Alexej Gossmann

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SKILLS

Core: Statistics, machine learning, deep learning, artificial intelligence, data science, study design, (applied) mathematics, medical imaging, genomics, regulatory science and policy.

Software, programming, tools: Python (PyTorch, Numpy, Pandas, etc.), R (ggplot2,, Tidyverse packages, etc), C, C++, Ruby, Shell, Matlab, LaTeX, Linux/Unix, Git and Github, HTML, CSS, AWS, Microsoft Office.

Language knowledge: German, Russian, English.

EDUCATION

PhD, Bioinnovation
Tulane University, New Orleans, Louisiana, August 2018
GPA: 3.967

Doctoral research, Mathematics (PhD candidacy, all but dissertation, withdrawn)
Tulane University, New Orleans, Louisiana, through January 2017
GPA: 3.978

MS, Statistics
Tulane University, New Orleans, Louisiana, May 2014
GPA: 3.975

BS, Mathematics
Technische Universität Darmstadt, Darmstadt, Germany, May 2012
GPA: 3.7 (1.54 German grade)

Workshops and summer schools
IPAM New Deep Learning Techniques, Los Angeles, CA, February 2018. | SAMSI Distributed and Parallel Data Analysis Workshop, September 2016. | SAMSI Optimization Opening Workshop, August 2016. | SAMSI Optimization Summer School, August 2016. | 2nd Summer Institute in Statistics for Big Data, University of Washington, Seattle, June 2016. | 21st Summer Institute in Statistical Genetics, University of Washington, Seattle, WA, June 2016. | 20th Summer Institute in Statistical Genetics, University of Washington, Seattle, WA, June 2015. | SAMSI Industrial Mathematical and Statistical Modeling Workshop for Graduate Students, June 2014.

FDA related training courses
CDRH Reviewer Certification Program (RCP) | RCP Advanced Courses | UCSF-Stanford CERSI: Introduction to Pharmacogenomics | Advanced Topics - Statistics for Clinical Trials with Application to Medical Devices, parts 1, 2, 3, and 4 (FDA/CDRH) | FDLI/CDRH Introduction to Medical Device Law and Regulation | Food and Drug Law (FDA/CDRH).

EXPERIENCE

Principal Statistician II   **Mayo Clinic Platform**
Remote. Mayo Clinic, Rochester, MN   Dec 2024– Present

- Leveraging advanced statistical analyses and AL/ML to translate complex and massive data resources into real-world healthcare solutions and actionable insights that enhance patient care.
- Day-to-day work with vast clinical datasets that include both structured data (demographics, diagnoses, lab test results, medications) and unstructured data (clinical notes, imaging, pathology reports).
- Multidisciplinary collaboration including data engineers, data scientists, informaticians, clinicians, and external partners.

Staff Fellow → Senior Staff Fellow   **Division of Imaging, Diagnostics, and**
(Mathematical Statistician Series 1529)   **Software Reliability**
                                                 (CDRH/OSEL/DIDSR) at the U.S.
                                                 Food & Drug Administration
FDA, Silver Spring, MD   Sep 2018 – Dec 2024

- **Scientific research** and **regulatory review** activities related to the evaluation of **AI/ML-based medical devices/software**, including experience with clinical studies for medical devices and research on theoretical and applied statistics and AI/ML.
- Coordinated the "Fundamental AI" research program at FDA/CDRH/OSEL, **developing strategic AI/ML research initiatives** by identifying regulatory science gaps and providing guidance to research teams.
- Mentored research fellows and interns, fostering a collaborative environment.
- Developed innovative **statistical and AI/ML methodologies**, with over 20 publications in high-impact venues (e.g., MICCAI, Biometrics, JAMIA, AISTATS).
- Developed and publicly released software packages for statistical analysis and ML in medical applications, promoting reproducibility and innovation.
- Delivered invited presentations at international conferences (e.g., PIcc23, REdI 2023, MICCAI 2022, DIA Europe 2022, KDD 2021), demonstrating thought leadership in regulatory science and AI/ML in healthcare.
- Participation in **regulatory review of over 100 submissions** (510(k), De Novo, Q-submissions) of AI/ML-based medical devices/software.
- Participation in the **development of regulatory guidance documents** related to medical AI/ML, shaping regulatory policy, industry standards and best practices.

Research assistantship (doctoral   **The Multiscale Bioimaging and**
research)   **Bioinformatics Laboratory**
Tulane University, New Orleans, LA   Jan 2015 – Jul 2018
Research in statistics and machine learning with application in genomics and neuroimaging under the supervision of Dr. Yu-Ping Wang, resulting in six peer-reviewed publications (Gossmann et al. [2015], Cao et al. [2015, 2016], Gossmann et al. [2018a,c], Brzyski et al. [2018]), presentations at multiple conferences and workshops, and several open source software packages (developed in R and C++).

Student intern (ORISE)   **Division of Imaging, Diagnostics, and Software Reliability (CDRH/OSEL/DIDSR) at the U.S. Food & Drug Administration**

FDA, Silver Spring, MD   May – Aug 2017, and Jan – Feb 2018

Machine learning research (with software implementation in R) resulting in a conference presentation and associated publication Gossmann et al. [2018b] related to the evaluation of machine learning systems in medicine.

Student developer   **Google Summer of Code 2015**

Remote position   May – August 2015

Project: Adding Linear Mixed Effects Models Support to SciRuby (supervised by Pjotr Prins from the Ruby Science Foundation). The created statistical software package (implemented in Ruby) received about 6000 downloads (`https://rubygems.org/gems/mixed_models`).

Research assistantship   **Department of Mathematics**

Tulane University, New Orleans, LA   Jun – Aug 2014

Worked under the supervision of Dr. Oleksandr Gromenko on statistical methods for the analysis of spatio-temporal processes with software implementation in R and C++, and with application in weather prediction (results unpublished).

Statistics MS research project   **Department of Mathematics**

Tulane University, New Orleans, LA   Sept 2013 – May 2014

Analysis of bone growth data using mixed-effects smoothing spline ANOVA methods (supervised by Dr. Michelle Lacey) with data analyses performed in R, resulting in a journal publication Sammarco et al. [2015].

Academic Mentor   **Tulane University, New Orleans, LA**

Tulane University, New Orleans, LA   Oct 2017 – May 2018

Design, mentoring, and guidance of an undergraduate research project applying machine learning methods to a large neuroimaging-genomics dataset, resulting in two presentations by the mentored undergraduate student, entitled *"Exploratory Analysis and Predictive Modeling of Neurodevelopmental Phenotypes from fMRI Data"* at the 2018 Health Sciences Research Days at Tulane University, and at the 2018 Tulane School of Science and Engineering Poster Days (top 3 finalist in the poster competition).

Co-Mentor   **Google Summer of Code 2016 (with the Ruby Science Foundation)**

Remote position   May – August 2016

Involved with project proposals, selection/interviewing of students, mentoring. Mentored project: Categorical data support for Daru, Statsample and Statsample-glm. The mentored student (Lokesh Sharma) made major improvements to several open source software packages for data analysis in Ruby.

Co-Mentor   **Google Summer of Code 2017 (with the Ruby Science Foundation)**

Remote position   May – August 2017

Involved with project proposals, selection/interviewing of students, mentoring. Mentored project: Creating the fastest math libraries for Ruby by using the GPU through OpenCL and ArrayFire. Outcome: a Ruby library for scientific computing on the GPU (`https://github.com/arrayfire/arrayfire-rb`) and multiple conference presentations by the mentored student (Prasun Anand).

Instructor, co-teacher, teaching assistant   **Technische Universität Darmstadt, and Tulane University**

Darmstadt, Germany, and New Orleans, LA   Fall semester 2010 – Fall semester 2014

Instructor for Calculus 1, co-teacher for Statistics for Scientists, and teaching assistant for Real Analysis 1 and 2 as well as for various undergraduate courses in mathematics and statistics.

PUBLICATIONS (sorted alphabetically)

[Brzyski et al., 2018] Damian Brzyski, Alexej Gossmann, Weijie Su, and Małgorzata Bogdan. Group SLOPE – Adaptive Selection of Groups of Predictors. *Journal of the American Statistical Association*, pages 1–15, January 2018. ISSN 0162-1459. doi:10.1080/01621459.2017.1411269.

[Cao et al., 2015] Shaolong Cao, Huaizhen Qin, Alexej Gossmann, Hong-Wen Deng, and Yu-Ping Wang. Unified tests for fine scale mapping and identifying sparse high-dimensional sequence associations. In *Proceedings of the 6th ACM Conference on Bioinformatics, Computational Biology and Health Informatics*, BCB '15, pages 241–249, New York, NY, USA, 2015. ACM. doi:10.1145/2808719.2808744.

[Cao et al., 2016] Shaolong Cao, Huaizhen Qin, Alexej Gossmann, Hong-Wen Deng, and Yu-Ping Wang. Unified tests for fine-scale mapping and identifying sparse high-dimensional sequence associations. *Bioinformatics*, 32(3):330–337, February 2016. doi:10.1093/bioinformatics/btv586.

[Cha et al., 2020] Kenny H Cha, Alexej Gossmann, Nicholas Petrick, and Berkman Sahiner. Supplementing training with data from a shifted distribution for machine learning classifiers: adding more cases may not always help. In *Medical Imaging 2020: Image Perception, Observer Performance, and Technology Assessment*. International Society for Optics and Photonics, March 2020. doi:10.1117/12.2550538.

[Coroller et al., 2023a] Thibaud Coroller, Berkman Sahiner, Anup Amatya, Alexej Gossmann, Konstantinos Karagiannis, Conor Moloney, Ravi K. Samala, Luis Santana-Quintero, Nadia Solovieff, Craig Wang, Laleh Amiri-Kordestani, Qian Cao, Kenny H. Cha, Rosane Charlab, Frank H. Cross Jr, Tingting Hu, Ruihao Huang, Jeffrey Kraft, Peter Krusche, Yutong Li, Zheng Li, Ilya Mazo, Rahul Paul, Susan Schnakenberg, Paolo Serra, Sean Smith, Chi Song, Fei Su, Mohit Tiwari, Colin Vechery, Xin Xiong, Juan Pablo Zarate, Hao Zhu, Arunava Chakravartty, Qi Liu, David Ohlssen, Nicholas Petrick, Julie A. Schneider, Mark Walderhaug, and Emmanuel Zuber. Methodology for good machine learning with multi-omics data. page cpt.3105, November 2023a. ISSN 0009-9236, 1532-6535. doi:10.1002/cpt.3105.

[Coroller et al., 2023b] Thibaud Coroller, Berkman Sahiner, Anup Amatya, Alexej Gossmann, Konstantinos Karagiannis, Ravi K. Samala, Luis Santana-Quintero, Nadia Solovieff, Craig Wang, Laleh Amiri-Kordestani, Qian Cao, Kenny H. Cha, Rosane Charlab Orbach, Frank H. Cross, Tingting Hu, Ruihao Huang, Jeffrey Kraft, Peter Krusche, Yutong Li, Zheng Li, Ilya Mazo, Conor Moloney, Rahul Paul, Jason Plawinski, Susan Schnakenberg, Paolo Serra, Sean Smith, Chi Song, Fei Su, Sajanth Subramaniam, Mohit Tiwari, Colin Vechery, Xin Xiong, Juan Pablo Zarate, Jonathan Ziegler, Hao Zhu, Arunava Chakravartty, Qi Liu, David Ohlssen, Nicholas Petrick, Julie A. Schneider, Mark Walderhaug, and Emmanuel Zuber. Multi-omics investigation on the prognostic and predictive factors in metastatic breast cancer using data from Phase III ribociclib clinical trials: A statistical and machine learning analysis plan. page 2023.08.30.23294367, August 2023b. doi:10.1101/2023.08.30.23294367.

[Feng et al., 2022a] Jean Feng, Alexej Gossmann, Berkman Sahiner, and Romain Pirracchio. Bayesian logistic regression for online recalibration and revision of risk prediction models with performance guarantees. *Journal of the American Medical Informat-*

ics Association, 2022a. ISSN 1527-974X. doi:10.1093/jamia/ocab280. URL `https://doi.org/10.1093/jamia/ocab280`.

[Feng et al., 2022b] Jean Feng, Gene Pennello, Nicholas Petrick, Berkman Sahiner, Romain Pirracchio, and Alexej Gossmann. Sequential algorithmic modification with test data reuse. In *Proceedings of the Thirty-Eighth Conference on Uncertainty in Artificial Intelligence*, pages 674–684. PMLR, August 2022b.

[Feng et al., 2023] Jean Feng, Adarsh Subbaswamy, Alexej Gossmann, Harvineet Singh, Berkman Sahiner, Mi-Ok Kim, Gene Pennello, Nicholas Petrick, Romain Pirracchio, and Fan Xia. Towards a post-market monitoring framework for machine learning-based medical devices: A case study. In *NeurIPS 2023 Workshop on Regulatable ML*, December 2023. URL `https://openreview.net/forum?id=L97dqPfQdT`.

[Feng et al., 2024a] Jean Feng, Alexej Gossmann, Gene Pennello, Nicholas Petrick, Berkman Sahiner, and Romain Pirracchio. Monitoring machine learning-based risk prediction algorithms in the presence of performativity. In Sanjoy Dasgupta, Stephan Mandt, and Yingzhen Li, editors, *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics*, volume 238 of *Proceedings of Machine Learning Research*, pages 919–927. PMLR, 02–04 May 2024a. URL `https://proceedings.mlr.press/v238/feng24b.html`.

[Feng et al., 2024b] Jean Feng, Alexej Gossmann, Romain Pirracchio, Nicholas Petrick, Gene Pennello, and Berkman Sahiner. Is this model reliable for everyone? Testing for strong calibration. In Sanjoy Dasgupta, Stephan Mandt, and Yingzhen Li, editors, *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics*, volume 238 of *Proceedings of Machine Learning Research*, pages 181–189. PMLR, 02–04 May 2024b. URL `https://proceedings.mlr.press/v238/feng24a.html`.

[Feng et al., 2024c] Jean Feng, Harvineet Singh, Fan Xia, Adarsh Subbaswamy, and Alexej Gossmann. A hierarchical decomposition for explaining ML performance discrepancies. *arXiv:2402.14254*, February 2024c.

[Gossmann et al., 2015] Alexej Gossmann, Shaolong Cao, and Yu-Ping Wang. Identification of significant genetic variants via SLOPE, and its extension to Group SLOPE. In *Proceedings of the 6th ACM Conference on Bioinformatics, Computational Biology and Health Informatics*, BCB '15, pages 232–240, New York, NY, USA, 2015. ACM. doi:10.1145/2808719.2808743.

[Gossmann et al., 2018a] Alexej Gossmann, Shaolong Cao, Damian Brzyski, Lan-Juan Zhao, Hong-Wen Deng, and Yu-Ping Wang. A sparse regression method for group-wise feature selection with false discovery rate control. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 15(4):1066–1078, July 2018a. ISSN 1545-5963, 1557-9964. doi:10.1109/TCBB.2017.2780106.

[Gossmann et al., 2018b] Alexej Gossmann, Aria Pezeshk, and Berkman Sahiner. Test data reuse for evaluation of adaptive machine learning algorithms: Over-fitting to a fixed "test" dataset and a potential solution. In *Proceedings of SPIE: Medical Imaging 2018*. International Society for Optics and Photonics, March 2018b. doi:10.1117/12.2293818.

[Gossmann et al., 2018c] Alexej Gossmann, Pascal Zille, Vince Calhoun, and Yu-Ping Wang. FDR-Corrected Sparse Canonical Correlation Analysis with Applications to Imaging Genomics. *IEEE Transactions on Medical Imaging*, 37(8):1761–1774, August 2018c. ISSN 0278-0062, 1558-254X. doi:10.1109/TMI.2018.2815583.

[Gossmann et al., 2019] Alexej Gossmann, Kenny H. Cha, and Xudong Sun. Variational inference based assessment of mammographic lesion classification algorithms under distribution shift. In *Medical Imaging Meets NeurIPS Workshop (MED-NeurIPS) 2019*, December 2019. URL `https://profs.etsmtl.ca/hlombaert/public/medneurips2019/72_CameraReadySubmission_neurips_2019.pdf`.

[Gossmann et al., 2020] Alexej Gossmann, Kenny H Cha, and Xudong Sun. Performance deterioration of deep neural networks for lesion classification in mammography due to distribution shift: an analysis based on artificially created distribution shift. In *Medical Imaging 2020: Computer-Aided Diagnosis*. International Society for Optics and Photonics, March 2020. doi:10.1117/12.2551346.

[Gossmann et al., 2021] Alexej Gossmann, Aria Pezeshk, Yu-Ping Wang, and Berkman Sahiner. Test Data Reuse for the Evaluation of Continuously Evolving Classification Algorithms Using the Area under the Receiver Operating Characteristic Curve. *SIAM Journal on Mathematics of Data Science*, pages 692–714, January 2021. doi:10.1137/20M1333110. URL https://doi.org/10.1137/20M1333110.

[Gossmann et al., 2023] Alexej Gossmann, Berkman Sahiner, Ravi K. Samala, Si Wen, Kenny H. Cha, and Nicholas Petrick. Considerations in the assessment of machine learning algorithm performance for medical imaging. In Kevin S. Zhou, Hayit Greenspan, and Dinggang Shen, editors, *Deep Learning for Medical Image Analysis*, The Elsevier and MICCAI Society Book Series, pages 473–507. Elsevier Academic Press, 2 edition, December 2023. ISBN 978-0-323-85124-4. doi:10.1016/B978-0-32-385124-4.00029-5.

[Hosseinzadeh Kassani et al., 2019] Peyman Hosseinzadeh Kassani, Alexej Gossmann, and Yu-Ping Wang. Multimodal Sparse Classifier for Adolescent Brain Age Prediction. *IEEE journal of biomedical and health informatics*, June 2019. ISSN 2168-2208, 2168-2194. doi:10.1109/JBHI.2019.2925710. URL http://dx.doi.org/10.1109/JBHI.2019.2925710.

[Pennello et al., 2020] Gene Pennello, Berkman Sahiner, Alexej Gossmann, and Nicholas Petrick. Discussion on "Approval policies for modifications to machine learning-based software as a medical device: A study of bio-creep" by Jean Feng, Scott Emerson, and Noah Simon. *Biometrics*, October 2020. ISSN 0006-341X, 1541-0420. doi:10.1111/biom.13381. URL http://dx.doi.org/10.1111/biom.13381.

[Sammarco et al., 2015] Mimi C Sammarco, Jennifer Simkin, Alexander J Cammack, Danielle Fassler, Alexej Gossmann, Luis Marrero, Michelle Lacey, Keith Van Meter, and Ken Muneoka. Hyperbaric oxygen promotes proximal bone regeneration and organized collagen composition during digit regeneration. *PloS one*, 10(10), 2015. doi:10.1371/journal.pone.0140156.

[Sidulova et al., 2023] Mariia Sidulova, Xudong Sun, and Alexej Gossmann. Deep Unsupervised Clustering for Conditional Identification of Subgroups Within a Digital Pathology Image Set. In Hayit Greenspan, Anant Madabhushi, Parvin Mousavi, Septimiu Salcudean, James Duncan, Tanveer Syeda-Mahmood, and Russell Taylor, editors, *Medical Image Computing and Computer Assisted Intervention – MICCAI 2023*, volume 14227, pages 666–675. Springer Nature Switzerland, November 2023. ISBN 978-3-031-43992-6 978-3-031-43993-3. doi:10.1007/978-3-031-43993-3_64.

[Sidulova et al., 2024] Mariia Sidulova, Seyed Kahaki, Ian Hagemann, and Alexej Gossmann. Contextual unsupervised deep clustering in digital pathology. In *Proceedings of the Conference on Health, Inference, and Learning*, CHIL '24, pages 558–565. Association for Computing Machinery, August 2024.

[Sun et al., 2019] X Sun, A Gossmann, Y Wang, and B Bischt. Variational Resampling Based Assessment of Deep Neural Networks under Distribution Shift. In *2019 IEEE Symposium Series on Computational Intelligence (SSCI)*, pages 1344–1353, December 2019. doi:10.1109/SSCI44817.2019.9002665. URL http://dx.doi.org/10.1109/SSCI44817.2019.9002665.

[Sun et al., 2024a] Xudong Sun, Nutan Chen, Alexej Gossmann, Yu Xing, Carla Feistner, Emilio Dorigatt, Felix Drost, Daniele Scarcella, Lisa Beer, and Carsten Marr. M-HOF-Opt: Multi-Objective Hierarchical Output Feedback Optimization via Multiplier Induced Loss Landscape Scheduling. *arXiv:2403.13728*, March 2024a.

[Sun et al., 2024b] Xudong Sun, Carla Feistner, Alexej Gossmann, George Schwarz, Rao Muhammad Umer, Lisa Beer, Patrick Rockenschaub, Rahul Babu Shrestha, Armin Gruber, Nutan Chen, Sayedali Shetab Boushehri, Florian Buettner, and Carsten Marr. DomainLab: A modular Python package for domain generalization in deep learning. *arXiv:2403.14356*, March 2024b.

CONFERENCE PRESENTATIONS

- Feng, J., Gossmann, A., et al. Is this model reliable for everyone? Testing for strong calibration; Oral presentation by Gossmann A. at *the 27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024)*, May 2024.

- Gossmann, A., Addressing regulatory science gaps in artificial intelligence (AI) and machine learning (ML); Invited presentation at *ReDI 2023*, 2023. `https://www.youtube.com/watch?v=s8aLxfjRHRw&t=1113s` (FDA Regulatory Education for Industry (REdI) Annual Conference 2023 – Devices Day 2/Biologics Day 1)

- Gossmann, A., OSEL AI/ML Research Program, and Regulatory Science Gaps; Invited presentation at *PIcc23*, 2023.

- Sidulova, M., Sun, X., Gossmann, A., Deep Unsupervised Clustering for Conditional Identification of Subgroups Within a Digital Pathology Image Set; Poster presentation at *MICCAI 2023*, October 2023.

- Gossmann A., Test Data Reuse for the Evaluation of Continuously Evolving Machine Learning Algorithms in Medicine; Invited talk at *the Tutorial on AI for medical image analysis in practice at MICCAI 2022*, September 2022.

- Feng, J., Pennello, G., Petrick, N., Sahiner, B., Pirracchio, R., Gossmann, A., Sequential algorithmic modification with test data reuse; Oral presentation by Gossmann A. at *the 12th International Conference on Multiple Comparison Procedures (MCP 2022)*, September 2022.

- Gossmann, A., A Regulatory Perspective on AI/ML-enabled Medical Devices, with Consideration of Real-World Data and Real-World Evidence; Invited presentation at *Europe DIA 2022 Panel on Enabling AI in Healthcare – the Gaps between State of Science and Regulatory Standards*, April 2022.

- Gossmann, A., Issues in reference standard determination for performance evaluation studies of AI/ML-based medical devices; Invited presentation for the *Xavier AI Experts forum*, December 2021.

- Gossmann, A., Performance evaluation and regulatory considerations for AI/ML in medical imaging; Invited talk presented at *KDD 2021 Health Day and 2021 KDD Workshop on Applied Data Science for Healthcare*, August 2021.

- Malik B., Cha K. H., Sahiner B., Gossmann, A., Software Pipelines for AI-Based Radiologic Image Analysis; Poster presented by Malik B. (summer intern student) at the *2021 FDA Science Forum*.

- Adkins-Chatfield T. A., Gossmann A., Image-to-Image Translation Using CycleGAN of Breast Cancer Tissue Slides Stained with an Antibody against HER2/NEU; Poster presented by Adkins-Chatfield T. A. (summer intern student) at *the Annual Biomedical Research Conference for Minority Students (ABRCMS) 2020*.

- Gossmann A., Cha K. H., Sun X., Performance deterioration of deep neural networks for lesion classification in mammography due to distribution shift: an analysis based on artificially created distribution shift; Contributed talk presented by Cha K. H. (substitute due to travel complications of lead author) at the *SPIE Medical Imaging Medical Imaging 2020: Computer-Aided Diagnosis*, February 2020, Houston, TX.

- Gossmann A., Cha K. H., Sun X., Variational inference based assessment of mammographic lesion classification algorithms under distribution shift; Poster presented at *Medical Imaging Meets NeurIPS Workshop (MED-NeurIPS) 2019*, December 2019, Vancouver, Canada.

- Gossmann A. Evaluation of continuously learning AI/ML-enabled medical devices. Invited talk presented at *Next Generation Dx*, August 2019, Washington, DC.

- Gossmann A., Chen W., Sahiner, B., Assessment of Classifier Performance Using a Reference Classifier with Known Performance and an Unlabeled Dataset; (Abstract/Program #307008). Contributed talk presented at the *Joint Statistical Meetings*, July 28, 2019, Denver, CO.

- Gossmann A., Pezeshk, A., Sahiner, B., Test data reuse for evaluation of adaptive machine learning algorithms: over-fitting to a fixed "test" dataset and a potential solution; (Paper 10577-19). Contributed talk presented at the *SPIE Medical Imaging symposium, Image Perception, Observer Performance, and Technology Assessment conference*, February 11, 2018, Houston, TX.

- Gossmann A., Wang Y.-P., SlopeCCA and gslopeCCA: sorted L1 penalized canonical correlation analysis; (Abstract/Program #2803W). Poster presented at the *66th Annual Meeting of The American Society of Human Genetics*, October 19, 2016, Vancouver, Canada.

- Gossmann A., Cao S., Wang Y.-P., Identification of Significant Genetic Variants via SLOPE, and its Extension to Group SLOPE; (Abstract/Program #1343F). Poster presented at the *65th Annual Meeting of The American Society of Human Genetics*, October 9, 2015, Baltimore, MD.

- Gossmann A., Cao S., Wang Y.-P., Identification of Significant Genetic Variants via SLOPE, and its Extension to Group SLOPE; Contributed talk presented at the *6th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics*, September 2015, Atlanta, GA.

SOFTWARE

- `DomId` – Python package for deep unsupervised clustering. Project repository: `https://github.com/DIDSR/DomId`.

- `ThresholdoutAUC` – R and Python code associated with the publication Gossmann et al. [2021]. Project repository: `https://github.com/DIDSR/ThresholdoutAUC`.

- `grpSLOPE` – Group SLOPE (Group Sorted L1 Penalized Estimation) is a penalized linear regression method that is used for adaptive selection of groups of significant predictors in a high-dimensional linear model. This R package has been used to perform simulations and/or analyses of real genomic data as reported in Gossmann et al. [2018a], Brzyski et al. [2018]. Project repository: `https://github.com/agisga/grpSLOPE`.
  CRAN: `https://cran.r-project.org/web/packages/grpSLOPE/index.html`.

- `grpSLOPEMC` – An extension package to the R package grpSLOPE, which contains additional Monte Carlo based methods implemented in R and C++ (interfaced to R via Rcpp). This R package has been used to perform simulation studies and analyses of real genomic data presented in Gossmann et al. [2018a]. Project repository: `https://github.com/agisga/grpSLOPEMC`.

- `FDRcorrectedSCCA` – Codes associated with the publication Gossmann et al. [2018c] with all methods and algorithms conveniently organized as functions in an R package. Project repository: `https://github.com/agisga/FDRcorrectedSCCA`.

- `mixed_models` – Fit statistical linear models with fixed and random effects in Ruby. It was created during Google Summer of Code 2015, and has been considered for deployment

at `http://www.genenetwork.org`. Project repository: `https://github.com/agisga/mixed_models`. RubyGems: `https://rubygems.org/gems/mixed_models`.

— For my contributions to several other open source software projects see `https://github.com/agisga`.

VOLUNTEER ACTIVITIES

— Combined Federal Campaign (CFC) key worker for FDA/CDRH/OSEL/DIDSR, 2019.

— Elected *President* of the SIAM student chapter at Tulane University (Society for Industrial and Applied Mathematics), September 2014 – September 2016.

— Organized the Graduate Student Colloquium at the Department of Mathematics, Tulane University, September 2014 – September 2016.

— Participation in *Google Summer of Code* as a mentor in 2016 and 2017, working on scientific open source software.

— Participation in the middle school outreach program *Girls in STEM at Tulane (GIST)*, November 2017.

HONORS & AWARDS

— 3× FDA/CDRH incentive award 2021, 2022, 2024.

— FDA/CDRH Excellence in Scientific Research Award for developing innovative approaches for reducing bias in artificial intelligence and machine learning testing protocols. June 2021.

— Finalist poster at the Tulane School of Science and Engineering Poster Days 2018.

— Reviewers' Choice Abstract, 66th Annual Meeting of The American Society of Human Genetics, October 19, 2016, Vancouver, Canada.

— SIAM Student Chapter Certificate of Recognition, SIAM (Society for Industrial and Applied Mathematics), April 2015.