



## Ulrik M. Nyman - Publication list

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- [1] S. Bøgh, P. G. Jensen, M. Kristjansen, K. G. Larsen, and U. Nyman, “Distributed fleet management in noisy environments via model-predictive control,” in *Proceedings of the Thirty-Second International Conference on Automated Planning and Scheduling, ICAPS 2022, Singapore (virtual), June 13-24, 2022* (A. Kumar, S. Thiébaux, P. Varakantham, and W. Yeoh, eds.), pp. 565–573, AAAI Press, 2022.
- [2] P. G. Jensen, A. Kiviriga, K. G. Larsen, U. Nyman, A. Mijacika, and J. H. Mortensen, “Monte carlo tree search for priced timed automata,” in *Quantitative Evaluation of Systems - 19th International Conference, QEST 2022, Warsaw, Poland, September 12-16, 2022, Proceedings* (E. Ábrahám and M. Paolieri, eds.), vol. 13479 of *Lecture Notes in Computer Science*, pp. 381–398, Springer, 2022.
- [3] P. Han, Z. Zhai, B. Nielsen, and U. Nyman, “Model-based optimization of ARINC-653 partition scheduling,” *Int. J. Softw. Tools Technol. Transf.*, vol. 23, no. 5, pp. 721–740, 2021.
- [4] A. Kiviriga, K. G. Larsen, and U. Nyman, “Randomized reachability analysis in uppaal: Fast error detection in timed systems,” in *Formal Methods for Industrial Critical Systems - 26th International Conference, FMICS 2021, Paris, France, August 24-26, 2021, Proceedings* (A. Lluch-Lafuente and A. Mavridou, eds.), vol. 12863 of *Lecture Notes in Computer Science*, pp. 149–166, Springer, 2021.
- [5] A. Kiviriga, K. G. Larsen, and U. Nyman, “Randomized refinement checking of timed I/O automata,” in *Dependable Software Engineering. Theories, Tools, and Applications - 6th International Symposium, SETTA 2020, Guangzhou, China, November 24-27, 2020, Proceedings* (J. Pang and L. Zhang, eds.), vol. 12153 of *Lecture Notes in Computer Science*, pp. 70–88, Springer, 2020.
- [6] J. Boudjadar, S. Ramanathan, A. Easwaran, and U. Nyman, “Combining task-level and system-level scheduling modes for mixed criticality systems,” *CoRR*, vol. abs/2003.05442, 2020.
- [7] M. Novak, U. Nyman, T. Dragicevic, and F. Blaabjerg, “Analytical design and performance validation of finite set MPC regulated power converters,” *IEEE Trans. Ind. Electron.*, vol. 66, no. 3, pp. 2004–2014, 2019.

- [8] J. Boudjadar, S. Ramanathan, A. Easwaran, and U. Nyman, “Combining task-level and system-level scheduling modes for mixed criticality systems,” in *23rd IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications DS-RT 2019, Cosenza, Italy, October 7-9, 2019* (F. D. Rango, C. T. Calafate, M. Voznák, A. Garro, and M. Tropea, eds.), pp. 1–10, IEEE, 2019.
- [9] J. Boudjadar, J. H. Kim, L. T. X. Phan, I. Lee, K. G. Larsen, and U. Nyman, “Generic formal framework for compositional analysis of hierarchical scheduling systems,” in *21st IEEE International Symposium on Real-Time Distributed Computing, ISORC 2018, Singapore, Singapore, May 29-31, 2018*, pp. 51–58, IEEE Computer Society, 2018.
- [10] P. Han, Z. Zhai, B. Nielsen, and U. Nyman, “A compositional approach for schedulability analysis of distributed avionics systems,” in *Proceedings of the 1st International Workshop on Methods and Tools for Rigorous System Design, MeTRiD@ETAPS 2018, Thessaloniki, Greece, 15th April 2018* (S. Bliudze and S. Bensalem, eds.), vol. 272 of *EPTCS*, pp. 39–51, 2018.
- [11] T. R. Gundersen, F. Lorber, U. Nyman, and C. Ovesen, “Effortless fault localisation: Conformance testing of real-time systems in ecdar,” in *Proceedings Ninth International Symposium on Games, Automata, Logics, and Formal Verification, GandALF 2018, Saarbrücken, Germany, 26-28th September 2018* (A. Orlandini and M. Zimmermann, eds.), vol. 277 of *EPTCS*, pp. 147–160, 2018.
- [12] P. Han, Z. Zhai, B. Nielsen, and U. Nyman, “A modeling framework for schedulability analysis of distributed avionics systems,” in *Proceedings Third Workshop on Models for Formal Analysis of Real Systems and Sixth International Workshop on Verification and Program Transformation, MARS/VPT@ETAPS 2018, Thessaloniki, Greece, 20th April 2018* (J. P. Gallagher, R. van Glabbeek, and W. Serwe, eds.), vol. 268 of *EPTCS*, pp. 150–168, 2018.
- [13] K. G. Larsen, A. Legay, M. Mikucionis, B. Nielsen, and U. Nyman, “Compositional testing of real-time systems,” in *ModelEd, TestEd, TrustEd - Essays Dedicated to Ed Brinksma on the Occasion of His 60th Birthday* (J. Katoen, R. Langerak, and A. Rensink, eds.), vol. 10500 of *Lecture Notes in Computer Science*, pp. 107–124, Springer, 2017.
- [14] P. G. Jensen, K. G. Larsen, A. Legay, and U. Nyman, “Integrating tools: Co-simulation in UPPAAL using FMI-FMU,” in *22nd International Conference on Engineering of Complex Computer Systems, ICECCS 2017, Fukuoka, Japan, November 5-8, 2017*, pp. 11–19, IEEE Computer Society, 2017.
- [15] K. G. Larsen, F. Lorber, B. Nielsen, and U. Nyman, “Mutation-based test-case generation with ecdar,” in *2017 IEEE International Conference on*

*Software Testing, Verification and Validation Workshops, ICST Workshops 2017, Tokyo, Japan, March 13-17, 2017*, pp. 319–328, IEEE Computer Society, 2017.

- [16] G. Sugumar, R. Selvamuthukumaran, T. Dragicevic, U. Nyman, K. G. Larsen, and F. Blaabjerg, “Formal validation of supervisory energy management systems for microgrids,” in *IECON 2017 - 43rd Annual Conference of the IEEE Industrial Electronics Society, Beijing, China, October 29 - November 1, 2017*, pp. 1154–1159, IEEE, 2017.
- [17] A. Boudjadar, A. David, J. H. Kim, K. G. Larsen, M. Mikucionis, U. Nyman, and A. Skou, “Statistical and exact schedulability analysis of hierarchical scheduling systems,” *Sci. Comput. Program.*, vol. 127, pp. 103–130, 2016.
- [18] J. H. Kim, A. Legay, L. Traonouez, A. Boudjadar, U. Nyman, K. G. Larsen, I. Lee, and J. Choi, “Optimizing the resource requirements of hierarchical scheduling systems,” *SIGBED Rev.*, vol. 13, no. 3, pp. 41–48, 2016.
- [19] A. Boudjadar, A. David, J. H. Kim, K. G. Larsen, M. Mikucionis, U. Nyman, and A. Skou, “A reconfigurable framework for compositional schedulability and power analysis of hierarchical scheduling systems with frequency scaling,” *Sci. Comput. Program.*, vol. 113, pp. 236–260, 2015.
- [20] A. David, K. G. Larsen, A. Legay, U. Nyman, L. Traonouez, and A. Wasowski, “Real-time specifications,” *Int. J. Softw. Tools Technol. Transf.*, vol. 17, no. 1, pp. 17–45, 2015.
- [21] J. H. Kim, A. Boudjadar, U. Nyman, M. Mikucionis, K. G. Larsen, A. Skou, I. Lee, and L. T. X. Phan, “Quantitative schedulability analysis of continuous probability tasks in a hierarchical context,” in *Proceedings of the 18th International ACM SIGSOFT Symposium on Component-Based Software Engineering, CBSE 2015, Montreal, QC, Canada, May 4-8, 2015* (P. Kruchten, S. Becker, and J. Schneider, eds.), pp. 91–100, ACM, 2015.
- [22] A. Boudjadar, J. H. Kim, A. David, K. G. Larsen, M. Mikucionis, U. Nyman, A. Skou, I. Lee, and L. T. X. Phan, “Flexible framework for statistical schedulability analysis of probabilistic sporadic tasks,” in *IEEE 18th International Symposium on Real-Time Distributed Computing, ISORC 2015, Auckland, New Zealand, 13-17 April, 2015*, pp. 74–83, IEEE Computer Society, 2015.
- [23] M. L. Pedersen, M. H. Sørensen, D. Lux, U. Nyman, and R. R. Hansen, “The timed decentralised label model,” in *Secure IT Systems, 20th Nordic Conference, NordSec 2015, Stockholm, Sweden, October 19-21, 2015, Proceedings* (S. Buchegger and M. Dam, eds.), vol. 9417 of *Lecture Notes in Computer Science*, pp. 27–43, Springer, 2015.

- [24] S. S. Bauer, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “A modal specification theory for components with data,” *Sci. Comput. Program.*, vol. 83, pp. 106–128, 2014.
- [25] A. Boudjadar, J. H. Kim, K. G. Larsen, and U. Nyman, “Model checking process algebra of communicating resources for real-time systems,” in *26th Euromicro Conference on Real-Time Systems, ECRTS 2014, Madrid, Spain, July 8-11, 2014*, pp. 51–60, IEEE Computer Society, 2014.
- [26] A. Boudjadar, A. David, J. H. Kim, K. G. Larsen, M. Mikucionis, U. Nyman, and A. Skou, “Widening the schedulability of hierarchical scheduling systems,” in *Formal Aspects of Component Software - 11th International Symposium, FACS 2014, Bertinoro, Italy, September 10-12, 2014, Revised Selected Papers* (I. Lanese and E. Madelaine, eds.), vol. 8997 of *Lecture Notes in Computer Science*, pp. 209–227, Springer, 2014.
- [27] A. Boudjadar, J. H. Kim, K. G. Larsen, and U. Nyman, “Compositional schedulability analysis of an avionics system using UPPAAL,” in *Proceedings of the 1st International Conference on Advanced Aspects of Software Engineering, ICAASE 2014, Constantine, Algeria, November 2-4, 2014* (Z. Sahnoun, ed.), vol. 1294 of *CEUR Workshop Proceedings*, pp. 140–147, CEUR-WS.org, 2014.
- [28] A. Boudjadar, A. David, J. H. Kim, K. G. Larsen, M. Mikucionis, U. Nyman, and A. Skou, “Degree of schedulability of mixed-criticality real-time systems with probabilistic sporadic tasks,” in *2014 Theoretical Aspects of Software Engineering Conference, TASE 2014, Changsha, China, September 1-3, 2014*, pp. 126–130, IEEE Computer Society, 2014.
- [29] A. Boudjadar, A. David, J. H. Kim, K. G. Larsen, M. Mikucionis, U. Nyman, and A. Skou, “Hierarchical scheduling framework based on compositional analysis using uppaal,” in *Formal Aspects of Component Software - 10th International Symposium, FACS 2013, Nanchang, China, October 27-29, 2013, Revised Selected Papers* (J. L. Fiadeiro, Z. Liu, and J. Xue, eds.), vol. 8348 of *Lecture Notes in Computer Science*, pp. 61–78, Springer, 2013.
- [30] K. G. Larsen, A. Legay, and U. Nyman, eds., *Proceedings 1st Workshop on Advances in Systems of Systems, AiSoS 2013, Rome, Italy, 16th March 2013*, vol. 133 of *EPTCS*, 2013.
- [31] A. David, K. G. Larsen, A. Legay, M. H. Møller, U. Nyman, A. P. Ravn, A. Skou, and A. Wasowski, “Compositional verification of real-time systems using ecdar,” *Int. J. Softw. Tools Technol. Transf.*, vol. 14, no. 6, pp. 703–720, 2012.
- [32] S. S. Bauer, A. David, R. Hennicker, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “Moving from specifications to contracts in component-based design,” in *Fundamental Approaches to Software Engineering - 15th*

- International Conference, FASE 2012, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2012, Tallinn, Estonia, March 24 - April 1, 2012. Proceedings* (J. de Lara and A. Zisman, eds.), vol. 7212 of *Lecture Notes in Computer Science*, pp. 43–58, Springer, 2012.
- [33] S. S. Bauer, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “A modal specification theory for components with data,” in *Formal Aspects of Component Software - 8th International Symposium, FACS 2011, Oslo, Norway, September 14-16, 2011, Revised Selected Papers* (F. Arbab and P. C. Ölveczky, eds.), vol. 7253 of *Lecture Notes in Computer Science*, pp. 61–78, Springer, 2011.
- [34] A. Antonik, M. Huth, K. G. Larsen, U. Nyman, and A. Wasowski, “Modal and mixed specifications: key decision problems and their complexities,” *Math. Struct. Comput. Sci.*, vol. 20, no. 1, pp. 75–103, 2010.
- [35] A. David, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “ECDAR: an environment for compositional design and analysis of real time systems,” in *Automated Technology for Verification and Analysis - 8th International Symposium, ATVA 2010, Singapore, September 21-24, 2010. Proceedings* (A. Bouajjani and W. Chin, eds.), vol. 6252 of *Lecture Notes in Computer Science*, pp. 365–370, Springer, 2010.
- [36] A. David, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “Timed I/O automata: a complete specification theory for real-time systems,” in *Proceedings of the 13th ACM International Conference on Hybrid Systems: Computation and Control, HSCC 2010, Stockholm, Sweden, April 12-15, 2010* (K. H. Johansson and W. Yi, eds.), pp. 91–100, ACM, 2010.
- [37] T. Bourke, A. David, K. G. Larsen, A. Legay, D. Lime, U. Nyman, and A. Wasowski, “New results on timed specifications,” in *Recent Trends in Algebraic Development Techniques - 20th International Workshop, WADT 2010, Etelsen, Germany, July 1-4, 2010, Revised Selected Papers* (T. Mossakowski and H. Kreowski, eds.), vol. 7137 of *Lecture Notes in Computer Science*, pp. 175–192, Springer, 2010.
- [38] A. David, K. G. Larsen, A. Legay, U. Nyman, and A. Wasowski, “Methodologies for specification of real-time systems using timed I/O automata,” in *Formal Methods for Components and Objects - 8th International Symposium, FMCO 2009, Eindhoven, The Netherlands, November 4-6, 2009. Revised Selected Papers* (F. S. de Boer, M. M. Bonsangue, S. Hallerstede, and M. Leuschel, eds.), vol. 6286 of *Lecture Notes in Computer Science*, pp. 290–310, Springer, 2009.
- [39] A. Antonik, M. Huth, K. G. Larsen, U. Nyman, and A. Wasowski, “20 years of modal and mixed specifications,” *Bull. EATCS*, vol. 95, pp. 94–129, 2008.

- [40] A. Antonik, M. Huth, K. G. Larsen, U. Nyman, and A. Wasowski, “Complexity of decision problems for mixed and modal specifications,” in *Foundations of Software Science and Computational Structures, 11th International Conference, FOSSACS 2008, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2008, Budapest, Hungary, March 29 - April 6, 2008. Proceedings* (R. M. Amadio, ed.), vol. 4962 of *Lecture Notes in Computer Science*, pp. 112–126, Springer, 2008.
- [41] A. Antonik, M. Huth, K. G. Larsen, U. Nyman, and A. Wasowski, “Exptime-complete decision problems for modal and mixed specifications,” in *Proceedings of the 15th Workshop on Expressiveness in Concurrency, EXPRESS 2008, Toronto, ON, Canada, August 23, 2008* (T. T. Hildebrandt and D. Gorla, eds.), vol. 242 of *Electronic Notes in Theoretical Computer Science*, pp. 19–33, Elsevier, 2008.
- [42] K. G. Larsen, U. Nyman, and A. Wasowski, “Modeling software product lines using color-blind transition systems,” *Int. J. Softw. Tools Technol. Transf.*, vol. 9, no. 5-6, pp. 471–487, 2007.
- [43] K. G. Larsen, U. Nyman, and A. Wasowski, “On modal refinement and consistency,” in *CONCUR 2007 - Concurrency Theory, 18th International Conference, CONCUR 2007, Lisbon, Portugal, September 3-8, 2007, Proceedings* (L. Caires and V. T. Vasconcelos, eds.), vol. 4703 of *Lecture Notes in Computer Science*, pp. 105–119, Springer, 2007.
- [44] K. G. Larsen, U. Nyman, and A. Wasowski, “Modal I/O automata for interface and product line theories,” in *Programming Languages and Systems, 16th European Symposium on Programming, ESOP 2007, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2007, Braga, Portugal, March 24 - April 1, 2007, Proceedings* (R. D. Nicola, ed.), vol. 4421 of *Lecture Notes in Computer Science*, pp. 64–79, Springer, 2007.
- [45] K. G. Larsen, U. Nyman, and A. Wasowski, “Interface input/output automata,” in *FM 2006: Formal Methods, 14th International Symposium on Formal Methods, Hamilton, Canada, August 21-27, 2006, Proceedings* (J. Misra, T. Nipkow, and E. Sekerinski, eds.), vol. 4085 of *Lecture Notes in Computer Science*, pp. 82–97, Springer, 2006.
- [46] K. G. Larsen, U. Larsen, and A. Wasowski, “Color-blind specifications for transformations of reactive synchronous programs,” in *Fundamental Approaches to Software Engineering, 8th International Conference, FASE 2005, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2005, Edinburgh, UK, April 4-8, 2005, Proceedings* (M. Cerioli, ed.), vol. 3442 of *Lecture Notes in Computer Science*, pp. 160–174, Springer, 2005.

- [47] U. Nyman, “How do we implement the theory of CM in practice,” in *Managing the Change: Software Configuration and Change Management* (M. Haug, E. W. Olsen, G. Cuevas, and S. Rementeria, eds.), vol. 2 of *Software Best Practice*, pp. 47–65, Springer, 2001.
- [48] M. Novak, I. Grobelna, U. Nyman, P. Szcześniak, and F. Blaabjerg, “Statistical performance verification of the fs-mpc algorithm applied to the matrix converter,” in *2022 International Power Electronics Conference (IPEC-Himeji 2022- ECCE Asia)*, pp. 76–82, IEEE Press, July 2022. IPEC 2022 ECCE Asia ; Conference date: 15-05-2022 Through 19-05-2022.
- [49] P. Szcześniak, I. Grobelna, M. Novak, and U. Nyman, “Overview of control algorithm verification methods in power electronics systems,” *Energies*, vol. 14, no. 14, 2021.
- [50] M. Novak, U. Nyman, T. Dragicevic, and F. Blaabjerg, “Statistical model checking for finite-set model predictive control converters: A tutorial on modeling and performance verification,” *I E E E Industrial Electronics Magazine*, vol. 13, pp. 6–15, Sept. 2019.
- [51] M. Novak, U. Nyman, T. Dragicevic, and F. Blaabjerg, “Statistical performance verification of fcs-mpc applied to three level neutral point clamped converter,” in *Proceedings of 2018 20th European Conference on Power Electronics and Applications (EPE’18 ECCE Europe)*, pp. 1–10, IEEE Press, Sept. 2018. 20th European Conference on Power Electronics and Applications, EPE 2018 ECCE Europe ; Conference date: 17-09-2018 Through 21-09-2018.
- [52] M. Novak, T. Dragicevic, F. Blaabjerg, and U. Nyman, “Analytical performance verification of fcs-mpc applied to power electronic converters: A model checking approach,” in *Proceedings of 2017 IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL)*, IEEE Workshop on Control and Modeling for Power Electronics (COMPEL), IEEE Press, July 2017. 18th IEEE Workshop on Control and Modeling for Power Electronics, COMPEL 2017 ; Conference date: 09-07-2017 Through 12-07-2017.