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Teaching Portfolio

Formal educational training

- Lecturer training program at SDU in 2014
- Engaging students in group work
- Interactive lecturing
- Helping students understand assessments-using rubrics, peer review and exemplars
- How to use interactive boards as part of your teaching
- PhD supervisor training program 2020

Administrative tasks relating to education

Teaching assignment coordinator for Math and Applied Math 2018-2019
Teaching committee in IMADA (2019-now)
Coordinator of math group

Experience of study programmes supervision and examinations

- I have taught the following courses in SDU: Multivariate statistical analysis (5ECTs), Mathematical statistics (10ECTs), Mathematical statistics 2 (5 ECTS), Complex analysis (5 ECTS), Mathematical Perspectives (5 ECTS), Calculus (10 ECTS), Topology and complex analysis (10 ECTS) and Graph theory (5 ECTS).
- I The audience of the above courses including: mathematics, applied mathematics, mathematics economics and data sciences.
- I have supervised many the individual projects and bachelor projects.
- I have supervised many master projects in Mathematics, Applied Mathematics and Mathematics economics.
- I am currently supervising one PhD student.

Methods, materials and tools

During my teaching, I have used the following methods

- Flipped classroom
- Using smart-board
- Forum theatre
- Helping students understand assessments - using rubrics, peer review and exemplars
- Online teaching techniques

Reflections on my teaching practice

I believe the main features of my teaching in mathematics and statistics are the following:

- > Audience orientated. Teaching, as a particular type of presentation, is all about audience. Before I prepare a course, I always spend enormous efforts in collecting background information of the students registered in this course. In particular, discussing with my colleagues who have taught these students.
- > Balanced and prioritized teaching objectives. Everyone appears in the lecture, including both the lecturer and the students, has his/her own expectation for this particular lecture. As a lecturer, my objective is that to make my audience indeed learn knowledge during the teaching to his/her largest extent. To this end, it is of the utmost importance to have balanced and prioritized teaching objectives.
- > Hyggelig and active study atmosphere. The more active the study atmosphere is, the more knowledge the students can learn and the happier people in class are. I observe an interesting and inspiring phenomenon that my students remember the mathematical results better when I teach them with an active and "hyggelig" environment.
- > Online teaching is challenging, but there are techniques to improve the quality of teaching. For instance, using OneNote as a tool to share notes of teaching and organise online office hours to let student have access to the lecturer.
- > For theoretical courses, it is always "a good picture is better than 1000 words", but I admit, finding a good picture to demonstrate a definition or theorem can be very time consuming and maybe even impossible for the moment. But I consider teaching is a skill which can be improved as long as one teaches. I am still på min vej.

Research outputs

Estimation of the conditional tail moment for Weibull-type distributions

Goegebeur, Y., Guillou, A. & Qin, J., 18. Jun 2024, (E-pub ahead of print) In: Scandinavian Journal of Statistics.

Dependent conditional tail expectation for extreme levels

Goegebeur, Y., Guillou, A. & Qin, J., May 2024, In: Stochastic Processes and Their Applications. 171, 18 p., 104330.

Seafloor primary production in a changing Arctic Ocean

Attard, K., Singh, R. K., Gattuso, J. P., Filbee-Dexter, K., Krause-Jensen, D., Kühl, M., Sejr, M. K., Archambault, P., Babin, M., Bélanger, S., Berg, P., Glud, R. N., Hancke, K., Jänicke, S., Qin, J., Rysgaard, S., Sørensen, E. B., Tachon, F., Wenzhöfer, F. & Ardyna, M., 12. Mar 2024, In: PNAS. 121, 11, p. e2303366121 10 p.

Conditional tail moment and reinsurance premium estimation under random right censoring

Goegebeur, Y., Guillou, A. & Qin, J., Mar 2024, In: TEST. 33, p. 230-250

A Weissman-type estimator of the conditional marginal expected shortfall

Goegebeur, Y., Guillou, A., Ho, N. K. L. & Qin, J., Jul 2023, In: Econometrics and Statistics. 27, p. 173-196

Robust estimation of the conditional stable tail dependence function

Goegebeur, Y., Guillou, A. & Qin, J., Apr 2023, In: Annals of the Institute of Statistical Mathematics. 75, 2, p. 201-231

Nonparametric estimation of conditional marginal excess moments

Goegebeur, Y., Guillou, A., Ho, N. K. L. & Qin, J., Jan 2023, In: Journal of Multivariate Analysis. 193, 105121.

Extreme-value based estimation of the conditional tail moment with application to reinsurance rating

Goegebeur, Y., Guillou, A., Pedersen, T. & Qin, J., Nov 2022, In: Insurance: Mathematics and Economics. 107, p. 102-122

Conditional marginal expected shortfall

Goegebeur, Y., Guillou, A., Le Ho, N. K. & Qin, J., Dec 2021, In: Extremes. 24, 4, p. 797-847

Extreme value estimation of the conditional risk premium in reinsurance

Goegebeur, Y., Guillou, A. & Qin, J., Jan 2021, In: Insurance: Mathematics and Economics. 96, p. 68-80

Robust nonparametric estimation of the conditional tail dependence coefficient

Goegebeur, Y., Guillou, A., Ho, N. K. L. & Qin, J., Jul 2020, In: Journal of Multivariate Analysis. 178, 20 p., 104607.

Bias-corrected estimation for conditional Pareto-type distributions with random right censoring

Goegebeur, Y., Qin, J. & Guillou, A., 15. Sept 2019, In: Extremes. 22, 3, p. 459-498

Robust estimation of the Pickands dependence function under random right censoring

Goegebeur, Y., Guillou, A. & Qin, J., 1. Jul 2019, In: Insurance: Mathematics and Economics. 87, p. 101-114

On kernel estimation of the second order rate parameter in multivariate extreme value statistics

Goegebeur, Y., Guillou, A. & Qin, J., Sept 2017, In: Statistics & Probability Letters. 128, p. 35-43

A Consensus Network of Gene Regulatory Factors in the Human Frontal Lobe

Berto, S., Perdomo-Sabogal, A., Gerighausen, D., Qin, J. & Nowick, K., 2016, In: Frontiers in Genetics. 7, 16 p., 31.

Pseudoknots in RNA folding landscapes

Kucharik, M., Hofacker, I. L., Stadler, P. & Qin, J., 2016, In: Bioinformatics. 32, 2, p. 187-194

Graph-distance distribution of the Boltzmann ensemble of RNA secondary structures

Qin, J., Fricke, M., Marz, M., Stadler, P. & Backofen, R., 11. Sept 2014, In: Algorithms for Molecular Biology. 9, 1, 20 p., 19.

Basin Hopping Graph: A computational framework to characterize RNA folding landscapes

Kucharik, M., Hofacker, I., Stadler, P. & Qin, J., 15. Jul 2014, In: Bioinformatics. 30, 14, p. 2009-2017

Geometry and Coarse-Grained Representations of Landscapes

Qin, J., Stadler, P. & Klemm, K., 2014, *Recent Advances in the Theory and Application of Fitness Landscapes, Emergence, Complexity and Computation*. Springer, Vol. 6. p. 153-176

On topological RNA interaction structures

Qin, J. & Reidys, C., 1. Jul 2013, In: Journal of Computational Biology. 20, 7, p. 495-513 18 p.

2D meets 4G: G-quadruplexes in RNA secondary structure prediction

Qin, J. & Lorenz et al, R., Jul 2013, In: I E E E - A C M Transactions on Computational Biology and Bioinformatics. 10, 4, p. 832-844 12 p.

Distribution of Graph-Distances in Boltzmann Ensembles of RNA Secondary Structures

Backofen, R., Fricke, M., Marz, M., Qin, J. & Stadler, P. F., 2013, *Algorithms in Bioinformatics: 13th International Workshop, WABI 2013, Sophia Antipolis, France, September 2-4, 2013. Proceedings*. Darling, A. & Stoye, J. (eds.). Springer, p. 112-125 13 p. (Lecture Notes in Computer Science, Vol. 8126).

The Trouble with Long-Range Base Pairs in RNA Folding

Amman, F., Bernhart, S. H., Doose, G., Hofacker, I. L., Qin, J., Stadler, P. F. & Will, S., 2013, *Advances in Bioinformatics and Computational Biology: 8th Brazilian Symposium on Bioinformatics, BSB 2013, Recife, Brazil, November 3-7, 2013, Proceedings*. Setubal, J. C. & Almeida, N. F. (eds.). Springer, p. 1-11 11 p. (Lecture Notes in Computer Science, Vol. 8213).

RNA folding algorithms with G-quadruplexes

Lorenz, R., Bernhart, S. H., Externbrink, F., Qin, J., Höner Zu Siederdisen, C., Amman, F., Hofacker, I. L. & Stadler, P. F., 2012

RNA-RNA interaction prediction based on multiple sequence alignments

Li, A. X., Marz, M., Jing, Q. & Reidys, C., 15. Feb 2011, In: Bioinformatics. 27, 4, p. 456-463 8 p.

Target prediction and a statistical sampling algorithm for RNA-RNA interaction.

Huang, F., Qin, J., Reidys, C. & Stadler, P., 15. Jan 2010, In: Bioinformatics. 26, 2, p. 175-181

Partition function and base pairing probabilities for RNA-RNA interaction prediction.

Huang, F., Qin, J., Reidys, C. & Stadler, P., 15. Oct 2009, In: Bioinformatics. 25, 20

Efficient counting and asymptotics of k-noncrossing tangled diagrams

Chen, W. Y. C., Qin, J., Reidys, C. M. & Zeilberger, D., 2009, In: The Electronic Journal of Combinatorics.

Neutral networks of sequence to shape maps.

Jin, E. Y., Qin, J. & Reidys, C. M., 7. Feb 2008, In: Journal of Theoretical Biology. 250, 3

Crossings and nestings in tangled diagrams

Chen, W. Y. C., Qin, J. & Reidys, C. M., 2008, In: The Electronic Journal of Combinatorics.

Combinatorics of RNA structures with pseudoknots.

Jin, E. Y., Qin, J. & Reidys, C. M., Sept 2007, In: Bulletin of Mathematical Biology. p. 45-67

