Alisa Rupenyan

Data-driven Automation and Optimization, Industrial AI, Additive manufacturing, Robot-based manufacturing

Rieter Endowed Professor, Zurich University for Applied Sciences, Centre for AI

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Education

2009 **PhD, Physical Sciences**, *Vrije Universiteit Amsterdam*, Amsterdam.
Thesis: Time-resolved laser spectroscopy for studying protein photoreactions
Supervisor: Prof. Dr. Marloes Groot

2005 **Master of Science, Laser Physics and Optics**, *Sofia University*, Sofia.
Thesis: Raman Spectroscopy studies of polymers C2E2C2
Supervisor: Prof. Dr. Georgi Georgiev

2003 **Bachelor of Science, Engineering Physics**, *Sofia University*, Sofia.
Bachelor thesis completed in exchange semester at University Paris XIII, Laboratoire de Physique de Lasers

Research Interests

Autonomous machines, Decision-making in industrial settings, Learning-based optimization and contol, Predictive control for machining applications

Professional Experience

September 2023 – Present ***Zurich University of Applied Sciences - Centre for AI***.
Rieter Stiftung Endowed Professor for Industiral AI - leader of multiple research projects in robot-based manufacturing optimization and learning control for industrial applications. Teaching BSc foundational courses in Machine Learning and AI.

August 2020 – August 2023 ***ETH Zurich - Automatic Control Laboratory***.
Senior scientist, Leader of Advanced manufacturing within NCCR Automation - Swiss research competence center, leading several interconnected and collaborative PhD and postdoctoral research projects in data-driven optimization and control

Feb 2018 – August 2023 ***Inspire AG - technology transfer unit at ETH Zurich***.
Group leader, Advanced Control and Automation (group associated with the Automated Control Lab at ETH Zurich, Prof. John Lygeros). Lead PI of Innosuisse funded-projects in the field of automation and learning-based control in collaboration with industry partners.

Jan 2014 – Aug 2017 ***Qualysense AG (swiss agri-tech startup)*** .
Lead scientist, Head of application development. Machine learning-based methods for automated high-speed grain sorting.

March 2011 – Sept 2013 ***Laboratory for Physical Chemistry, ETH Zurich***.
Postdoctoral fellow (individual grant), Following electrons on the electronic time scale: attosecond imaging of charge tranfer

Jan 2010 – Dec 2010 ***Van't Hoff Institute for Molecular Chemistry, University of Amsterdam***.
Postdoctoral researcher, Supervisor: Prof. Dr. Sander Woutersen, 2D mid-IR spectroscopy of proteins

Research funding, Fellowships & Grants

2025-2027 Recipient of ***Innosuisse (Swiss Innovation Agency) grant***: Cloud-enabled learning controllers

2025-2029 ***Bridge Discovery SNF/Innosuisse Grant***: Co-PI (2 projects hosted at ZHAW CAI), 1 PhD, 1 engineer), Robotic 3D-Printing Technology

2024-2028 ***NCCR Automation Phase II (SNF)***: Co-PI, Lead for the Advanced manufacturing research projects (2 projects hosted at ZHAW CAI), 1 postdoc)

2024-2028 Co-PI in ***EU Horizon grant*** DMaaST - Digital Manufacturing as a Service Technology

2023-2026 Recipient of ***Innosuisse grant*** Robot-enhanced active control for thermal spray coating

2022-2024 Recipient of ***Innosuisse grant*** Multi-axis path generation and intelligent control for 3D-printing

2020-2024 ***NCCR Automation Phase I***: Lead PI for the Advanced manufacturing research projects (2 co-supervised PhD projects and a postdoctoral project)

2020-2022 Recipient of ***Innosuisse grant*** Data-driven adaptive control for high-end motion systems

2019-2021 Recipient of ***Innosuisse grant*** Data-driven insights for smart grinding

2019-2022 Co-Recipient of ***Innosuisse grant*** Adaptive control tracker In-Situ Verification

2011-2013 Recipient of ***ETH Zurich postdoctoral fellowship grant***

Teaching Experience

2023–present **Lecturer, Machine Learning and Data Mining Undergraduate course for students in Computer Science / IT and in Data Science, 2024 (undergraduate semester course, AI basics)**.

2025 **Lecturer, Continual learning, Doctoral school, ETH Zurich / EPFL (NCCR Automation Theory moonshot course)**.

2025–present **Lecturer, Intelligent Automation, 2024 (undergraduate semester course)**.

2022–2023 **Lecturer and organiser, AI in Manufacturing Course (inspire, graduate research seminar)**.

2018–present **Supervisor and co-supervisor of multiple (>20) bachelor and master-level research projects at D-ITET ETH Zurich, and at ZHAW**.

2011–2013 **Supervisor of bachelor and master-level research projects at D-CHAB ETH Zurich**.

2006-2008 **TA Structure of matter (Quantum mechanics / Atomic physics), VU Amsterdam**.

2006-2008 **TA Practicum Analytical Chemistry, VU Amsterdam**.

Academic Experience

Supervision

PhD students

Yu Tang, PhD student, ZHAW/ETH Zurich. Multi-objective optimization of industrial processes with digital twins, April 2025 - present (co-supervising with prof. J. Lygeros, ETH Zurich)

Vishnu Varadan, PhD student, EPFL/ZHAW. Data-driven Control Methods for Robotic Systems using Koopman Operator, September 2024 - present (co-supervising with prof. Alireza Karimi, EPFL)

Diego Bolliger, PhD student, ZHAW/ETH Zurich. Data-driven planning and control for robot-based manufacturing, September 2023 - present (co-supervising with prof. M. Bambach, ETH Zurich)

Mahdi Nobar, PhD student, FHNW / ETH Zurich (NCCR Automation). Intelligent Control Framework for Robotic Systems, September 2021 - present (co-supervising with prof. J. Lygeros, ETH Zurich and with prof. J. Keller at FHNW)

Xavier Guidetti, PhD student, ETH Zurich/inspire. Data-driven process control, December 2019 - July 2024 (co-supervised with prof. J. Lygeros, ETH Zurich)

Samuel Balula, PhD student, ETH Zurich/inspire. Merging data-driven and first principles modeling for real-time control of industrial processes, June 2018 - July 2023 (co-supervised with prof. J. Lygeros, ETH Zurich)

>30 semester projects (MSc level at ETH Zurich and at ZHAW) and BSc projects (BSc thesis at ETH Zurich and at ZHAW) in the field of advanced control systems combined with machine learning and AI, with applications in manufacturing processes (machine tools, motion systems), 3D-printing, and robotics

Editorial and reviewing experience

Editorial board, **Control Engineering Practice** (IFAC's journal for application of control theory and its supporting tools in all areas of automation) since 2024

Associate editor, **IEEE T-ASE (Transaction on Automation, Science, and Engineering)** since 2026

IEEE CSS Conference Editorial Board since 2025

Reviewer: NeurIPS 2024, 2025, ICLR 2024, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Vehicular Technology, IEEE Conference on Decision and Control, IEEE ICRA, IROS, IECON, CIRP Journal of Manufacturing Technology, IEEE Access, IEEE Robotics and Automation Letters, IEEE Transactions on Robotics, IEEE TCST

Review of proposals and grants

Swiss Innovation Agency (Innosuisse) innovation expert in ICT since January 2021
Expert Evaluator at the European Commission, (Horizon 2020, Horizon Europe, MSCA postdoctoral projects)

Seminar organization

Co-organizer of **Colloquium on Production Technology** (ETH Zurich, IWF, inspire) for industrial manufacturing research
Organizer and lead lecturer for **AI in manufacturing** - graduate level course seminar for researchers at inspire

Conference organization

Tutorial session chair, ECC 2025 Entrepreneurship in Control, IFAC Co-sponsored
Conference Track organizer, AI+X Summit 2025, Zurich Beyond Automation
Workshop co-organizer, IEEE CASE 2024 Bridging control and automation resarch with manufacturing applications, 2024 - Bari, Italy
Tutorial session co-chair, ECC 2024, Automatic Control Horizon: Roadmap and Industrial Innovation, 2024 - Stockholm, Sweden
Special session technical chair, IEEE ICPS24 Advances in Decision, Control, and Testing for Autonomous Intelligent Systems, 2024 - St. Louis, USA
Industry chair for 7th IEEE Conference on Control Technology and Applications, 2023 - Bridgetown, Barbados
Co-chair, Workshop - Taking Control Research to Practice, 7th IEEE Conference on Control Technology and Applications, 2023 - Bridgetown, Barbados

Honors and awards

2020 Finalist Best paper IEEE IROS (co-author)
2011 ETH individual postdoctoral research grant (ETH fellow)
2000-2004 Scholarship for excellence, Sofia University, Physics Department

Selected recent invited talks and conference presentations

2025, IEEE IROS, Workshop on Embodied AI and Cloud Integration, invited talk, Hangzhou China
2025, European Control Conference 2025, From research to practice in manufacturing, Tutorial session Entrepreneurship in control
2025, Flexible Automation for robotics and manufacturing tasks, invited seminar presentation, TU Delft
2025, Flexible Automation for robotics and manufacturing tasks, invited seminar presentation, KU Leuven
2025, Robotics and Industry 4.0, IB Robotics event, Rotkreuz, Switzerland, invited presentation
2024, Tage der Technik, EMPA, Dübendorf, keynote speaker
2024, European Control Conference 2024, Tutorial session Bridging control and automation research with applications
2024, DIFFER - Eindhoven, Invited seminar presentation
2024, Benelux Meeting on Systems and Control, Plenary keynote speaker, Data-driven optimization and control for advanced manufacturing
2023, CCTA Workshop - Taking Control Research to Practice, Co-chair, Speaker
2023, IFAC World Congress, Forum - The impact of Automatic Control Research on Industrial Innovation, Speaker and panelist
2022, Swiss Robotics Day, Panel
2022, Innovation Booster Photonics - AI in Photonics, Automated laser beam alignment through Bayesian Optimization, FHNW Brugg

Languages

Bulgarian (mother tongue), English (fluent), French (professional proficiency), German (intermediate B1-B2)

Interests and acitivites

Senior Member of IEEE (CSS, RAS, IES), IFAC Industry (executive committee member), member of Swiss informatics

Publications and Patents

Patents

2020 Christian Bobst Markus Maier, Alisa Rupenyan. Method for autonomous optimization of a grinding process. *EU patent EP3736648A1*, 2020.

Book chapters

2024 Alisa Rupenyan and Efe C Balta. Robotics and manufacturing automation. *The Impact of Automatic Control Research on Industrial Innovation: Enabling a Sustainable Future*, pages 169–197. John Wiley & Sons, Inc. Hoboken, NJ, USA, 2024.

2020 Markus Maier, Alisa Rupenyan, Stephan Scholze, and Konrad Wegener. Einrichten von schleifmaschinen auf der basis der bayesschen optimierung. In Hans-Werner Hoffmeister and Berend Denkena, editors, *Jahrbuch Schleifen, Honen, Läppen und Polieren*. Vulkan-Verlag GmbH, 2020.

Journal Articles

2025 Marta Zagorowska, Christopher König, Hanlin Yu, Efe C Balta, Alisa Rupenyan, and John Lygeros. Efficient safe learning for controller tuning with experimental validation. *Engineering Applications of Artificial Intelligence*, 2025.

2025 Mingkun Wu, Alisa Rupenyan, and Burkhard Corves. Iterative learning control with mismatch compensation for residual vibration suppression in delta robots: M. wu et al. *Nonlinear Dynamics*, pages 1–21. Springer Netherlands Dordrecht, 2025.

2025 Mingkun Wu, Alisa Rupenyan, and Burkhard Corves. Autogeneration and optimization of pick-and-place trajectories in robotic systems: A data-driven approach. *Robotics and Computer-Integrated Manufacturing*, volume 97, page 103080. Pergamon, 2025.

2025 Christopher König, Raamadaas Krishnadas, Efe C Balta, and Alisa Rupenyan. Adaptive bayesian optimization for high-precision motion systems. *IEEE Transactions on Automation Science and Engineering*. IEEE, 2025.

2025 Barış Kavas, Efe C Balta, Michael R Tucker, Raamadaas Krishnadas, Alisa Rupenyan, John Lygeros, and Markus Bambach. In-situ controller autotuning by bayesian optimization for closed-loop feedback control of laser powder bed fusion process. *Additive Manufacturing*, volume 99, page 104641. Elsevier, 2025.

2024 Mahdi Nobar, Jürg Keller, Alisa Rupenyan, Mohammad Khosravi, and John Lygeros. Guided bayesian optimization: Data-efficient controller tuning with digital twin. *IEEE Transactions on Automation Science and Engineering*, 2024.

2024 Dominic Liao-McPherson, Efe C Balta, Mohamadreza Afrasiabi, Alisa Rupenyan, Markus Bambach, and John Lygeros. Layer-to-layer melt pool control in laser powder bed fusion. *IEEE Transactions on Control Systems Technology*. IEEE, 2024.

2024 Xavier Guidetti, Nathan Mingard, Raul Cruz-Oliver, Yannick Nagel, Marvin Rueppel, Alisa Rupenyan, Efe C Balta, and John Lygeros. Force controlled printing for material extrusion additive manufacturing. *Additive Manufacturing*, 2024.

2024 Samuel Balula, Dominic Liao-McPherson, Alisa Rupenyan, and John Lygeros. Data-driven reference trajectory optimization for precision motion systems. *Control Engineering Practice*, volume 144, page 105834, 2024.

2023 Christopher König, Miks Ozols, Anastasia Makarova, Efe C. Balta, Andreas Krause, and Alisa Rupenyan. Safe risk-averse bayesian optimization for controller tuning. *IEEE Robotics and Automation Letters*, volume 8, pages 8208–8215, 2023.

2023 Barış Kavas, Efe C Balta, Michael Tucker, Alisa Rupenyan, John Lygeros, and Markus Bambach. Layer-to-layer closed-loop feedback control application for inter-layer temperature stabilization in laser powder bed fusion. *Additive Manufacturing*, volume 78, page 103847. Elsevier, 2023.

2023 Xavier Guidetti, Alisa Rupenyan, Ehsan Fallahi Sichani, Majid Nabavi, and John Lygeros. Spraying parameters selection based on predicted equipment status: A study on measured voltage. *Journal of Thermal Spray Technology*, volume 32, pages 523–531. Springer US New York, 2023.

2023 Xavier Guidetti, Efe C Balta, Yannick Nagel, Hang Yin, Alisa Rupenyan, and John Lygeros. Stress flow guided non-planar print trajectory optimization for additive manufacturing of anisotropic polymers. *Additive Manufacturing*, page 103628. Elsevier, 2023.

2022 Mohammad H Mamduhi, Efe C Balta, Alisa Rupenyan, and John Lygeros. Information-operation technology integration in industrial cyberphysical systems. *Computer*, volume 55, pages 115–118. IEEE, 2022.

2022 Markus Maier, Hannes Kunstmann, Ruben Zwicker, Alisa Rupenyan, and Konrad Wegener. Autonomous and data-efficient optimization of turning processes using expert knowledge and transfer learning. *Journal of Materials Processing Technology*, volume 303, page 117540, 2022.

2022 Dominic Liao-McPherson, Efe C Balta, Alisa Rupenyan, and John Lygeros. On robustness in optimization-based constrained iterative learning control. *IEEE Control Systems Letters*. IEEE, 2022.

2022 Christopher Koenig, Mohammad Khosravi, Markus Maier, Roy S Smith, John Lygeros, and Alisa Rupenyan. Safety-aware cascade controller tuning using constrained bayesian optimization. *IEEE Transactions on Industrial Electronics (accepted)*, 2022. https://arxiv.org/abs/2010.15211.

2022 Xavier Guidetti, Alisa Rupenyan, Ehsan Fallahi Sichani, Majid Nabavi, and John Lygeros. Spraying parameters selection based on predicted equipment status: A study on measured voltage. *Journal of Thermal Spray Technology*, pages 1–9. Springer US, 2022.

2021 M. Khosravi, V. Behrunani, P. Myszkorowski, R. S. Smith, A. Rupenyan, and J. Lygeros. Performance-driven cascade controller tuning with bayesian optimization. *IEEE Transactions on Industrial Electronics*, pages 1–1, 2021. DOI: https://doi.org/10.1109/TIE.2021.3050356.

2020 Markus Maier, Alisa Rupenyan, Christian Bobst, and Konrad Wegener. Self-optimizing grinding machines using gaussian process models and constrained bayesian optimization. *The International Journal of Advanced Manufacturing Technology*, volume 108, pages 528–552, 2020. DOI: https://doi.org/10.1007/s00170-020-05369-9.

2020 Thomas Gittler, Stephan Scholze, Alisa Rupenyan, and Konrad Wegener. Machine tool component health identification with unsupervised learning. *Journal of Manufacturing and Materials Processing*, volume 4, page 86, 2020. DOI: https://doi.org/10.3390/jmmp4030086.

2019 M. Maier, R. Zwicker, M. Akbari, A. Rupenyan, and K. Wegener. Bayesian optimization for autonomous process set-up in turning. *CIRP Journal of Manufacturing Science and Technology*, volume 26, pages 81–87, 2019. DOI: https://doi.org/10.1016/j.cirpj.2019.04.005.

2017 P.R. Armstrong, F. Dell'Endice, E.B. Maghirang, and A. Rupenyan. Discriminating oat and groat kernels from other grains using near-infrared spectroscopy. *Cereal Chemistry*, volume 94, pages 458–463, 2017. DOI: https://doi.org/10.1094/CCHEM-06-16-0162-R.

2016 A. Rupenyan, N. Sansonne, and F. Dell'Endice. Machine vision combined with near-infrared spectroscopy to guarantee food safety. *Cereal Foods World*, volume 61, pages 140–142, 2016. DOI: https://doi.org/10.1094/CFW-61-4-0140.

2015 Kraus PM, Tolstikhin OI, Baykusheva D, Rupenyan A, Schneider J, Bisgaard CZ, Morishita T, Jensen F, Madsen LB, and Wörner HJ. Observation of laser-induced electronic structure in oriented polyatomic molecules. *Nature communications*, 05 2015. DOI: https://doi.org/10.1038/ncomms8039.

2015 Kraus PM, Mignolet B, Baykusheva D, Rupenyan A, Horny L, Penka EF, Grassi G, Tolstikhin OI, Schneider J, Jensen F, Madsen LB, Bandrauk AD, Remacle F, and Wörner HJ. Measurement and laser control of attosecond charge migration in ionized iodoacetylene. *Science (New York, N.Y.)*, 11 2015. DOI: https://doi.org/10.1126/science.aab2160.

2015 P.M. Kraus, B. Mignolet, D. Baykusheva, A. Rupenyan, L. Horn, E.F. Penka, O.I. Tolstikhin, J. Schneider, F. Jensen, L.B. Madsen, A.D. Bandrauk, F. Remacle, and H.J. Wörner. Attosecond charge migration and its laser control. *Journal of Physics: Conference Series*, volume 635, 2015.

2015 Huerta-Viga A, Amirjalayer S, Domingos SR, Meuzelaar H, Rupenyan A, and Woutersen S. The structure of salt bridges between Arg(+) and Glu(-) in peptides investigated with 2d-ir spectroscopy: Evidence for two distinct hydrogen-bond geometries. *The Journal of chemical physics*, 06 2015. DOI: https://doi.org/10.1063/1.4921064.

2013 A. Rupenyan, P.M. Kraus, J. Schneider, and H.J. Wörner. High-harmonic spectroscopy of isoelectronic molecules: Wavelength scaling of electronic-structure and multielectron effects. *Physical Review A - Atomic, Molecular, and Optical Physics*, volume 87, 2013.

2012 Kraus PM, Rupenyan A, and Wörner HJ. High-harmonic spectroscopy of oriented OCS molecules: emission of even and odd harmonics. *Physical review letters*, 12 2012. DOI: https://doi.org/10.1103/physrevlett.109.233903.

2012 P.M. Kraus, J. Schneider, A. Rupenyan, and H.J. Wörner. High-harmonic spectroscopy of oriented polyatomic molecules: Toward probing attosecond charge migration. *Laser Science, LS 2012*, 2012.

2012 Rupenyan A, Bertrand JB, Villeneuve DM, and Wörner HJ. All-optical measurement of high-harmonic amplitudes and phases in aligned molecules. *Physical review letters*, 01 2012. DOI: https://doi.org/10.1103/physrevlett.108.033903.

2011 Toh KC, Stojkovic EA, Rupenyan AB, van Stokkum IH, Salumbides M, Groot ML, Moffat K, and Kennis JT. Primary reactions of bacteriophytochrome observed with ultrafast mid-infrared spectroscopy. *The journal of physical chemistry. A*, 04 2011. DOI: https://doi.org/10.1021/jp106891x.

2011 Rupenyan AB, Vreede J, van Stokkum IH, Hospes M, Kennis JT, Hellingwerf KJ, and Groot ML. Proline 68 enhances photoisomerization yield in photoactive yellow protein. *The journal of physical chemistry. B*, 05 2011. DOI: https://doi.org/10.1021/jp112113s.

2009 Rupenyan A, van Stokkum IH, Arents JC, van Grondelle R, Hellingwerf KJ, and Groot ML. Reaction pathways of photoexcited retinal in proteorhodopsin studied by pump-dump-probe spectroscopy. *The journal of physical chemistry. B*, 12 2009. DOI: https://doi.org/10.1021/jp9065289.

2009 Rupenyan A, Commandeur J, and Groot ML. Co photodissociation dynamics in cytochrome p450bm3 studied by subpicosecond visible and mid-infrared spectroscopy. *Biochemistry*, 07 2009. DOI: https://doi.org/10.1021/bi900351m.

2008 Rupenyan A, van Stokkum IH, Arents JC, van Grondelle R, Hellingwerf K, and Groot ML. Characterization of the primary photochemistry of proteorhodopsin with femtosecond spectroscopy. *Biophysical journal*, 05 2008. DOI: https://doi.org/10.1529/biophysj.107.121376.

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Conference Proceedings

2025 Mingkun Wu, Alisa Rupenyan, and Burkhard Corves. Singularity-avoidance control of robotic systems with model mismatch and actuator constraints. *European Control Conference (ECC) 2025*, 2025.

2024 Marta Zagorowska, Lukas Ortmann, Alisa Rupenyan, Mehmet Mercangoez, and Lars Imsland. Tuning of online feedback optimization for setpoint tracking in centrifugal compressors. *accepted, IFAC ADCEM 2024 arXiv:2312.01996*, 2024.

2024 Jiaqi Yan, Ankush Chakrabarty, Alisa Rupenyan, and John Lygeros. Mpc of uncertain nonlinear systems with meta-learning for fast adaptation of neural predictive models. *IEEE CASE 2024, arXiv preprint arXiv:2404.12097*, 2024.

2024 Jialin Li, Marta Zagorowska, Giulia De Pasquale, Alisa Rupenyan, and John Lygeros. Safe time-varying optimization based on gaussian processes with spatio-temporal kernel. In *The Thirty-eighth Annual Conference on Neural Information Processing Systems*, 2024. https://openreview.net/forum?id=yKvHJJE9le.

2023 Marta Zagorowska, Efe C Balta, Varsha Behrunani, Alisa Rupenyan, and John Lygeros. Efficient sample selection for safe learning. *IFAC-PapersOnLine*, volume 56, pages 10107–10112. Elsevier, 2023.

2023 Karlo Lajtner, Christopher Koenig, Alisa Rupenyan, and Bojan Resan. Machine learning for automatic pointing alignment and spatial beam filtering. In *EPJ Web of Conferences*, volume 287, page 13014. EDP Sciences, 2023.

2023 Xavier Guidetti, Marino Kühne, Yannick Nagel, Efe C Balta, Alisa Rupenyan, and John Lygeros. Data-driven process optimization of fused filament fabrication based on in situ measurements. *IFAC-PapersOnLine*, volume 56, pages 4713–4718. Elsevier, 2023.

2023 Samuel Balula, Dominic Liao-McPherson, Stefan Stevšić, Alisa Rupenyan, and John Lygeros. Drone-based volume estimation in indoor environments. *IFAC-PapersOnLine*, volume 56, pages 5009–5014. Elsevier, 2023.

2023 Samuel Balula, Efe C Balta, Dominic Liao-McPherson, Alisa Rupenyan, and John Lygeros. Sequential quadratic programming-based iterative learning control for nonlinear systems. In *2023 IEEE Conference on Control Technology and Applications (CCTA)*, pages 162–167. IEEE, 2023.

2022 Riccardo Zuliani, Efe C Balta, Alisa Rupenyan, and John Lygeros. Batch model predictive control for selective laser melting. *IEEE ECC 2022 (accepted)*, 2022. https://arxiv.org/abs/2111.08363.

2022 Dominic Liao-McPherson, Efe C Balta, Ryan Wüest, Alisa Rupenyan, and John Lygeros. In-layer thermal control of a multi-layer selective laser melting process. *IEEE ECC 2022 (accepted)*, 2022. https://arxiv.org/abs/2111.00890.

2021 Alisa Rupenyan, Mohammad Khosravi, and John Lygeros. Performance-based trajectory optimization for path following control using bayesian optimization. In *2021 60th IEEE Conference on Decision and Control (CDC)*, pages 2116–2121, 2021.

2021 Christopher Koenig, Mateo Turchetta, John Lygeros, Alisa Rupenyan, and Krause Andreas. Safe and efficient model-free adaptive control via bayesian optimization. *International Conference for Robotics ans Automation (ICRA) 2021*, 2021. https://arxiv.org/abs/2101.07825.

2021 Xavier Guidetti, Alisa Rupenyan, Lutz Fassl, Majid Nabavi, and John Lygeros. Plasma spray process parameters configuration using sample-efficient batch bayesian optimization. In *2021 IEEE 17th International Conference on Automation Science and Engineering (CASE)*, pages 31–38, 2021.

2021 Eugenio Chisari, Alexander Liniger, Alisa Rupenyan, and John Lygeros. Learning from simulation, racing in reality. *International Conference for Robotics ans Automation (ICRA) 2021*, 2021. https://arxiv.org/abs/2011.13332.

2021 Efe C. Balta, Kira Barton, Dawn M. Tilbury, Alisa Rupenyan, and John Lygeros. Learning-based repetitive precision motion control with mismatch compensation. In *2021 60th IEEE Conference on Decision and Control (CDC)*, pages 3605–3610, 2021.

2020 José L Vázquez, Marius Brühlmeier, Alexander Liniger, Alisa Rupenyan, and John Lygeros. Optimization-based hierarchical motion planning for autonomous racing. *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 2397–2403, 2020. DOI:10.1109/IROS45743.2020.9341731.

2020 Markus Maier, Alisa Rupenyan, Mansur Akbari, Ruben Zwicker, and Konrad Wegener. Turning: Autonomous process set-up through bayesian optimization and gaussian process models. In *13th CIRP Conference on Intelligent Computation in Manufacturing Engineering, CIRP ICME 19*, volume 88, pages 306–311, 2020. https://doi.org/10.3929/ethz-b-000386017.

2020 Mohammad Khosravi, Varsha Behrunani, Roy S Smith, Alisa Rupenyan, and John Lygeros. Cascade control: Data-driven tuning approach based on bayesian optimization. *accepted in IFAC World congress*, 2020. https://arxiv.org/abs/2005.03970.

2020 Eugenio Chisari, Alexander Liniger, Alisa Rupenyan, and John Lygeros. Learning from simulation, racing in reality. *3rd Robot Learning Workshop, NeurIPS*, 2020.

2020 Samuel Balula, Alex Liniger, Alisa Rupenyan, and John Lygeros. Reference design for closed loop system optimization. *IEEE Xplore European Control Conference*, 2020. https://ieeexplore.ieee.org/document/9143667.

2019 A. Liniger, L. Varano, A. Rupenyan, and J. Lygeros. Real-time predictive control for precision machining. In *2019 IEEE 58th Conference on Decision and Control (CDC)*, pages 7746–7751, 2019. DOI: https://doi.org/10.1109/CDC40024.2019.9029533.