

CURRICULUM VITAE

Gyorgy Dosa

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Education

Msc: 1987, Mathematician, Eotvos Lorand University, Budapest

PhD: 2009, title: Optimal and near optimal online and semi online algorithms for scheduling problems,
University of Szeged

Scientific interests

Operations research, combinatorial optimization, different areas of bin packing and scheduling, approximation (online-offline) algorithms, bin packing games

Publications

More than 50 papers, more than 400 citations. Four handbooks in Hungarian. More than 50 conference talks, including talks as plenary speaker.

Honors, awards

1. I. Award of the Hungarian Academy, Veszprem Region, (VEAB), 2005
2. Best Paper Award of ESCAPE 2007 Conference, (G. Dosa, The tight bound of bin packing algorithm FFD is $FFD(I) \leq 11/9 OPT(I) + 6/9$, Combinatorics, Algorithms, Probabilistic and Experimental Methodologies, First International Symposium ESCAPE 2007, Hangzhou, China, April 7-9, 2007)
3. The best PhD work in the VEAB region, 2009.
4. Best teacher, University of Pannonia, Faculty of Informatics, (according to the votes of students), 2015 and 2016
5. Pro Scientia, University of Pannonia, MIK Faculty, 2017

Scientific grants

- Many scientific funds and grants, mainly domestic ones and for support of attending conferences like OTKA, ÖMA, Hans Pape Foundation, OMFB, TAMOP, etc.
- Chinese-Hungarian bilateral project Algorithms and visualization for hard combinatorial problems TÉT_10-1-2011-0115, duration: 2011.11.01.- 2013.10.30., participants: ten people
- Chinese-Hungarian bilateral project TET-12-CN-1-2012-0028, duration: 2013.09.01-2015.05.31, title: Investigation of scheduling and packing algorithms with applications, participants: 13 people

Teaching

Different types of mathematical courses like analysis, discrete mathematics, operations research

Short visits

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- Zhejiang University, Hangzhou, China, for invitation of Yong He and later Zhiyi Tan, several times
- Charles University, Praha, Czech Republic, for the invitation of Jiri Sgall, 2 times
- Helmut Schmidt University, Hamburg, Germany, for invitation of Armin Fügenschuch

My coauthors:

János Balogh, József Békési, Attila Benkő, Joan Boyar, Martin Böhm, Csilla Bujtás, Min Chen, Xin Chen, Ning Ding, Leah Epstein, Tivadar Feczko, He Guo, János Gyenis, Xin Han, Yong He, Daniel Horak, Csanad Imreh, He Jiang, Andrea F. Kardos, Hans Kellerer, Claude Laflamme, Yan Lan, Asaf Levin, Rongheng Li, Ruixin Ma, Hana Mackova, Judit Nagy-György, Lorant Ormai, Jiri Sgall, Cecília Sik Lányi, Quazi T.H. Shubhra, Zsolt Soós, Grazia M. Speranza, Rob van Stee, Balázs Szalkai, Istvan Szalkai, Zhiyi Tan, Hing-Fung Ting, Judit Tóth, Zsolt Tuza, Zhenzhen Xu, Yujie Yan, Deshi Ye, Laszlo Varga, Béla Vizvári, Pavel Vesely, Zhenbo Wang, Yuxin Wang, Yong Zhang, Weiya Zhong, Chenyang Zhou,...

Academic position

1987 - 1991 Demonstrator, Eotvos Lorand University, Budapest, Hungary
1991 - 1994 Instructor, Szechenyi Istan College, Gyor, Hungary
1994 - 1999 Instructor, University of Veszprem, Veszprem, Hungary
2000 - 2009 Assistant Professor, University of Pannonia, Veszprem, Hungary
2010 - Associate Professor, University of Pannonia, Veszprem, Hungary

Main results

- Definition and investigation of new models in Combinatorial Optimization, like
 - a, *Bin packing with rejection*. In this model any item can be rejected (i.e. it is not packed) by some incurred cost. The total cost is the number of used bins plus the total penalty, given for the unpacked items, which is to be minimized.
 - b, *A general model of scheduling with machine cost*.
 - c, *A bin covering model with a general cost function*.
 - d, *Batch scheduling with nonidentical job sizes*. In this model there are jobs with different sizes (processing times), these jobs can be scheduled in batches on a single machine or on parallel machines. The makespan is to be minimized. (This model is a common generalization of bin packing and parallel machine scheduling.) The parallel machine case has never been considered before, and for the single machine case we gave an improved algorithm.
 - e, *Several new versions of the selfish bin packing game*.
 - f, *Several new reassignment models on two related machines*.
 - g, *Black and White bin packing*. Here the items have size and color (black or white), and in any bin, two consecutive items cannot have the same color.
 - h, *Colorful bin packing*. This is the generalization of Black and White bin packing for more colors, with a similar constraint.
 - i, *The Graph-Bin Packing Problem*, here a graph should be packed into another graph under several natural constraints. This is a very general model, a generalization of many other known models.
 - j, *Multiprofessor Scheduling*. This is also a general model, a common generalization of several scheduling models.
 - Determining the tight absolute approximation ratio of several classical bin packing algorithms
 - a, First Fit algorithm (together with Jiri Sgall). This was an open question for forty years
 - b, Best Fit algorithm (together with Jiri Sgall). This was an open question for forty years
 - b, First Fit Decreasing algorithm (together with Xin Han, Rongheng Li and Zsolt Tuza). It was an open question for forty years
 - c, First Fit algorithm in the parameterized version. This was an open question for forty years
 - Determining the tight asymptotic ratio of First Fit algorithm for cardinality constrained bin packing (together with Leah Epstein). This was again an open question for forty years.
 - The actually best algorithm for scheduling with machine cost, and the best lower bound.
 - Optimal algorithms for several scheduling problems, where such optimal algorithms were not known previously.

Some recent publications:

1. Gyorgy Dosa, Zsolt Tuza, Multiprocessor Scheduling, *Discrete Applied Mathematics*, 2016, in press, 2016, [doi:10.1016/j.dam.2016.01.035](https://doi.org/10.1016/j.dam.2016.01.035)
2. Janos Balogh, Jozsef Békési, Gyorgy Dosa, Jiri Sgall, Rob van Stee, The optimal absolute ratio for online bin packing, *Proceedings of the Twenty-Sixth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, San Diego, 2015 (January), pp. 1425-1438, Book Code: PRDA15, Series: Proceedings, Pages: 14, DOI: <http://dx.doi.org/10.1137/1.9781611973730.94>
3. Janos Balogh, Jozsef Bekesi, Gyorgy Dosa, Leah Epstein, Hans Kellerer, Asaf Levin, Zsolt Tuza, Offline black and white bin packing, *Theoretical Computer Science*, Vol 596, 2015, Pages 92–101, [doi:10.1016/j.tcs.2015.06.045](https://doi.org/10.1016/j.tcs.2015.06.045)
4. Gyorgy Dosa, Zhiyi Tan, Zsolt Tuza, Yujie Yan, Cecilia Sik Lányi, Improved Bounds for Batch Scheduling with Non-identical Job Sizes, *Naval Research Logistics*, Volume 61, Issue 5, pages 351–358, August 2014
5. Gyorgy Dosa, Jiri Sgall, Optimal analysis of Best Fit bin packing, J. Esparza et al. (Eds.): *ICALP 2014, Part I*, LNCS 8572, pp. 429-441. Springer, Heidelberg (2014).