

MARIELLA GLORIA GREGORICH

Curriculum Vitae

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🌐 Mariella-Gloria-Gregorich

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📍 Vienna, Austria



EDUCATION

03/2020 - 06/2024	PhD Program Medical Informatics, Biostatistics & Complex Systems DOCTORAL THESIS: <i>"Statistical Approaches for Handling Complex Correlation Structures in Prediction Modelling"</i> funded by the DOC fellowship from the Austrian Academy of Sciences under the supervision of Ao. Univ. Prof. Dr. Georg Heinze UNIVERSITY: Institute for Clinical Biometrics, Center for Medical Data Science (CeDas), Medical University of Vienna, Austria
10/2015 - 03/2019	Dipl.-Ing. Biomedical Engineering (MSc equivalent) MASTER THESIS: <i>"Detecting and Understanding Glioblastoma Multiforme Using Convolutional Neural Networks"</i> under the supervision of Assoc.-Prof. Dipl.-Ing. Dr. Georg Langs and Univ.-Prof. Dipl.-Ing. Dr. Peter Filzmoser UNIVERSITY: University of Technology, Vienna, Austria
10/2015 - 05/2018	Dipl.-Ing. Technical Mathematics (MSc equivalent) MASTER THESIS: <i>"A comparison of methods for causal inference with a rare binary outcome"</i> under the supervision of Ao. Univ. Prof. Dr. Georg Heinze and Univ.-Prof. Dipl.-Ing. Dr.techn. Peter Filzmoser UNIVERSITY: University of Technology, Vienna, Austria
09/2016 - 01/2017	ERASMUS European Exchange Program at the University of Bath, UK
10/2011 - 10/2015	Bachelor of Science (BSc) in Technical Mathematics BACHELOR THESIS: <i>"Simulation of Colon Carcinoma Prevention in Austria - Importance of Risk Factors and Evaluation of Screening Programs"</i> SUPERVISOR: Ao.Univ.-Prof. Dipl.-Ing. Dr. Felix Breitenecker UNIVERSITY: University of Technology, Vienna, Austria

PROFESSIONAL EXPERIENCE

Project lead at the Medical University of Vienna

07/2022 - 06/2024	Lead of the project titled <i>"A Framework for Developing Prognostic Models with Networks as Predictors (PRONET)"</i> funded by the Austrian Academy of Sciences Institute of Clinical Biometrics, Center for Medical Data Science (CeDaS), Medical University of Vienna, Vienna, Austria
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Biostatistician at the Medical University of Vienna

12/2019 - 06/2022	Statistical consultation and collaborations with medical researchers Contributed to the EU-project BEAt-DKD by developing and validating a statistical model for the prediction of kidney function with a corresponding R Shiny web app Division of Nephrology and Dialysis, University Clinic Internal Medicine III & Institute of Clinical Biometrics, Medical University of Vienna, Vienna, Austria
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Statistical research fellow at the University of Technology Vienna

08/2019 - 11/2019 | Participation in applied projects, supervision of a student, and research activities in multivariate outlier detection
Research group Computational Statistics, Institute of Statistics and Mathematical Methods in Economics, University of Technology Vienna, Vienna, Austria

Statistical research fellow at the Medical University of Vienna

08/2019 - 11/2019 | Participation in applied projects and research activities in survival analysis
Institute of Medical Statistics, Center for Medical Data Science (CeDaS), Medical University of Vienna, Vienna, Austria

Summer internship at the Austrian Federal Agency for Health and Food Safety

07/2017 - 09/2017 | Statistical analysis and evaluation of the Austrian Hepatitis A data
Reference Center for Infection Epidemiology in Vienna at the Institute for Medical Microbiology and Hygiene Vienna of the Austrian Federal Agency for Health and Food Safety (AGES)

Summer internship at the Austrian Institute of Technology (AIT)

08/2015 - 09/2015 | Model-based pulse wave and ECG analysis for predicting cardiovascular diseases; calibration and adjustment of measuring data for the determination of risk parameters for left ventricular hypertrophy
Department Health & Environment in the business field Biomedical Systems of the Austrian Institute of Technology (AIT)

Summer internship at the Medical University of Vienna

07/2013 - 08/2013 | Development of a simulation study in R on the subject of "*Multinomial logit regression and logistic regression with fractional polynomials*"
Institute of Clinical Biometrics at the Center for Medical Data Science (CeDaS); Medical University Vienna, Austria

Summer internship at the Austrian Federal Agency for Health and Food Safety

07/2011 | Detection of Legionellae bacteria with microbiological and molecular biological methods & statistical evaluations
Reference Center for Anthropogenic Infections in Vienna / Institute for Medical Microbiology and Hygiene Vienna of the Austrian Federal Agency for Health and Food Safety (AGES)
ADD. INFORM.: Honoured by the Austrian Ministry of Transport, Innovation and Technology (BMVIT) for outstanding performance

AWARDS, HONORS & FELLOWSHIPS

06/2022 - 06/2024 | Recipient of the DOC Fellowship from the Austrian Academy of Sciences for the doctoral research project conducted at the Institute of Clinical Biometrics, Center for Medical Data Science (CeDaS), at the Medical University of Vienna, Austria (Amount: 85,050 €)

2019 | Award from the Austrian Statistical Society in the category of Applied Statistics for the master thesis in Technical Mathematics

2019 | Dr. Maria Schaumayer Foundation Prize for excellence in the master thesis in Biomedical Engineering

08/2012 | Invitation to the Alpbach Technology Forum by the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) in Alpbach, Austria

LANGUAGES

NATIVE	German
FLUENT	English (Cambridge Certificate Advanced)
INTERMEDIATE	French
BASIC	Spanish

CODING PROFICIENCY

ADVANCED:	R, R Markdown, R Quarto, R Shiny, LaTeX
INTERMEDIATE:	Python, AnyLogic, SPSS
BASIC:	C, C++, Matlab, Maple, HTML/PHP

TEACHING

2023 - 2024	Workshop for medical students: "Hochschulschriften erfolgreich verfassen" (nominated for the Ars Docendi National Award for Excellence in Teaching 2023)
2023	Methodenseminar Statistik - Statistical seminar to support medical students in writing their thesis
2021 - 2023	Scientific Study Module (SSM3) - Seminar on statistical software
2021 - 2023	Scientific Study Module (SSM2) - Statistical methods in medical research Medical University of Vienna
2015 - 2016	Tutor for the refresher course of mathematics (AKMATH, Auffrischkurs Mathematik) for students at the University of Technology Vienna University of Technology Vienna, Austria
2014 - 2018	Online mentoring for students in Applied Mathematics at the University of Technology Vienna
2012 - 2019	Lectures in secondary schools on "Women in technical studies", participation in the FIT (germ. "Frauen in die Technik", engl. "Women in Technology") information days at the University of Technology Vienna COMPANY: FIT project of the information center "Sprungbrett" funded by the Austrian Federal Ministry of Education, Science, and Research
2007 - 2015	Tutor for mathematics, biology and Latin

TALKS & CONFERENCES

Invited talks

- XXXIInd Conference of the Austro-Swiss Region (ROeS) of the International Biometric Society
Title: *Using subject-specific networks for prediction modelling: Methodological aspects and challenges*, **M. Gregorich**, F. Melograna, M. Sunqvist, S. Michiels, K. Van Steen, G. Heinze, September, 2021
- 65th Annual Meeting of the German Association for Medical Informatics, Biometry and Epidemiology (GMDS), Meeting of the Central European Network (CEN: German Region, Austro-Swiss Region and Polish Region) of the International Biometric Society (IBS) including the 66th Biometric Colloquium of the German Region (GMDS & IBS-CEN 2020)
Title: *A comparison of methods for causal inference with a rare binary outcome*, **M. Gregorich** and G. Heinze. September, 2020

Contributed Talks

- Workshop of the project "Statistical Model Building Strategies for Cardiologic Applications - New results and future challenges (SAMBA)"
Title: *Correlated predictors: is variable omission a good default solution?*, **M. Gregorich**, S. Strohmaier, D. Dunkler and G. Heinze, 23-24 November, 2023 in Vienna, Austria
- 6th Conference of the Central European Network (CEN)
Title: *Individual-specific network inference for prediction modelling: a plasmode simulation study*, **M. Gregorich**, SL Simpson and G. Heinze, 3-7 September 2023 in Basel Switzerland
- 44th Conference of the International Society for Clinical Biostatistics (ISCB44)
Title: *Variable selection with 'too' many zero-inflated predictors*, **M. Gregorich**, M. Kammer and G. Heinze, 27-31 August 2023 in Milan, Italy
- 24th International Conference on Computational Statistics (COMPSTAT)
Title: *Flexible parametrization of graph-theoretical features from individual-specific networks for prediction*, **M. Gregorich** and G. Heinze, 23-26 August 2022 in Bologna, Italy
- 43rd Annual Conference of the International Society of Biostatistics (ISCB43)
Title: *Flexible parametrization of individual sparsified networks for prediction: a proof-of-concept*, **M. Gregorich** and G. Heinze, 21-25 August 2022 in Newcastle, UK (virtual participation)
- 31st International Biometric Conference (IBC)
Title: *Prediction modelling with individual-specific networks. a methodological review*, **M. Gregorich** and G. Heinze, 10-15 July 2022 in Riga, Latvia
- 6th Conference of the Deutsche Arbeitsgemeinschaft Statistik (DAGStat)
Title: *Improved prediction of renal function decline by model updating*, **M. Gregorich**, G. Heinze and R. Oberbauer, 28 March - 1 April 2022 in Hamburg, Germany
- 42nd Conference of the International Society for Clinical Biostatistics (ISCB42)
Title: *Subject-specific networks as features for predictive modelling - A scoping review of methods*, **M. Gregorich**, F. Melograna, M. Sunqvist, S. Michiels, K. Van Steen, G. Heinze, 18-22 July 2021 (virtual conference)

Contributed Posters

- 41st Conference of the International Society for Clinical Biostatistics (ISCB41)
Title: *Comparison of methods for causal inference with a rare binary outcome*, **M. Gregorich** and G. Heinze, 23-27 August 2020 (virtual conference)
- 19th Annual European Congress - International Society for Pharmacoeconomics and Outcomes Research (ISPOR)
Title: *Cost-effectiveness analysis of colorectal cancer screening in Austria and assessment of the impact of cancer-causing risk factors*, **M. Gregorich**, C. Urach, F. Breitenecker, 29 October-2 November 2016 in Vienna, Austria

Courses

- *Practical Smoothing. The Joys of P-splines* held by Paul Eilers and organized by L-Biostat (KU Leuven, Belgium), 8-10 March 2023 in Leuven, Belgium

ADDITIONAL ACTIVITIES

Peer-reviewing	Journals: BMC Medical Research Methodology, Diagnostic and Prognostic Research, Nephrology Dialysis Transplantation, Statistics in Medicine
Memberships	Austrian Statistical Society (ÖSG) and the Austrian Swiss Region (ROeS) of the International Society of Clinical Biostatistics (ISCB)

PUBLICATIONS

1. **GREGORICH, M.**, KAMMER, M., MISCHAK, H., AND HEINZE, G. Prediction modelling with many correlated and zero-inflated predictors: assessing a nonnegative garrote approach. *arXiv preprint: 2402.02064* (2024)
2. **GREGORICH, M.**, SIMPSON, S. L., AND HEINZE, G. Flexible parametrization of graph-theoretical features from individual-specific networks for prediction. *arXiv preprint: 2308.15365* (2023)
3. JABBOUR, R., HEINZEL, A., REINDL-SCHWAIGHOFER, R., **GREGORICH, M.**, REGELE, H., KOZAKOWSKI, N., KLÄGER, J., FISCHER, G., KAINZ, A., BECKER, J. U., ET AL. Early progression of chronic histologic lesions in kidney transplant biopsies is not associated with hla histocompatibility. *Nephrology Dialysis Transplantation* (2023), gfad246
4. KAMMER, M., HEINZEL, A., HU, K., MEISELBACH, H., **GREGORICH, M.**, BUSCH, M., DUFFIN, K. L., GOMEZ, M. F., ECKARDT, K.-U., OBERBAUER, R., ET AL. Different roles of protein biomarkers predicting egfr trajectories in people with chronic kidney disease and diabetes mellitus: a nationwide retrospective cohort study. *Cardiovascular Diabetology* 22, 1 (2023), 74
5. **GREGORICH, M.**, KAMMER, M., HEINZEL, A., BÖGER, C., ECKARDT, K.-U., HEERSPINK, H. L., JUNG, B., MAYER, G., MEISELBACH, H., SCHMID, M., ET AL. Development and validation of a prediction model for future estimated glomerular filtration rate in people with type 2 diabetes and chronic kidney disease. *JAMA Network Open* 6, 4 (2023), e231870–e231870
6. ASCHAUER, C., JELENCICS, K., HU, K., **GREGORICH, M.**, REINDL-SCHWAIGHOFER, R., WENDA, S., WEKERLE, T., HEINZEL, A., AND OBERBAUER, R. Effects of reduced-dose anti-human t-lymphocyte globulin on overall and donor-specific t-cell repertoire reconstitution in sensitized kidney transplant recipients. *Frontiers in Immunology* 13 (2022), 843452
7. **GREGORICH, M.**, MELOGRANA, F., SUNQVIST, M., MICHIELS, S., VAN STEEN, K., AND HEINZE, G. Individual-specific networks for prediction modelling—a scoping review of methods. *BMC Medical Research Methodology* 22, 1 (2022), 62
8. ASCHAUER, C., JELENCICS, K., HU, K., HEINZEL, A., **GREGORICH, M.**, VETTER, J., SCHALLER, S., WINKLER, S. M., WEINBERGER, J., PIMENOV, L., ET AL. Prospective tracking of donor-reactive t-cell clones in the circulation and rejecting human kidney allografts. *Frontiers in Immunology* 12 (2021), 750005
9. **GREGORICH, M.**, STROHMAIER, S., DUNKLER, D., AND HEINZE, G. Regression with highly correlated predictors: variable omission is not the solution. *International Journal of Environmental Research and Public Health* 18, 8 (2021), 4259
10. **GREGORICH, M.**, HEINZEL, A., KAMMER, M., MEISELBACH, H., BÖGER, C., ECKARDT, K.-U., MAYER, G., HEINZE, G., AND OBERBAUER, R. A prediction model for the decline in renal function in people with type 2 diabetes mellitus: study protocol. *Diagnostic and Prognostic Research* 5 (2021), 1–9
11. FILZMOSE, P., AND **GREGORICH, M.** Multivariate outlier detection in applied data analysis: global, local, compositional and cellwise outliers. *Mathematical Geosciences* 52, 8 (2020), 1049–1066
12. SANDNER, S. E., NOLZ, R., LOEWE, C., **GREGORICH, M.**, HEINZE, G., ANDREAS, M., KOLH, P., ZIMPFER, D., AND LAUFER, G. Routine preoperative aortic computed tomography angiography is associated with reduced risk of stroke in coronary artery bypass grafting: a propensity-matched analysis. *European Journal of Cardio-Thoracic Surgery* 57, 4 (2020), 684–690

April 24, 2024