Ksenia Bestuzheva

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Education

Ph.D. in computer science, *Australian National University* 2019
Thesis title: Global Optimisation for Energy Systems
Supervisors: Prof. Markus Hegland, Dr. Hassan Hijazi, Prof. Sylvie Thiebaux

Diplom in applied mathematics and computer science, with highest distinction, *State Management University* 2014
Thesis title: Computer Modelling of Successive Collisions of a Particle with Moving boundaries in an External Magnetic Field
Supervisor: Prof. Nikolai Shananin

Work Experience

Postdoctoral Researcher, *Zuse Institute Berlin* 2018-present

Leading the Global Optimization research area; leading the development of the constraint integer programming solver SCIP; research in the area of mixed-integer nonlinear programming; student supervision.

Publications

Peer-reviewed publications

- K. Bestuzheva, A. Gleixner, and S. Vigerske. A computational study of perspective cuts. *Mathematical Programming Computation*, 15(4):703–731, 2023. doi: 10.1007/s12532-023-00246-4
- K. Bestuzheva, A. Gleixner, and T. Achterberg. Efficient separation of RLT cuts for implicit and explicit bilinear products. *arXiv preprint arXiv:2211.13545 (accepted to IPCO 2023)*, 2022
- K. Bestuzheva, M. Besançon, W.-K. Chen, A. Chmiela, T. Donkiewicz, J. van Doornmalen, L. Eifler, O. Gaul, G. Gamrath, A. Gleixner, et al. Enabling research through the SCIP optimization suite 8.0. *ACM Transactions on Mathematical Software*, 49(2):1–21, 2023
- E. Ramin, K. Bestuzheva, C. L. Gargalo, D. Ramin, C. Schneider, P. Ramin, X. Flores-Alsina, M. M. Andersen, and K. V. Gernaey. Incremental design of water symbiosis networks with prior knowledge: The case of an industrial park in Kenya. *Science of The Total Environment*, 751:141706, 2021
- K. Bestuzheva, H. Hijazi, and C. Coffrin. Convex relaxations for quadratic on/off constraints and applications to optimal transmission switching. *INFORMS Journal on Computing*, 32(3):682–696, 2020
- K. Bestuzheva and H. Hijazi. Invex optimization revisited. *Journal of Global Optimization*, 74(4):753–782, 2019

Other publications

- K. Bestuzheva, A. Chmiela, B. Müller, F. Serrano, S. Vigerske, and F. Wegscheider. Global optimization of mixed-integer nonlinear programs with SCIP 8. *arXiv preprint arXiv:2301.00587 (submitted to Mathematical Programming B)*, 2023
- K. Bestuzheva, A. Gleixner, and H. Völker. Strengthening SONC relaxations with constraints derived from variable bounds. *arXiv preprint arXiv:2211.05518 (submitted to Journal of Global Optimization)*, 2022
- G. Gamrath, D. Anderson, K. Bestuzheva, W.-K. Chen, L. Eifler, M. Gasse, P. Gemander, A. Gleixner, L. Gottwald, K. Halbig, et al. The SCIP Optimization Suite 7.0. 2020

Teaching Experience

Theses supervised

- H. Müller. Algorithms for constrained optimization using sums of nonnegative circuit polynomials certificates. Master's thesis, Humboldt University of Berlin, 2021

  Supervised jointly with Prof. Andrea Walther.

Lectures

- Mixed-integer nonlinear programming. Combinatorial Optimization at Work 2020, Berlin, Germany (2020)

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Awards

- COIN-OR Cup 2021: Hassan Hijazi, Guanglei Wang, Ksenia Bestuzheva, Smitha Gopinath, Mertcan Yetkin, and Carleton Coffrin (Gravity)
- Best Student Paper Award, 24th National Conference of the Australian Society for Operations Research, 2016

Other Related Experience

Technical Editor, *Mathematical Programming Computation* 2022-present

Performing technical reviews of submitted articles concentrating on the software and/or data aspect of the submission.

Contributor, *ASCEND - mathematical modelling software* 2012-2016

Worked on dynamic modelling, participated in two Google Summer of Code (GSOC) projects as a student (2012, 2013) and in two GSOC projects as a mentor (2015, 2016).

Schools attended

- NICTA Optimization Summer School. Kioloa, Australia (2016).
- Combinatorial Optimization at Work. Zuse Institute Berlin, Berlin, Germany (2015).