Curriculum Vitae

Personal Information

Name, Surname:	Ričards Marcinkevičs
Address:	Zürich, Switzerland
email:	ricards.marcinkevics@inf.ethz.ch
Nationality:	Latvian (EU)

Education

11.2019-09.2024	Ph.D. student, **Department of Computer Science, Institute for Machine Learning, ETH Zurich**, supervised by Prof. Dr. Julia E. Vogt, co-advised by Prof. Dr. Fanny Yang
09.2017-08.2019	M.Sc. ETH in Statistics, with distinction, **Department of Mathematics, ETH Zurich**. Master thesis: *"Causal Inference in Time Series for Identifying Molecular Fingerprints during Sleep"*, supervised by Prof. Dr. Joachim M. Buhmann, advised by Đorđe Miladinović
09.2014-08.2017	B.Sc. in Data Science and Knowledge Engineering, summa cum laude, **Department of Data Science and Knowledge Engineering, Maastricht University**. Bachelor thesis: *"Minimum Modification of Time Series to Alter Classification Outcomes under the Nearest Neighbour Algorithm"*, supervised by Prof. Dr. Steven Kelk, Prof. Dr. Carlo Galuzzi, and Dr. Berthold Stegemann
09.2009-06.2014	**Rīga Secondary School 34**, General Certificate of Secondary Education
09.2002-05.2009	**Rīga Secondary School 95**

Publications & Preprints

Laguna, S.,† **Marcinkevičs, R.**,† Vandenhirtz, M., Vogt, J.E. (2024) Beyond Concept Bottleneck Models: How to Make Black Boxes Intervenable? *arXiv: 2401.13544*.

Marcinkevičs, R.,† Reis Wolfertstetter, P.,† Klimiene, U.,† Chin-Cheong, K., Paschke, A., Zerres, J., Denzinger, M., Niederberger, D., Wellmann, S., Ozkan, E., Knorr, C., Vogt, J. E. (2024). Interpretable and Intervenable Ultrasonography-based Machine Learning Models for Pediatric Appendicitis. *Medical Image Analysis*.

Xiao, Z., Muszynski., M., **Marcinkevičs, R.**, ..., Clarenbach, C., Vogt, J.E., Brunschwiler, T. (2023) Breathing New Life into COPD Assessment: Multisensory Home-monitoring for Predicting Severity. *25th ACM International Conference on Multimodal Interaction, ICMI 2023*.

Marcinkevičs, R.,† Silva, P.,† Hankele, A.-K.,† ..., Vogt, J.E., Sallusto, F., Stoffel, M., Ulbrich, S.E. (2023) Machine learning analysis of humoral and cellular responses to SARS-CoV-2 infection in young adults. *Frontiers in Immunology*.

Vogt, J. E., Ozkan, E., **Marcinkevičs, R.** (2023). Introduction to Machine Learning for Physicians: A Survival Guide for Data Deluge. In *Digital Medicine: Bringing Digital Solutions to Medical Practice*.

Schuurmans, M., Muszynski, M., Li, X., **Marcinkevičs, R.**, Zimmerli, L., Monserrat Lopez, D., Michel, B., Weiss, J., Hage, R., Roeder, M., Vogt, J. E., Brunschwiler, T. (2023) Multimodal Remote Home-Monitoring of Lung Transplant Recipients during COVID-19 Vaccinations: Usability Pilot Study of the COVIDA Desk Incorporating Wearable Devices. *Medicina*.

Marcinkevičs, R., and Vogt, J. E. (2023) Interpretable and explainable machine learning: A methods-centric overview with concrete examples. *WIREs Data Mining and Knowledge Discovery*.

Marcinkevičs, R., Ozkan, E., Vogt, J.E. (2022) Debiasing Deep Chest X-Ray Classifiers using Intra- and Post-processing Methods. *7th Machine Learning for Healthcare Conference, MLHC 2022*.

Manduchi, L.,† **Marcinkevičs, R.**,† Massi, M.C., Weikert, T., Sauter, A., Gotta, V., Müller, T., Vasella, F., Neidert, M.C., Pfister, M., Stieltjes, B., Vogt, J.E. (2022) A Deep Variational Approach to Clustering Survival Data. *10th International Conference on Learning Representations, ICLR 2022*.

Roig Aparicio, P., **Marcinkevičs, R.**, Reis Wolfertstetter, P., Wellmann, S., Knorr, C., Vogt, J.E. (2021) Learning Medical Risk Scores for Pediatric Appendicitis. *Short paper at 20th IEEE International Conference on Machine Learning and Applications, ICMLA 2021*.

Nowak, N., Gaisl, T., Miladinovic, D., **Marcinkevičs, R.**, Osswald, M., Bauer, S., Buhmann, J.M., Zenobi, R., Sinues, P., Brown, S.A., Kohler, M. (2021) Rapid and reversible control of human metabolism by individual sleep states. *Cell Reports*.

Hatteland, A.H.,† **Marcinkevičs, R.**,† Marquis, R., Frick, T., Hubbard, I., Vogt, J.E., Brunschwiler, T., Ryvlin, P. (2021) Exploring Relationships between Cerebral and Peripheral Biosignals with Neural Networks. ***Best paper award*** *at IEEE International Conference on Digital Health, ICDH 2021.*

Marcinkevičs, R.,† Reis Wolfertstetter, P.,† Wellmann, S., Knorr, C., Vogt, J.E. (2021) Using machine learning to predict the diagnosis, management and severity of pediatric appendicitis. *Frontiers in Pediatrics.*

Marcinkevičs, R. and Vogt, J.E. (2021) Interpretable Models for Granger Causality Using Self-explaining Neural Networks. *9th International Conference on Learning Representations, ICLR 2021.*

Marcinkevičs, R. and Vogt, J.E. (2020) Interpretability and Explainability: A Machine Learning Zoo Mini-tour. *arXiv: 2012.01805.*

Daunhawer, I., Sutter, T.M., **Marcinkevičs, R.**, Vogt, J.E. (2020) Self-supervised Disentanglement of Modality-specific and Shared Factors Improves Multimodal Generative Models. *42nd DAGM German Conference on Pattern Recognition, DAGM GCPR 2020.*

Marcinkevičs, R., Kelk, S., Galuzzi, C., Stegemann, B. (2019) Discovery of Important Subsequences in Electrocardiogram Beats Using the Nearest Neighbour Algorithm. *arXiv: 1901.09187.*

Marcinkevičs, R., O'Neill, J., Law, H., Pervolaraki, E., Hogarth, A., Russell, C.R., Stegemann, B., Holden, A.V., Tayebjee, M.H. (2017) Multichannel ECG diagnostics for the diagnosis of arrhythmogenic right ventricular dysplasia. *EP-Europace.*

Workshop Contributions

Marcinkevičs, R.,† Laguna, S.,† Vandenhirtz, M., Vogt, J.E. (2023) Beyond Concept Bottleneck Models: How to Make Black Boxes Intervenable? *Workshop "XAI in Action: Past, Present, and Future Applications" at the 37th Conference on Neural Information Processing Systems, NeurIPS 2023.*

Marcinkevičs, R.,† Reis Wolfertstetter, P.,† Klimiene, U.,† Chin-Cheong, K., Paschke, A., Zerres, J., Denzinger, M., Niederberger, D., Wellmann, S., Knorr, C., Ozkan, E., Vogt, J. E. (2023). Interpretable and Intervenable Ultrasonography-based Machine Learning Models for Pediatric Appendicitis. *Workshop on Machine Learning for Multimodal Healthcare Data at ICML 2023.*

Vandenhirtz, M., Manduchi, L., **Marcinkevičs, R.**, Vogt, J.E. (2023) Signal Is Harder To Learn Than Bias: Debiasing with Focal Loss. *Domain Generalization Workshop at ICLR 2023.*

Marcinkevičs, R.,† Silva, P.,† Hankele, A.-K.,† ..., Vogt, J.E., Sallusto, F., Stoffel, M., Ulbrich, S.E. (2022) Site-specific Antibody and T Cell Immune Response to Particular Components of SARS-CoV-2. *1st Workshop on Healthcare AI and COVID-19 at ICML 2022.*

Klimiene, U.,† **Marcinkevičs, R.**,† Reis Wolfertstetter, P., Ozkan, E., Paschke, A., Niederberger, D., Wellmann, S., Knorr, C., Vogt, J.E. (2022) Multiview Concept Bottleneck Models Applied to Diagnosing Pediatric Appendicitis. *2nd Workshop on Interpretable Machine Learning in Healthcare (IMLH) at ICML 2022.*

Marcinkevičs, R., Ozkan, E., Vogt, J.E. (2022) Debiasing Neural Networks using Differentiable Classification Parity Proxies. *ICLR 2022 Workshop on Socially Responsible Machine Learning.*

Reis Wolfertstetter, P., **Marcinkevičs, R.**, Wellmann, S., Knorr, C., Vogt, J.E. (2021) Using Machine Learning to Predict the Diagnosis, Management and Severity of Pediatric Appendicitis. *Kongress für Kinder- und Jugendmedizin (KKJ).*

Reis Wolfertstetter, P., **Marcinkevičs, R.**, Wellmann, S., Knorr, C., Vogt, J.E. (2021) Using Machine Learning to Predict the Diagnosis, Management and Severity of Pediatric Appendicitis. *Machine Learning for Healthcare Conference 2021 – Clinical Abstract Track.*

Manduchi, L.,† **Marcinkevičs, R.**,† Vogt, J.E. (2021) A Deep Variational Approach to Clustering Survival Data. *AI for Public Health Workshop at ICLR 2021.*

Marcinkevičs, R. and Vogt, J.E. (2020) Interpretable Models for Granger Causality Using Self-explaining Neural Networks. *NeurIPS 2020 Workshop on Interpretable Inductive Biases and Physically Structured Learning.*

Marcinkevičs, R., Miladinović, Đ., Vogt, J.E., Buhmann, J.M. (2020) Nonlinear Granger Causality for Identifying Molecular Fingerprints during Sleep. *Swiss Institute of Bioinformatics (SIB) Days.*

Marcinkevičs, R., Stegemann, B., Holden, A.V., Tayebjee, M.H. (2017) Differences in Right and Left Atrial Structure and Electrophysiology in ARVD. *Heart Rythm Congress 2017.*

Aasmul, S., **Marcinkevičs, R.**, Stegemann, B. (2016) Remote Photoplethysmography – Comparing Perfusion Signals at Different Sites of the Body. *Medtronic 17th European Science and Technology Conference.*

Aasmul, S., **Marcinkevičs, R.**, Stegemann, B. (2016) Comparison of Colour and Monochrome Cameras in Remote Photoplethysmographic Imaging. *Medtronic 17th European Science and Technology Conference.*

Talks

Machine Learning for Pediatric Appendicitis (October 2023) *Invited talk at the Swiss Research Network of Clinical Pediatric Hubs (SwissPedNet) Field Trip, Luzerner Kantonsspital (LUKS).*

Anomaly Detection for Retinal Fundus Images (March 2023) *Invited talk at the Statistical Machine Learning group meeting at ETH Zurich.*

Multiview Concept Bottleneck Models Applied to Diagnosing Pediatric Appendicitis (July 2022) *Oral spotlight at the 2nd Workshop on Interpretable Machine Learning in Healthcare (IMLH) at ICML 2022.*

Debiasing Neural Networks using Differentiable Classification Parity Proxies (April 2022) *Contributed talk at the ICLR 2022 Workshop on Socially Responsible Machine Learning.*

Deep Variational Approaches for Weakly Supervised Clustering with Applications to Survival Data (November 2021) *Invited talk at the Research Seminar of the TU Wien Machine Learning Research Unit.*

Machine Learning Basics for Physicians (November 2021) *Invited talk at the Barmherzige Brüder Regensburg Hospital Journal Club.*

A Deep Variational Approach to Clustering Survival Data (March & May 2021) *Contributed talk at the AI for Public Health Workshop at ICLR 2021 and invited talk at the IBM Research Zurich Machine Learning Seminar.*

Interpretable Models for Granger Causality Using Self-explaining Neural Networks (November 2020) *Talk at the ETH Zurich Doctoral Machine Learning Seminar.*

Reviewing

Conferences	ICML 2022–2023; Machine Learning for Health symposium 2022–2023 (ML4H; *outstanding reviewer award* 2022); NeurIPS 2022
Journals	PLOS ONE (*PLOS*); Computers in Biology and Medicine (*Elsevier*); Frontiers in Medicine (*Frontiers*); iScience (*Cell Press*); International Journal of Computer Vision (*Springer*)
Workshops	Workshop on Machine Learning for Multimodal Healthcare Data (ICML 2023); Time Series Representation Learning for Health (ICLR 2023); Learning from Time Series for Health (NeurIPS 2022); Trustworthy and Socially Responsible Machine Learning (*PC member*; NeurIPS 2022); Interpretable Machine Learning in Healthcare (ICML 2022, 2023); Workshop on Computational Biology (ICML 2022, 2023); Bridging the Gap: From Machine Learning Research to Clinical Practice (*PC member*; NeurIPS 2021)

Work Experience

2019-	Research assistant at the Department of Computer Science, ETH Zurich
2015-2017	Intern at Medtronic Bakken Research Center, Maastricht Developed methods for extracting and processing remote photoplethysmographic signals from videos; analysed multichannel electrocardiograms to perform the selection of channels for the diagnosis of arrhythmogenic right ventricular dysplasia.

Teaching Experience

2023	Head TA for Data Science for Medicine (252-0868-00L)
2021-2022	TA for Data Science for Medicine (252-0868-00L)
2020-2022	TA for Advanced Machine Learning (252-0535-00L)
2020	TA for Digital Medicine II (252-0868-00L)

Certificates & Awards

2023	The fide German language proficiency test: written B1, oral B1
2022	Outstanding reviewer award at the 2nd Machine Learning for Health symposium 2022
2021	Best paper award at IEEE ICDH 2021
2021	Gero Wesener prize from Deutsche Gesellschaft für Kinderchirurgie (DGKCH)
2017	IELTS: 8.5
2017	Maastricht University Research Based Learning Program (MaRBLe)
2017	KE@Work

Languages

Latvian (*native*), Russian (*native*), English (*professional*), German (*limited working proficiency*)

Programming & Software Skills

Basic	C++, mySQL, GLPK, OpenMP, Open MPI, Adobe Photoshop
Intermediate	C#, LaTeX, OpenCV, TensorFlow
Advanced	python, PyTorch, Java, R, MATLAB, MS Office

Interests & Activities

Recreational Mathematics, History, Literature, Philosophy, Angling, Swimming