List of patents, publications, presentations and theses.

Summary of presentations and publications given where the AutoDC project has contributed during the 2 first years.

# Patents:

1. A method and apparatus for selecting power-saving features to activate in virtualized base station, PCT/IB2020/057932
2. Measurement reporting and configuration in communication networks, PCT/EP2020/065127
3. Source Selection based on Diversity for Transfer Learning, US 63/080,371
4. Methods and systems for dynamic service performance prediction using transfer learning, US 62/770,330
5. Improving performance modelling in dynamic clouds, PCT/SE2019/050672

# Publications (conferences and journals):

1. F. Moradi, et. al, “Performance Prediction in Dynamic Clouds using Transfer Learning”, In Proceedings to IFIP/IEEE IM
2. R. Brännvall, J. Sarkinen, J. Svartholm , J. Gustafsson, J. Summers, Digital Twin for tuning of Server Fan Controllers. Proceedings IEEE 17th International Conference on Industrial Informatics, INDIN 2019, 2019.
3. F. S. Samani , R. Stadler, C. Flinta , A. Johnsson , ”Conditional Density Estimation of Service Metrics for Networked Services”, Transactions of Network and Service Management, July 2019.
4. F. S. Samani, et. al., ”Demonstration: Predicting Distributions of Service Metrics”, In Proceedings to IFIP/IEEE IM
5. C. Flinta , W. Yan, A. Johnsson , “Predicting Round Trip Time Distributions in IoT Systems using Histogram Estimators”, IFIP/IEEE, September 2019.
6. C. Flinta, W. Yan, A. Johnsson, “Predicting Round-Trip Time Distributions in IoT Systems using Histogram Estimators”, IFIP/IEEE Network Operations and Management Symposium, 2020.
7. R. Stadler, “Data driven Network Engineering and Management”, Keynote address, IEEE BlackSeaCom , June 3 6, 2019, Sochi, Russia.
8. F. Shahab Samani , H. Zhang, R. Stadler, “Efficient Learning on High dimensional Operational Data”, 15th International Conference on Network and Service Management, Halifax, Canada, 21 25 October, 2019.
9. R. Brännvall, M. et.al. , EDGE microgrid data center with electricity and coolant storage, 8th International Workshop on Energy-Efficient Data Centres (E2DC 2020), Melbourne, Australia (virtual due to covid-19)
10. Millnert, V., E. Bini, and J. Eker. “AutoSAC: automatic scaling and admission control of forwarding graphs”. In: Annals of Telecommunications 73.3-4 (2018), pp. 193–204.
11. Millnert, V., E. Bini, and J. Eker. “Cost minimization of network services with buffer and end-to-end deadline constraints”. In: ACM SIGBED Review 14.4 (2018), pp. 39–45.
12. Millnert, V., J. Eker, and E. Bini. “Achieving predictable and low end-to-end latency for a network of smart services”. In: IEEE GLOBECOM 2018. 2018.
13. Victor Millnert, Johan Eker, Enrico Bini. "End-to-end deadlines over dynamic topologies" 31st Euromicro Conference on Real-Time Systems, Stuttgart, Germany 2019
14. Skarin, P., W. Tärneberg, K. Årzen, and M. Kihl. “Towards Mission-Critical Control at the Edge and Over 5G”. In: 2018 IEEE International Conference on Edge Computing (EDGE). July 2018, pp. 50–57.
15. Per Skarin, Johan Eker, Karl-Erik Årzén. "Cloud-based model predictive control with variable horizon", 21st World Congress of the International Federation of Automatic Control, 2020
16. Per Skarin, Johan Eker, Maria Kihl and Karl-Erik Årzén. "Cloud-Assisted Model Predictive Control"
17. 2019 IEEE International Conference on Edge Computing (EDGE)
18. Karl-Erik Årzén, Per Skarin, William Tärneberg, Maria Kihl. "Control Over the Edge Cloud - An MPC Example" 1st Int. Workshop on Trustworthy and Real-time Edge Computing for CPS, Nashville, US
19. Johan Ruuskanen, Haorui Peng, Alexandre Martins. "Latency prediction in 5G for control with deadtime compensation", IoT-Fog '19, 1st Workshop on Fog Computing and the Io, Montreal, Canada, 2019
20. Victor Millnert, Johan Eker, Enrico Bini. "End-to-end deadlines over dynamic topologies"31st Euromicro Conference on Real-Time Systems, Stuttgart, Germany, July 2019
21. Per Skarin, Johan Eker, Karl-Erik Årzén. "Cloud-based model predictive control with variable horizon" In submission to 21st World Congress of the International Federation of Automatic Control, 2020
22. Per Skarin, Johan Eker, Maria Kihl and Karl-Erik Årzén. "Cloud-Assisted Model Predictive Control" 2019 IEEE International Conference on Edge Computing (EDGE), July 2019
23. Abdelzaher, Tarek ; Hao, Yifan ; Jayarajah, Kasthuri ; Misra, Archan ; Yao, Shuochao ; Skarin, Per; Weerakoon, Dulanga and Årzén, Karl-Erik. "Five Challenges in Cloud-Enabled Intelligence and Control", ACM Transactions on Internet Technology, 2020
24. T. Nylander, J. Ruuskanen, K.-E. Årzén, M. Maggio. "Modeling of Request Cloning in Cloud Server Systems using Processor Sharing", 11th ACM/SPEC International Conference on Performance Engineering (ICPE), Edmonton, Canada, April 2020
25. Tommi Nylander, Johan Ruuskanen, Karl-Erik Arzen and Martina Maggio "Towards Performance Modeling of Speculative Execution for Cloud Applications", 3rd Workshop on Hot Topics in Cloud Computing Performance, Edmonton, Canada, April 21, 2020
26. Gautham Nayak Seetanadi and Karl-Erik Arzen. "Routing using Safe Reinforcement Learning", 2nd Workshop on Fog Computing and the Internet of Things", CPS - IoT WEEK, Sydney, Australia, April 2020
27. X. Wang, F. Shahab Samani, R. Stadler: “Online feature selection for rapid, low-overhead learning in networked systems,” 6th IFIP/IEEE International Conference on Network and Service Management, 2-6 November 2020.
28. Chemouil, P., Hui, P., Kellerer, W., Limam, N., Stadler, R. and Wen, Y., Guest Editorial Special Issue on Advances in Artificial Intelligence and Machine Learning for Networking. IEEE Journal on Selected Areas in Communications, 38(10), pp.2229-2233. 2020.
29. Chemouil, P., Hui, P., Kellerer, W., Li, Y., Stadler, R., Tao, D., Wen, Y. and Zhang, Y., Special issue on artificial intelligence and machine learning for networking and communications. IEEE Journal on Selected Areas in Communications, 37(6), pp.1185-1191.2019.

# Keynotes, presentations, and workshop organization:

1. Karl-Erik Årzén gave a keynote at the DTU High Tech Summit, DTU, Denmark, October 11, 2018
2. "1st Workshop on Fog Computing and the Internet of Things" organized by Karl-Erik Årzen as a part of the CPS - IoT WEEK in Montreal, Canada, April 15, 2019
3. "2nd Workshop on Fog Computing and the Internet of Things" organized by Anton Cervin ULUND as a part of the CPS - IoT WEEK in Sydney, Australia, April 2020
4. R. Stadler: Keynote at IEEE BlackSeaCom
5. R. Stadler: Distinguished Experts Panel at IEEE NOMS 2020
6. R. Stadler: Distinguished Experts Panel at IEEE CNSM 2020
7. The AutoDC project was included in the presentation "Control of Computer Systems" by Karl-Erik Årzén at the 40th International Summer School of Automatic Control Grenoble, France September, 09-13, 2019
8. The AutoDC project was included in a presentation on Control of Computer Systems by Karl-Erik Årzén at the Nordic IoT Summer School: Edge and Fog Computing, June 17-21, 2019, DTU, Denmark
9. T. B. Minde - Presentation at Datacenter Innovation Region
10. T. B. Minde - AutoDC EDGE presentation at DataCentreWorld 2020
11. "2nd Workshop on Fog Computing and the Internet of Things" organized by Anton Cervin ULUND as a part of the CPS - IoT WEEK in Sydney, Australia, April 2020
12. The AutoDC project was included in the presentation "Control of Computer Systems" by Karl-Erik Årzén at the 40th International Summer School of Automatic Control Grenoble, France September, 09-13, 2019

# Theses:

1. M. Siltala, Simulating data center cooling systems: data-driven and physical modeling methods. Masters Thesis, Aalto University/RISE, <https://aaltodoc.aalto.fi/handle/123456789/43528>
2. R. Brännvall, Machine learning based control of small-scale autonomous data centers, Licentiate thesis, Luleå University of Technology/RISE, <http://ltu.diva-portal.org/smash/get/diva2:1445959/FULLTEXT01.pdf>
3. O. Linna, Feasibility study of autonomous data centers, Masters Thesis, Aalto University/Granlund, <http://urn.fi/URN:NBN:fi:aalto-201908254942>
4. X. Wang, “Dimensionality reduction for performance prediction in networked systems,” master thesis, KTH Royal Institute of Technology, Stockholm, 2020.
5. H. Zhang, “Efficient learning on high-dimensional operational data,” master thesis, KTH Royal Institute of Technology, Stockholm, 2020.
6. C. Teng, “Forecasting service metrics for network services,” master thesis, KTH Royal Institute of Technology, Stockholm, 2020.