
- Hanxiao Liu, Karen Simonyan, and Yiming Yang. DARTS: Differentiable Architecture Search. In *Proceedings of the 7th International Conference on Learning Representations, New Orleans, LA, USA, May 6-9, 2019*.
- Sijia Liu, Parikshit Ram, Deepak Vijaykeerthy, Djallel Bouneffouf, Gregory Bramble, Horst Samulowitz, Dakuo Wang, Andrew Conn, and Alexander G. Gray. An ADMM Based Framework for AutoML Pipeline Configuration. In *Proceedings of the 34th AAAI Conference on Artificial Intelligence, New York, NY, USA, February 7-12, 2020*, pages 4892–4899.
- Yuqiao Liu, Yanan Sun, Bing Xue, Mengjie Zhang, Gary G. Yen, and Kay Chen Tan. A Survey on Evolutionary Neural Architecture Search. *IEEE Transactions on Neural Networks and Learning Systems*, 34(2):550–570, 2023.
- James Robert Lloyd. GEFCom2012 hierarchical load forecasting: Gradient boosting machines and Gaussian processes. *International Journal of Forecasting*, 30(2):369–374, 2014.
- Pablo Ribalta Lorenzo and Jakub Nalepa. Memetic evolution of deep neural networks. In *Proceedings of the genetic and evolutionary computation conference, Kyoto, Japan, July 15-19, 2018*, pages 505–512.
- Jonathan Lorraine, Paul Vicol, and David Duvenaud. Optimizing millions of hyperparameters by implicit differentiation. In *Proceedings of the International Conference on Artificial Intelligence and Statistics, Virtual Event, August 26-28, 2020*, pages 1540–1552.
- Ilya Loshchilov and Frank Hutter. CMA-ES for Hyperparameter Optimization of Deep Neural Networks. *CoRR*, abs/1604.07269, 2016.
- Ilya Loshchilov, Marc Schoenauer, and Michèle Sebag. Self-adaptive surrogate-assisted covariance matrix adaptation evolution strategy. In *Proceedings of the Genetic and Evolutionary Computation Conference, Philadelphia, PA, USA, July 7-11, 2012*, pages 321–328.
- Ilya Loshchilov, Marc Schoenauer, and Michèle Sebag. Bi-population CMA-ES algorithms with surrogate models and line searches. In *Proceedings of the Genetic*

- and *Evolutionary Computation Conference, Amsterdam, The Netherlands, July 6-10, 2013, Companion Material Proceedings*, pages 1177–1184.
- Nuno Lourenço, Filipe Assunção, Francisco B Pereira, Ernesto Costa, and Penousal Machado. Structured grammatical evolution: a dynamic approach. In *Handbook of Grammatical Evolution*, pages 137–161. Springer, 2018.
- Shun Lu, Jixiang Li, Jianchao Tan, Sen Yang, and Ji Liu. TNASP: A Transformer-based NAS Predictor with a Self-evolution Framework. In *Proceedings of the 35th Annual Conference on Neural Information Processing Systems, Virtual Event, December 6-14, 2021*, pages 15125–15137.
- Zhichao Lu, Ian Whalen, Vishnu Boddeti, Yashesh Dhebar, Kalyanmoy Deb, Erik Goodman, and Wolfgang Banzhaf. Nsga-net: neural architecture search using multi-objective genetic algorithm. In *Proceedings of the Genetic and Evolutionary Computation Conference, Prague, Czech Republic, July 13 - 17, 2019*, pages 419–427.
- Carl Henning Lubba, Sarab S. Sethi, Philip Knaute, Simon R. Schultz, Ben D. Fulcher, and Nick S. Jones. catch22: CAnonical Time-series CHaracteristics. *CoRR*, abs/1901.10200, 2019.
- Renqian Luo, Fei Tian, Tao Qin, Enhong Chen, and Tie-Yan Liu. Neural Architecture Optimization. In *Proceedings of the 32nd Annual Conference on Neural Information Processing Systems, Montréal, Canada, December 3-8, 2018*, pages 7827–7838.
- Manuel López-Ibáñez, Jérémie Dubois-Lacoste, Leslie Pérez Cáceres, Mauro Birattari, and Thomas Stützle. The irace package: Iterated racing for automatic algorithm configuration. *Operations Research Perspectives*, 3:43 – 58, 2016.
- Dougal Maclaurin, David Duvenaud, and Ryan Adams. Gradient-based hyperparameter optimization through reversible learning. In *Proceedings of the 32nd International conference on machine learning, Lille, France, July 6-11, 2015*, pages 2113–2122.
- Essam Mahmoud. Accuracy in forecasting: A survey. *Journal of Forecasting*, pages 139–159, 1984.
- Shahar Mahpod and Yosi Keller. Auto-ML Deep Learning for Rashi Scripts OCR. *CoRR*, abs/1811.01290, 2018.
- Maren Mahsereci, Lukas Balles, Christoph Lassner, and Philipp Hennig. Early Stopping without a Validation Set. *CoRR*, abs/1703.09580, 2017.
- Spyros Makridakis, Evangelos Spiliotis, and Vassilios Assimakopoulos. Statistical and Machine Learning forecasting methods: Concerns and ways forward. *PLOS ONE*, 13(3), 2018.
- Spyros Makridakis, Evangelos Spiliotis, Vassilios Assimakopoulos, Zhi Chen, Anil Gaba, Ilia Tsetlin, and Robert L Winkler. The M5 Uncertainty competition: Results, findings and conclusions. *International Journal of Forecasting*, 2021.

Bibliography

- Henry B Mann and Donald R Whitney. On a test of whether one of two random variables is stochastically larger than the other. *The Annals of Mathematical Statistics*, pages 50–60, 1947.
- Mitch Marcus, Grace Kim, Mary Ann Marcinkiewicz, Robert MacIntyre, Ann Bies, Mark Ferguson, Karen Katz, and Britta Schasberger. The Penn treebank: Annotating predicate argument structure. In *Human Language Technology: Proceedings of a Workshop held at Plainsboro, New Jersey, March 8-11, 1994*.
- Oded Maron and Andrew W. Moore. Hoeffding Races: Accelerating Model Selection Search for Classification and Function Approximation. In *Proceedings of the Advances in Neural Information Processing Systems, Denver, Colorado, USA, 1993*, pages 59–66.
- Ruben Martinez-Cantin. Bayesopt: A bayesian optimization library for nonlinear optimization, experimental design and bandits. *The Journal of Machine Learning Research*, 15(1):3735–3739, 2014.
- Robert I. McKay, Nguyen Xuan Hoai, Peter Alexander Whigham, Yin Shan, and Michael O’Neill. Grammar-based Genetic Programming: a survey. *Genetic Programming and Evolvable Machines*, 11(3-4):365–396, 2010.
- Joe Mellor, Jack Turner, Amos Storkey, and Elliot J Crowley. Neural architecture search without training. In *Proceedings of the 38th International Conference on Machine Learning, Virtual Event, July 18-24, 2021*, pages 7588–7598.
- Hector Mendoza, Aaron Klein, Matthias Feurer, Jost Tobias Springenberg, and Frank Hutter. Towards Automatically-Tuned Neural Networks. In *Proceedings of the Workshop on Automatic Machine Learning, New York, NY, USA, June 24, 2016*, pages 58–65.
- Kittipong Methaprayoon, Wei-Jen Lee, Sothaya Rasmiddatta, James R. Liao, and Richard J. Ross. Multistage Artificial Neural Network Short-Term Load Forecasting Engine With Front-End Weather Forecast. *IEEE Transactions on Industry Applications*, 43(6):1410–1416, 2007.
- Microsoft. Microsoft Neural Network Intelligence. <https://github.com/microsoft/nni>, 2021. Accessed: 2021-11-04.
- Risto Miikkulainen, Jason Liang, Elliot Meyerson, Aditya Rawal, Daniel Fink, Olivier Francon, Bala Raju, Hormoz Shahrzad, Arshak Navruzyan, Nigel Duffy, et al. Evolving deep neural networks. In *Artificial intelligence in the age of neural networks and brain computing*, pages 293–312. Elsevier, 2019.
- José Del R Millán, Daniele Posenato, and Eric Dedieu. Continuous-action Q-learning. *Machine Learning*, 49(2):247–265, 2002.
- Felix Mohr and Jan N. van Rijn. Fast and Informative Model Selection using Learning Curve Cross-Validation. *CoRR*, abs/2111.13914, 2021.

- Felix Mohr and Jan N. van Rijn. Learning Curves for Decision Making in Supervised Machine Learning - A Survey. *CoRR*, abs/2201.12150, 2022.
- Felix Mohr and Marcel Wever. Naive automated machine learning. *Machine Learning*, pages 1–40, 2022.
- Felix Mohr, Marcel Wever, and Eyke Hüllermeier. ML-Plan: Automated machine learning via hierarchical planning. *Machine Learning*, 107(8):1495–1515, 2018.
- Felix Mohr, Tom J. Viering, Marco Loog, and Jan N. van Rijn. LCDB 1.0: An Extensive Learning Curves Database for Classification Tasks. In *Proceedings of the 2022 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Grenoble, France, September 19-23, 2022*.
- Juan Pablo Muñoz, Nikolay Lyalyushkin, Chaunte Willetta Lacewell, Anastasia Senina, Daniel Cummings, Anthony Sarah, Alexander Kozlov, and Nilesch Jain. Automated Super-Network Generation for Scalable Neural Architecture Search. In *Proceedings of the International Conference on Automated Machine Learning, Baltimore, MD, USA, 25-27 July 2022, Johns Hopkins University*, pages 5/1–15.
- Raphael Nedellec, Jairo Cugliari, and Yannig Goude. GEFCom2012: Electric load forecasting and backcasting with semi-parametric models. *International Journal of Forecasting*, 30(2):375–381, 2014.
- Renato Negrinho and Geoffrey J. Gordon. DeepArchitect: Automatically Designing and Training Deep Architectures. *CoRR*, abs/1704.08792, 2017.
- Nam Nguyen and J. Morris Chang. CSNAS: Contrastive Self-Supervised Learning Neural Architecture Search Via Sequential Model-Based Optimization. *IEEE Transactions on Artificial Intelligence*, 3(4):609–624, 2022.
- Vu Nguyen, Tam Le, Makoto Yamada, and Michael A Osborne. Optimal transport kernels for sequential and parallel neural architecture search. In *Proceedings of the 38th International Conference on Machine Learning, Virtual Event, July 18-24, 2021*, pages 8084–8095.
- Hongzhan Nie, Guohui Liu, Xiaoman Liu, and Yong Wang. Hybrid of ARIMA and SVMs for Short-Term Load Forecasting. *Energy Procedia*, 16:1455 – 1460, 2012.
- Nikolay O. Nikitin, Pavel Vychuzhanin, Mikhail Sarafanov, Iana S. Polonskaia, Ilia Revin, Irina V. Barabanova, Gleb Maximov, Anna V. Kalyuzhnaya, and Alexander Boukhanovsky. Automated evolutionary approach for the design of composite machine learning pipelines. *Future Generation Computer Systems*, 127:109–125, 2022.
- Fernando Nogueira. Bayesian Optimization: Open source constrained global optimization tool for Python. <https://github.com/fmfn/BayesianOptimization>, 2014. Accessed: 2022-11-04.

Bibliography

- Randal S. Olson, Nathan Bartley, Ryan J. Urbanowicz, and Jason H. Moore. Evaluation of a Tree-based Pipeline Optimization Tool for Automating Data Science. In *Proceedings of the Genetic and Evolutionary Computation Conference, Denver, CO, USA, July 20-24, 2016*, pages 485–492.
- Randal S. Olson, Ryan J. Urbanowicz, Peter C. Andrews, Nicole A. Lavender, La Creis Kidd, and Jason H. Moore. Automating Biomedical Data Science Through Tree-Based Pipeline Optimization. In *Proceedings of the Applications of Evolutionary Computation: 19th European Conference, Porto, Portugal, March 30 – April 1, 2016*, pages 123–137.
- Boris N. Oreshkin, Dmitri Carпов, Nicolas Chapados, and Yoshua Bengio. N-BEATS: Neural basis expansion analysis for interpretable time series forecasting. *CoRR*, abs/1905.10437, 2019.
- Boris N. Oreshkin, Dmitri Carпов, Nicolas Chapados, and Yoshua Bengio. Meta-Learning Framework with Applications to Zero-Shot Time-Series Forecasting. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence, Virtual Event, February 2-9, 2021*, pages 9242–9250.
- Gilles Ottervanger, Mitra Baratchi, and Holger H Hoos. MultiETSC: automated machine learning for early time series classification. *Data Mining and Knowledge Discovery*, 35(6):2602–2654, 2021.
- Laurent Parmentier, Olivier Nicol, Laetitia Jourdan, and Marie-Eléonore Kessaci. TPOT-SH: A Faster Optimization Algorithm to Solve the AutoML Problem on Large Datasets. In *Proceedings of the 31st IEEE International Conference on Tools with Artificial Intelligence, Portland, OR, USA, November 4-6, 2019*, pages 471–478.
- Fabian Pedregosa, Gaël Varoquaux, Alexandre Gramfort, Vincent Michel, Bertrand Thirion, Olivier Grisel, Mathieu Blondel, Peter Prettenhofer, Ron Weiss, Vincent Dubourg, Jake Vanderplas, Alexandre Passos, David Cournapeau, Matthieu Brucher, Matthieu Perrot, and Édouard Duchesnay. Scikit-learn: Machine Learning in Python. *Journal of Machine Learning Research*, 12:2825–2830, 2011.
- Valerio Perrone, Huibin Shen, Matthias W. Seeger, Cédric Archambeau, and Rodolphe Jenatton. Learning search spaces for Bayesian optimization: Another view of hyperparameter transfer learning. In *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems, Vancouver, BC, Canada, December 8-14, 2019*, pages 12751–12761.
- Valerio Perrone, Michele Donini, Muhammad Bilal Zafar, Robin Schmucker, Krishnamurthy Kenthapadi, and Cédric Archambeau. Fair bayesian optimization. In *Proceedings of the 2021 AAAI/ACM Conference on AI, Ethics, and Society, Virtual Event, May 19-21, 2021*, pages 854–863.
- Gabriel Peyré and Marco Cuturi. Computational Optimal Transport. *Foundations and Trends in Machine Learning*, 11(5-6):355–607, 2019.

- Florian Pfisterer, Jan Nicolaas van Rijn, Philipp Probst, Andreas Müller, and Bernd Bischl. Learning multiple defaults for machine learning algorithms. In *Proceedings of the Genetic and Evolutionary Computation Conference, Companion Volume, Lille, France, July 10-14, 2021*, pages 241–242.
- Hieu Pham, Melody Guan, Barret Zoph, Quoc Le, and Jeff Dean. Efficient Neural Architecture Search via Parameters Sharing. In *Proceedings of the 35th International Conference on Machine Learning, Stockholmsmässan, Stockholm Sweden, July 10-15, 2018*, pages 4095–4104.
- Angkoon Phinyomark, Franck Quaine, Sylvie Charbonnier, Christine Serviere, Franck Tarpin-Bernard, and Yann Laurillau. Feature extraction of the first difference of EMG time series for EMG pattern recognition. *Computer Methods and Programs in Biomedicine*, 117(2):247–256, 2014.
- Foster J. Provost, David D. Jensen, and Tim Oates. Efficient Progressive Sampling. In *Proceedings of the 5th ACM International Conference on Knowledge Discovery & Data Mining, San Diego, CA, USA, August 15-18, 1999*, pages 23–32.
- Friedrich Pukelsheim. *Optimal design of experiments*. SIAM classics edition, SIAM, 2006.
- Aravind Rajeswaran, Chelsea Finn, Sham M. Kakade, and Sergey Levine. Meta-Learning with Implicit Gradients. In *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems, Vancouver, BC, Canada, December 8-14, 2019*, pages 113–124.
- Herilalaina Rakotoarison, Marc Schoenauer, and Michèle Sebag. Automated Machine Learning with Monte-Carlo Tree Search. In *Proceedings of the 28th International Joint Conference on Artificial Intelligence, Macao, China, August 10-16, 2019*, pages 3296–3303.
- Jesse Read, Peter Reutemann, Bernhard Pfahringer, and Geoff Holmes. MEKA: A Multi-label/Multi-target Extension to Weka. *Journal of Machine Learning Research*, 17(21):1–5, 2016.
- Esteban Real, Sherry Moore, Andrew Selle, Saurabh Saxena, Yutaka Leon Suematsu, Jie Tan, Quoc V. Le, and Alexey Kurakin. Large-Scale Evolution of Image Classifiers. In *Proceedings of the 34th International Conference on Machine Learning, Sydney, NSW, Australia, August 6-11, 2017*, pages 2902–2911.
- Esteban Real, Alok Aggarwal, Yanping Huang, and Quoc V. Le. Regularized Evolution for Image Classifier Architecture Search. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence, Honolulu, HI, USA, January 27 - February 1, 2019*, pages 4780–4789.
- Bin Xin Ru, Xingchen Wan, Xiaowen Dong, and Michael A. Osborne. Neural Architecture Search using Bayesian Optimisation with Weisfeiler-Lehman Kernel. *CoRR*, abs/2006.07556, 2020a.

Bibliography

- Robin Ru, Pedro Esperanca, and Fabio Maria Carlucci. Neural architecture generator optimization. *Advances in Neural Information Processing Systems*, 33:12057–12069, 2020b.
- Ashish Sabharwal, Horst Samulowitz, and Gerald Tesauro. Selecting Near-Optimal Learners via Incremental Data Allocation. In *Proceedings of the 30th AAAI Conference on Artificial Intelligence, Phoenix, Arizona, USA, February 12-17, 2016*, pages 2007–2015.
- David Salinas, Matthias W. Seeger, Aaron Klein, Valerio Perrone, Martin Wistuba, and Cédric Archambeau. Syne Tune: A Library for Large Scale Hyperparameter Tuning and Reproducible Research. In *Proceedings of the International Conference on Automated Machine Learning, Johns Hopkins University, Baltimore, MD, USA, 25-27 July 2022*, pages 16/1–23.
- Nelly Rosaura Palacios Salinas, Mitra Baratchi, Jan N. van Rijn, and Andreas Vollrath. Automated Machine Learning for Satellite Data: Integrating Remote Sensing Pre-trained Models into AutoML Systems. In *Proceedings of the 2021 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Virtual Event, 13-17 September, 2021*, pages 447–462.
- Shreyas Saxena and Jakob Verbeek. Convolutional neural fabrics. *Advances in neural information processing systems*, 29:4053–4061, 2016.
- Alexander Scriven, David Jacob Kedziora, Katarzyna Musial, and Bogdan Gabrys. The Technological Emergence of AutoML: A Survey of Performant Software and Applications in the Context of Industry. *CoRR*, abs/2211.04148, 2022.
- Matthias W Seeger, Christopher KI Williams, and Neil D Lawrence. Fast forward selection to speed up sparse Gaussian process regression. In *Proceedings of the International Workshop on Artificial Intelligence and Statistics, Key West, FL, USA, January 3 - 6, 2003*, pages 254–261.
- Bobak Shahriari, Kevin Swersky, Ziyu Wang, Ryan P. Adams, and Nando de Freitas. Taking the Human Out of the Loop: A Review of Bayesian Optimization. *Proceedings of the IEEE*, 104(1):148–175, 2016.
- Shai Shalev-Shwartz, Koby Crammer, Ofer Dekel, and Yoram Singer. Online Passive-Aggressive Algorithms. In *Proceedings of the Advances in Neural Information Processing Systems 16: Annual Conference on Neural Information Processing Systems 2003, December 8-13, 2003, Vancouver and Whistler, British Columbia, Canada*, pages 1229–1236.
- Zeyuan Shang, Emanuel Zraggen, Benedetto Buratti, Ferdinand Kossmann, Philipp Eichmann, Yeounoh Chung, Carsten Binnig, Eli Upfal, and Tim Kraska. Democratizing Data Science through Interactive Curation of ML Pipelines. In *Proceedings of the 2019 International Conference on Management of Data*, pages 1171–1188.

- Han Shi, Renjie Pi, Hang Xu, Zhenguo Li, James T. Kwok, and Tong Zhang. Bridging the Gap between Sample-based and One-shot Neural Architecture Search with BONAS. In *Proceedings of the 34th Annual Conference on Neural Information Processing Systems, Virtual Event, December 6-12, 2020*.
- Xingjian Shi, Jonas Mueller, Nick Erickson, Mu Li, and Alex Smola. Multimodal AutoML on Structured Tables with Text Fields. In *Proceedings of the 38th International Conference on Machine Learning Workshop on Automated Machine Learning (AutoML), Virtual Event, July 18-24, 2021*.
- Richard Shin, Charles Packer, and Dawn Song. Differentiable Neural Network Architecture Search. In *Workshop track proceedings of the 6th International Conference on Learning Representations, Vancouver, BC, Canada, April 30 - May 3, 2018*.
- Sima Siami-Namini, Neda Tavakoli, and Akbar Siami Nami. A Comparison of ARIMA and LSTM in Forecasting Time Series. In *Proceedings of the 17th IEEE International Conference on Machine Learning and Applications, Orlando, FL, USA, December 17-20, 2018*, pages 1394–1401.
- David Silver, Julian Schrittwieser, Karen Simonyan, Ioannis Antonoglou, Aja Huang, Arthur Guez, Thomas Hubert, Lucas Baker, Matthew Lai, Adrian Bolton, et al. Mastering the game of go without human knowledge. *nature*, 550(7676):354–359, 2017.
- David Silver, Thomas Hubert, Julian Schrittwieser, Ioannis Antonoglou, Matthew Lai, Arthur Guez, Marc Lanctot, Laurent Sifre, Dhharshan Kumaran, Thore Graepel, et al. A general reinforcement learning algorithm that masters chess, shogi, and Go through self-play. *Science*, 362(6419):1140–1144, 2018.
- Dan Simon. *Evolutionary Optimization Algorithms*. Wiley Online Library, 2013.
- Taylor G. Smith et al. pmdarima: ARIMA estimators for Python, 2017. [Online; accessed 01-04-2021].
- Jasper Snoek, Hugo Larochelle, and Ryan P. Adams. Practical Bayesian Optimization of Machine Learning Algorithms. In *Proceedings of the 25th Annual Conference on Neural Information Processing Systems, Lake Tahoe, NV, USA, Dec 3 - 6, 2012*, pages 2951–2959.
- Jasper Snoek, Kevin Swersky, Richard S. Zemel, and Ryan P. Adams. Input Warping for Bayesian Optimization of Non-Stationary Functions. In *Proceedings of the 31th International Conference on Machine Learning, Beijing, China, June 21–June 26, 2014*, pages 1674–1682.
- Computer software. Autonomio Talos. <http://github.com/autonomio/talos>, 2020.
- Antti Sorjamaa and Amaury Lendasse. Time series prediction using DirRec strategy. In *Proceedings of the 14th European Symposium on Artificial Neural Networks, Bruges, Belgium, April 26-28, 2006*, pages 143–148.

Bibliography

- Jost Tobias Springenberg, Aaron Klein, Stefan Falkner, and Frank Hutter. Bayesian Optimization with Robust Bayesian Neural Networks. In *Proceedings of the 30th Annual Conference on Neural Information Processing Systems, Barcelona, Spain, December 5-10, 2016*, pages 4134–4142.
- Ankit Kumar Srivastava, Ajay Shekhar Pandey, and Devender Singh. Short-term load forecasting methods: A review. In *Proceedings of the 2016 International Conference on Emerging Trends in Electrical Electronics Sustainable Energy Systems, Sultanpur, India, March 11-12, 2016*, pages 130–138.
- Tushar Srivastava, Vedanshu, and MM Tripathi. Predictive analysis of RNN, GBM and LSTM network for short-term wind power forecasting. *Journal of Statistics and Management Systems*, 23(1):33–47, 2020.
- Iain Staffell and Mazda Rustomji. Maximising the value of electricity storage. *Journal of Energy Storage*, 8:212 – 225, 2016.
- Kenneth O. Stanley and Risto Miikkulainen. Evolving Neural Networks Through Augmenting Topologies. *Evolutionary Computation*, 10(2):99–127, 2002a.
- Kenneth O. Stanley and Risto Miikkulainen. Efficient Reinforcement Learning Through Evolving Neural Network Topologies. In *Proceedings of the Genetic and Evolutionary Computation Conference, New York, NY, USA, July 9-13, 2002*, page 9.
- Kenneth O Stanley, David B D’Ambrosio, and Jason Gauci. A hypercube-based encoding for evolving large-scale neural networks. *Artificial life*, 15(2):185–212, 2009.
- James H Stock and Mark Watson. Dynamic factor models. *Oxford Handbooks Online*, 2011.
- Masanori Suganuma, Shinichi Shirakawa, and Tomoharu Nagao. A Genetic Programming Approach to Designing Convolutional Neural Network Architectures. In *Proceedings of the 27th International Joint Conference on Artificial Intelligence, Stockholm, Sweden, July 13-19, 2018*, pages 5369–5373.
- Yanan Sun, Bing Xue, Mengjie Zhang, Gary G Yen, and Jiancheng Lv. Automatically designing CNN architectures using the genetic algorithm for image classification. *IEEE transactions on cybernetics*, 50(9):3840–3854, 2020.
- Richard S Sutton and Andrew G Barto. *Reinforcement learning: An introduction*. MIT press, 2018.
- Thomas Swearingen, Will Drevo, Bennett Cyphers, Alfredo Cuesta-Infante, Arun Ross, and Kalyan Veeramachaneni. ATM: A distributed, collaborative, scalable system for automated machine learning. In *Proceedings of the 2017 IEEE International Conference on Big Data, Boston, MA, USA, December 11-14, 2017*, pages 151–162.

- Kevin Swersky, Jasper Snoek, and Ryan Prescott Adams. Multi-Task Bayesian Optimization. In *Proceedings of the 27th Annual Conference on Neural Information Processing Systems. Lake Tahoe, NV, United States December 5-8, 2013*, pages 2004–2012.
- Kevin Swersky, David Duvenaud, Jasper Snoek, Frank Hutter, and Michael A Osborne. Raiders of the lost architecture: Kernels for Bayesian optimization in conditional parameter spaces. *arXiv*, 2014a.
- Kevin Swersky, Jasper Snoek, and Ryan Prescott Adams. Freeze-Thaw Bayesian Optimization. *CoRR*, abs/1406.3896, 2014b.
- Souhaib Ben Taieb and Gianluca Bontempi. Recursive Multi-step Time Series Forecasting by Perturbing Data. In *Proceedings of the 11th IEEE International Conference on Data Mining, Vancouver, BC, Canada, December 11-14, 2011*, pages 695–704.
- Souhaib Ben Taieb, Gianluca Bontempi, Amir F. Atiya, and Antti Sorjamaa. A review and comparison of strategies for multi-step ahead time series forecasting based on the NN5 forecasting competition. *Expert Systems with Applications*, 39(8):7067–7083, 2012.
- Chang Wei Tan, Christoph Bergmeir, François Petitjean, and Geoffrey I. Webb. Time series extrinsic regression. *Data Mining and Knowledge Discovery*, 35(3):1032–1060, 2021.
- Mingxing Tan, Bo Chen, Ruoming Pang, Vijay Vasudevan, Mark Sandler, Andrew Howard, and Quoc V. Le. MnasNet: Platform-Aware Neural Architecture Search for Mobile. In *Proceedings of the 2019 IEEE Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, June 16-20, 2019*.
- Laurits Tani, Diana Rand, Christian Veelken, and Mario Kadastik. Evolutionary algorithms for hyperparameter optimization in machine learning for application in high energy physics. *The European Physical Journal C*, 81(2):1–9, 2021.
- Paul Templier, Emmanuel Rachelson, and Dennis G. Wilson. A Geometric Encoding for Neural Network Evolution. In *Proceedings of the Genetic and Evolutionary Computation Conference*, page 919–927.
- Jaco Tetteroo, Mitra Baratchi, and Holger H. Hoos. Automated Machine Learning for COVID-19 Forecasting. *IEEE Access*, 10:94718–94737, 2022.
- Abhishek Thakur and Artus Krohn-Grimberghe. AutoCompete: A Framework for Machine Learning Competition. In *Proceedings of the 32nd International Conference on Machine Learning Workshop on Automated Machine Learning, Lille, France, July 6-11, 2015*.
- Sergios Theodoridis. *Machine Learning: A Bayesian and Optimization Perspective*. Academic Press, Inc., Orlando, FL, USA, 1st edition, 2015.

Bibliography

- William R Thompson. On the likelihood that one unknown probability exceeds another in view of the evidence of two samples. *Biometrika*, 25(3/4):285–294, 1933.
- Chris Thornton, Frank Hutter, Holger H. Hoos, and Kevin Leyton-Brown. AutoWEKA: Combined Selection and Hyperparameter Optimization of Classification Algorithms. In *Proceedings of the 19th ACM International Conference on Knowledge Discovery & Data Mining, Chicago, IL, USA, August 11-14, 2013*, pages 847–855.
- Dafne van Kuppevelt, Christiaan Meijer Meijer, Florian Huber, Atze van der Ploeg, Sonja Georgievskaja, and Vincent Theodoor van Hees. Mcfly: Automated deep learning on time series. *SoftwareX*, 12:100548, 2020.
- Jan N. van Rijn and Frank Hutter. Hyperparameter Importance Across Datasets. In *Proceedings of the 24th ACM International Conference on Knowledge Discovery & Data Mining, London, UK, August 19-23, 2018*, pages 2367–2376.
- Jan N. van Rijn, Salisu Mamman Abdulrahman, Pavel Brazdil, and Joaquin Vanschoren. Fast Algorithm Selection Using Learning Curves. In *Advances in Intelligent Data Analysis XIV - the Proceedings of the 14th International Symposium, Saint Etienne, France, October 22-24, 2015*, pages 298–309.
- Joaquin Vanschoren, Jan N. van Rijn, Bernd Bischl, and Luis Torgo. OpenML: Networked Science in Machine Learning. *SIGKDD Explorations*, 15(2):49–60, 2013.
- Sudhir Varma and Richard Simon. Bias in error estimation when using cross-validation for model selection. *BMC Bioinformatics*, 7:91, 2006.
- Xingchen Wan, Binxin Ru, Pedro M. Esperança, and Zhenguo Li. On Redundancy and Diversity in Cell-based Neural Architecture Search. In *Proceedings of the 10th International Conference on Learning Representations, Virtual Event, April 25-29, 2022*.
- Can Wang, Thomas Bäck, Holger H. Hoos, Mitra Baratchi, Steffen Limmer, and Markus Olhofer. Automated Machine Learning for Short-term Electric Load Forecasting. In *Proceedings of the IEEE Symposium Series on Computational Intelligence, Xiamen, China, December 6-9, 2019*, pages 314–321.
- Can Wang, Mitra Baratchi, Thomas Bäck, Holger H. Hoos, Steffen Limmer, and Markus Olhofer. Towards Time-Series Feature Engineering in Automated Machine Learning for Multi-Step-Ahead Forecasting. *Engineering Proceedings*, 18(1), 2022.
- Can Wang, Mitra Baratchi, Thomas Bäck, Holger H. Hoos, Steffen Limmer, and Markus Olhofer. Towards time-series-specific feature engineering in automated machine learning frameworks. *Under review at International Journal of Data Science and Analytics*, 2023.
- Chi Wang, Qingyun Wu, Markus Weimer, and Erkang Zhu. FLAML: A Fast and Lightweight AutoML Library. In *Proceedings of the Machine Learning and Systems 2021, Virtual Event, April 5-9, 2021*.

- Linnan Wang, Yiyang Zhao, Yuu Jinnai, Yuandong Tian, and Rodrigo Fonseca. Neural Architecture Search Using Deep Neural Networks and Monte Carlo Tree Search. In *Proceedings of the 34th AAAI Conference on Artificial Intelligence, New York, NY, USA, February 7-12, 2020*, pages 9983–9991.
- Pu Wang, Bidong Liu, and Tao Hong. Electric load forecasting with recency effect: A big data approach. *International Journal of Forecasting*, 32(3):585–597, 2016.
- Xiaoyue Wang, Abdullah Mueen, Hui Ding, Goce Trajcevski, Peter Scheuermann, and Eamonn Keogh. Experimental comparison of representation methods and distance measures for time series data. *Data Mining and Knowledge Discovery*, 26(2):275–309, 2013.
- Shinji Watanabe and Jonathan Le Roux. Black box optimization for automatic speech recognition. In *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 4-9, 2014*, pages 3256–3260.
- Christopher John Cornish Hellaby Watkins. *Learning from delayed rewards*. PhD thesis, University of Cambridge, 1989.
- Tao Wei, Changhu Wang, Yong Rui, and Chang Wen Chen. Network morphism. In *Proceedings of the 33rd International Conference on Machine Learning*, pages 564–572.
- Xin Wei, Lulu Zhang, Hao-Qing Yang, Limin Zhang, and Yang-Ping Yao. Machine learning for pore-water pressure time-series prediction: application of recurrent neural networks. *Geoscience Frontiers*, 12(1):453–467, 2021.
- Marcel Wever, Felix Mohr, and Eyke Hüllermeier. Automated Multi-Label Classification based on ML-Plan. *CoRR*, abs/1811.04060, 2018.
- Colin White, Willie Neiswanger, and Yash Savani. BANANAS: Bayesian Optimization with Neural Architectures for Neural Architecture Search. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence, Virtual Event, February 2-9, 2021*, pages 10293–10301.
- Colin White, Arber Zela, Robin Ru, Yang Liu, and Frank Hutter. How Powerful are Performance Predictors in Neural Architecture Search? In *Proceedings of the 35th Annual Conference on Neural Information Processing Systems, Virtual Event, December 6-14, 2021*, pages 28454–28469.
- Ronald J Williams. Simple statistical gradient-following algorithms for connectionist reinforcement learning. *Machine learning*, 8(3):229–256, 1992.
- Martin Wistuba. Finding Competitive Network Architectures Within a Day Using UCT. *CoRR*, abs/1712.07420, 2017.

Bibliography

- Martin Wistuba. Deep Learning Architecture Search by Neuro-Cell-Based Evolution with Function-Preserving Mutations. In *Proceedings of the 2018 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Dublin, Ireland, September 10-14, 2018*, pages 243–258.
- Martin Wistuba, Nicolas Schilling, and Lars Schmidt-Thieme. Hyperparameter Search Space Pruning - A New Component for Sequential Model-Based Hyperparameter Optimization. In *Proceedings of the 2015 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Porto, Portugal, September 7-11, 2015*, pages 104–119.
- Catherine Wong, Neil Houlsby, Yifeng Lu, and Andrea Gesmundo. Transfer learning with neural AutoML. In *Proceedings of the 32nd Annual Conference on Neural Information Processing Systems, Montréal, Canada, December 3-8, 2018*, pages 8366–8375.
- Bichen Wu, Xiaoliang Dai, Peizhao Zhang, Yanghan Wang, Fei Sun, Yiming Wu, Yuandong Tian, Peter Vajda, Yangqing Jia, and Kurt Keutzer. Fbnet: Hardware-aware efficient convnet design via differentiable neural architecture search. In *Proceedings of the 2019 IEEE Conference on Computer Vision and Pattern Recognition, Long Beach, CA, USA, June 16-20, 2019*, pages 10734–10742.
- Jia Wu, SenPeng Chen, and XiYuan Liu. Efficient hyperparameter optimization through model-based reinforcement learning. *Neurocomputing*, 409:381–393, 2020a.
- Qingyun Wu, Chi Wang, and Silu Huang. Frugal Optimization for Cost-related Hyperparameters. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence, Virtual Event, February 2-9, 2021*, pages 10347–10354.
- Zonghan Wu, Shirui Pan, Guodong Long, Jing Jiang, Xiaojun Chang, and Chengqi Zhang. Connecting the Dots: Multivariate Time Series Forecasting with Graph Neural Networks. In *Proceedings of the 26th ACM International Conference on Knowledge Discovery & Data Mining, Virtual Event, CA, USA, August 23-27, 2020*, pages 753–763.
- Jingrui Xie and Tao Hong. Load forecasting using 24 solar terms. *Journal of Modern Power Systems and Clean Energy*, 6(2):208–214, 2018.
- Jingrui Xie, Ying Chen, Tao Hong, and Thomas Laing. Relative Humidity for Load Forecasting Models. *IEEE Transactions on Smart Grid*, 9(1):191–198, 2018.
- Lingxi Xie and Alan Yuille. Genetic CNN. In *Proceedings of the 2017 IEEE international conference on computer vision, Venice, Italy, October 22-29, 2017*, pages 1379–1388.
- Lingxi Xie, Xin Chen, Kaifeng Bi, Longhui Wei, Yuhui Xu, Lanfei Wang, Zhengsu Chen, An Xiao, Jianlong Chang, Xiaopeng Zhang, and Qi Tian. Weight-Sharing Neural Architecture Search: A Battle to Shrink the Optimization Gap. *ACM Computing Surveys*, 54(9):183:1–183:37, 2022a.

- Sirui Xie, Hehui Zheng, Chunxiao Liu, and Liang Lin. SNAS: stochastic neural architecture search. In *Proceedings of the 7th International Conference on Learning Representations, New Orleans, LA, USA, May 6-9, 2019*.
- Xiangning Xie, Yuqiao Liu, Yanan Sun, Gary G. Yen, Bing Xue, and Mengjie Zhang. BenchENAS: A Benchmarking Platform for Evolutionary Neural Architecture Search. *IEEE Transactions on Evolutionary Computation*, 26(6):1473–1485, 2022b.
- Tao Xiong, Yukun Bao, and Zhongyi Hu. Beyond one-step-ahead forecasting: evaluation of alternative multi-step-ahead forecasting models for crude oil prices. *Energy Economics*, 40:405–415, 2013.
- Yuhui Xu, Lingxi Xie, Xiaopeng Zhang, Xin Chen, Guo-Jun Qi, Qi Tian, and Hongkai Xiong. PC-DARTS: Partial Channel Connections for Memory-Efficient Architecture Search. In *Proceedings of the 8th International Conference on Learning Representations, Addis Ababa, Ethiopia, April 26-30, 2020*.
- Song Xue, Runqi Wang, Baochang Zhang, Tian Wang, Guodong Guo, and David S. Doermann. IDARTS: Interactive Differentiable Architecture Search. In *Proceedings of the 2021 IEEE International Conference on Computer Vision, Montreal, QC, Canada, October 10-17, 2021*, pages 1143–1152.
- Anatoly Yakovlev, Hesam Fathi Moghadam, Ali Moharrer, Jingxiao Cai, Nikan Chavoshi, Venkatanathan Varadarajan, Sandeep R. Agrawal, Tomas Karnagel, Sam Idicula, Sanjay Jinturkar, and Nipun Agarwal. Oracle AutoML: A Fast and Predictive AutoML Pipeline. *Proceedings of the VLDB Endowment*, 13(12):3166–3180, 2020.
- Peter T. Yamak, Li Yujian, and Pius Kwao Gadosey. A Comparison between ARIMA, LSTM, and GRU for Time Series Forecasting. In *Proceedings of the 2nd International Conference on Algorithms, Computing and Artificial Intelligence, Sanya, China, December 20-22, 2019*, pages 49–55.
- Chengrun Yang, Yuji Akimoto, Dae Won Kim, and Madeleine Udell. OBOE: Collaborative Filtering for AutoML Model Selection. In *Proceedings of the 25th ACM International Conference on Knowledge Discovery & Data Mining, Anchorage, AK, USA, August 4-8, 2019*, pages 1173–1183.
- Chengrun Yang, Jicong Fan, Ziyang Wu, and Madeleine Udell. AutoML Pipeline Selection: Efficiently Navigating the Combinatorial Space. In *Proceedings of the 26th ACM International Conference on Knowledge Discovery & Data Mining*, pages 1446–1456.
- Xin Yao. Evolving artificial neural networks. *Proceedings of the IEEE*, 87(9):1423–1447, 1999.

Bibliography

- Ibrahim Yazici, Omer Faruk Beyca, and Dursun Delen. Deep-learning-based short-term electricity load forecasting: A real case application. *Engineering Applications of Artificial Intelligence*, 109:104645, 2022.
- Peng Ye, Baopu Li, Yikang Li, Tao Chen, Jiayuan Fan, and Wanli Ouyang. b-DARTS: Beta-Decay Regularization for Differentiable Architecture Search. In *Proceedings of the 2022 IEEE Conference on Computer Vision and Pattern Recognition, New Orleans, LA, USA, June 19-20, 2022*, pages 10874–10883.
- Yelp. Metric Optimization Engine. <https://github.com/Yelp/MOE>, 2014.
- Chris Ying, Aaron Klein, Eric Christiansen, Esteban Real, Kevin Murphy, and Frank Hutter. Nas-bench-101: Towards reproducible neural architecture search. In *Proceedings of the 36th International Conference on Machine Learning, Long Beach, California, USA, June 9-15, 2019*, pages 7105–7114.
- Kaicheng Yu, Christian Sciuto, Martin Jaggi, Claudiu Musat, and Mathieu Salzmann. Evaluating The Search Phase of Neural Architecture Search. In *Proceedings of the 8th International Conference on Learning Representations, Addis Ababa, Ethiopia, April 26-30, 2020*.
- Baichuan Yuan, Yen Joe Tan, Maruti K Mudunuru, Omar E Marcillo, Andrew A De-lorey, Peter M Roberts, Jeremy D Webster, Christine NL Gammans, Satish Karra, George D Guthrie, et al. Using machine learning to discern eruption in noisy environments: A case study using CO₂-driven cold-water geyser in Chimayó, New Mexico. *Seismological Research Letters*, 90(2A):591–603, 2019.
- Sergey Zagoruyko and Nikos Komodakis. Wide Residual Networks. In *Proceedings of the British Machine Vision Conference 2016, York, UK, September 19-22, 2016*.
- Arber Zela, Aaron Klein, Stefan Falkner, and Frank Hutter. Towards Automated Deep Learning: Efficient Joint Neural Architecture and Hyperparameter Search. *CoRR*, abs/1807.06906, 2018.
- Arber Zela, Julien Siems, and Frank Hutter. NAS-Bench-1Shot1: Benchmarking and Dissecting One-shot Neural Architecture Search. In *Proceedings of the 8th International Conference on Learning Representations, Addis Ababa, Ethiopia, April 26-30, 2020*.
- Arber Zela, Julien Niklas Siems, Lucas Zimmer, Jovita Lukasik, Margret Keuper, and Frank Hutter. Surrogate NAS Benchmarks: Going Beyond the Limited Search Spaces of Tabular NAS Benchmarks. In *Proceedings of the 10th International Conference on Learning Representations, Virtual Event, April 25-29, 2022*.
- Chris Zhang, Mengye Ren, and Raquel Urtasun. Graph HyperNetworks for Neural Architecture Search. In *Proceedings of the 7th International Conference on Learning Representations, New Orleans, LA, USA, May 6-9, 2019*.

- Haoyu Zhang, Yaochu Jin, and Kuangrong Hao. Evolutionary Search for Complete Neural Network Architectures With Partial Weight Sharing. *IEEE Transactions on Evolutionary Computation*, 26(5):1072–1086, 2022a.
- Miao Zhang, Huiqi Li, Shirui Pan, Xiaojun Chang, and Steven Su. Overcoming multi-model forgetting in one-shot NAS with diversity maximization. In *Proceedings of the 2020 IEEE Conference on Computer Vision and Pattern Recognition, Seattle, WA, USA, June 13-19, 2020*, pages 7809–7818.
- Wentao Zhang, Zheyu Lin, Yu Shen, Yang Li, Zhi Yang, and Bin Cui. Deep and Flexible Graph Neural Architecture Search. In *Proceedings of the 39th International Conference on Machine Learning, Baltimore, MD, USA, 17-23 July 2022*, pages 26362–26374.
- Xu Zhang, Furao Shen, Jinxi Zhao, and GuoHai Yang. Time Series Forecasting Using GRU Neural Network with Multi-lag After Decomposition. In Derong Liu, Shengli Xie, Yuanqing Li, Dongbin Zhao, and El-Sayed M. El-Alfy, editors, *Proceedings of the 24th Neural Information Processing, Guangzhou, China, November 14-18, 2017*, pages 523–532.
- Zhao Zhong, Junjie Yan, Wei Wu, Jing Shao, and Cheng-Lin Liu. Practical Block-Wise Neural Network Architecture Generation. In *Proceedings of the 2018 IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, UT, USA, June 18-22, 2018*, pages 2423–2432.
- Qinqin Zhou, Xiwu Zheng, Liujuan Cao, Bineng Zhong, Teng Xi, Gang Zhang, Er-rui Ding, Mingliang Xu, and Rongrong Ji. EC-DARTS: Inducing Equalized and Consistent Optimization Into DARTS. In *Proceedings of the 2021 IEEE International Conference on Computer Vision, Montréal, QC, Canada, October 10-17, 2021*, pages 11986–11995.
- Lucas Zimmer, Marius Lindauer, and Frank Hutter. Auto-PyTorch Tabular: Multi-Fidelity MetaLearning for Efficient and Robust AutoDL. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 43(9):3079–3090, 2021.
- Marc-André Zöller, Waldemar Titov, Thomas Schlegel, and Marco F. Huber. XAutoML: A Visual Analytics Tool for Establishing Trust in Automated Machine Learning. *CoRR*, abs/2202.11954, 2022.
- Barret Zoph and Quoc V. Le. Neural Architecture Search with Reinforcement Learning. In *Proceedings of the 5th International Conference on Learning Representations, Toulon, France, April 24-26, 2017*.
- Barret Zoph, Vijay Vasudevan, Jonathon Shlens, and Quoc V. Le. Learning Transferable Architectures for Scalable Image Recognition. In *Proceedings of the 2018 IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, UT, USA, June 18-22, 2018*, pages 8697–8710.

List of publications

- Can Wang, Thomas Bäck, Holger H. Hoos, Mitra Baratchi, Steffen Limmer, and Markus Olhofer. Automated Machine Learning for Short-term Electric Load Forecasting. In *Proceedings of the IEEE Symposium Series on Computational Intelligence, Xiamen, China, December 6-9, 2019*, pages 314–321.
- Can Wang, Mitra Baratchi, Thomas Bäck, Holger H. Hoos, Steffen Limmer, and Markus Olhofer. Towards time-series-specific feature engineering in automated machine learning frameworks. *Under review at International Journal of Data Science and Analytics*, 2023.
- Can Wang, Mitra Baratchi, Thomas Bäck, Holger H. Hoos, Steffen Limmer, and Markus Olhofer. Towards Time-Series Feature Engineering in Automated Machine Learning for Multi-Step-Ahead Forecasting. *Engineering Proceedings*, 18(1), 2022.
- Mitra Baratchi, Can Wang, Steffen Limmer, Jan N. van Rijn, Holger H. Hoos, Thomas Bäck, and Markus Olhofer. Automated Machine Learning: Past, Present and Future. *Artificial Intelligence Review*, 2024.