Curriculum Vitae

Boglárka G.-Tóth

Formal Name: Dr. Boglárka Gazdag-Tóth

Maiden Name: Boglárka Tóth

Date, place of birth: April 18, 1977., Budapest, Hungary

Affiliation:

February, 2017 – University of Szeged, Institute of Informatics, Department of Computational Optimization

Position: senior research fellow

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Professional Experiences:

2003 – 2007	research assistant at the Research Group of Artificial Intelligence of the Hungarian Academy of Sciences and University of Szeged
2007 – 2017	associate professor at Budapest University of Technology and Economics, Institute of Mathematics, Department of Differential Equations

Education:

1995 – 1998	B.Sc. studies: in economics, computer science and mathematics as Computer Economist at József Attila University, Szeged, Hungary
1998 – 2000	M.Sc. studies: in computer science and mathematics as Computer Program Designer at József Attila University, Szeged, Hungary
2000 – 2003	Ph.D Student at Department of Informatics in University of Szeged, Hungary
2003 – 2007	doctoral fellow at the Faculty of Mathematics of University of Murcia
2008	Ph.D degree for the dissertation titled *Interval Methods for Competitive Location Problems*

Klowledge of languages:

English: intermediate level (spoken and written)

Spanish: intermediate level of professional language (spoken and written)

Hungarian: native

Grants:

2000 – 2003	doctoral grant, Ministry of Education and Culture Supervisor: Dr. Tibor Csendes, University of Szeged
2003 – 2007	FPI doctoral grant, Spanish Ministry of Science and Education Supervisor: Dr. José Fernández Hernández, University of Murcia
2009 – 2013	Bolyai János research grant, Hungarian Academy of Sciences
2013	IMUS post-doctoral grant at University of Seville (Spain)

Professional training: EURO Winter Institute on Location and Logistics, January 27. – February 9., 2007, Estoril, Portugal.

Teaching Experience:

I have more than 20 years teaching experience. I started teaching in 1998 at the University of Szeged with Numerical Analysis as a demonstrator, and continued later as a Ph.D. student and as a research assistant. At the Institute of Informatics, University of Szeged I taught the following subjects: Numerical Analysis, Operation Systems, Operations Research, Basis of Computer Science, Applications of Optimization and The tools of AI.

From 2007 till 2017 I gave classes at the Institute of Mathematics, Budapest University of Technology and Economics. I thought courses in basic mathematics for engineers, Operations Research to MSc students in Business Information Systems, Optimization Models, Operations Research Software and Global Optimization to mathematicians in both their BSc and MSc studies.

In 2009 I was invited to teach PhD students at the University of Almería in the subject of "Reliable methods for biobjective optimization" as an intensive course.

From 2017 I teach Global Optimization, Operations Research and Optimization Models at University of Szeged for BSc and/or MSc students in computer science.

In 2019 and 2021 I was invited as well to teach PhD students at the University of Almería in the subject of "Build your own Optimization Models: a practical course on AMPL" and "Solving Complex Optimization Models using AMPL" as an intensive course.

Supervision:

BSc: Ottó Zsíros (2003), Csaba Rendek (2012), Máté Knódel, Luca Kovács and Ádám Tóth (2013), Eszter Kalmár (SZTE, 2019), Ágnes Vida (SZTE, 2020), Leonóra Gyuránki (SZTE, 2021), Kinga Balog (SZTE, 2021)

MSc: Tamás Cziráki (2012), Kristóf Kovács (2014), Rendek Csaba (2015), Dávid Cirok (2019), Gyöngyvér Vass (SZTE, 2021), Attila Deák (SZTE, 2021)

PhD: Kristóf Kovács (2022?) Ahmad Turki Yousef Al-Anaqreh (2023?), Gyöngyvér Vass (2025?), Mihály Gencsi (2026?)

Carrier and course development: in 2007 I worked in the development of the Operations Research sub-carrier in Mathematics M.Sc, and in 2012 in the development of the second M.Sc. degree vocational training in Operations Research.

PhD committee member: Juana López Redondo (University of Almería, 2008), Aranzazu Gila Arrondo (University of Almería, 2013), Miriam Ruiz Ferrández (University of Almería, 2019), Amaya Nogales Gómez (University of Seville, 2015), Ádám Sleisz (Budapest University of Technology and Economics, 2019), Pavlo Mutz (University of Málaga, 2021).

PhD reviewer: Juan Álvaro Muñoz Naranjo (University of Almería, 2013), Gloria Ortega López (University of Almería, 2014), Juan Francisco Rodríguez Herrera (University of Almería, 2015), Alejandro Gutiérrez Alcoba (University of Málaga, 2017).

Long term visits, visiting research positions:

2001	1 month at Technical University of Ilmenau (Germany) with DAAD Fellowship
2002	4 months at University of Almería (Spain) with Erasmus/Socrates Fellowship
2002	2 weeks at University of Almería (Spain) with OM Fellowship
2003	4 months at University of Vienna (Austria) as a research assistant (COCONUT project

2003 – 2007	at the University of Murcia with the FPI doctoral fellowship of the Ministry of Education and Science of Spain
2013	4 months at University of Sevilla (Spain) with COST STSM and IMUS post-doctoral grants.

Membership:

2001 – Hungarian Operational Research Society (HORS)

2003 – European Working Group of Location Analysis (EWGLA)

2008 – public body of the Hungarian Academy of Sciences (HAS)

2012 – János Bolyai Mathematical Society (BJMT)

2022 – Hungarian Young Academy

Member of Executive Board:

2011–2014 treasurer of the Hungarian Operational Research Society (HORS).

2018– board member of the European Working Group of Location Analysis (EWGLA).

2021– vice-president of the Hungarian Operational Research Society (HORS).

2022– treasurer of the Operation Research Committee of the Mathematics Section of Hungarian Academy of Sciences (HAS).

Awards:

First and second prize at the local Scientific Conference for Students, Szeged, Hungary, 2000.

Excellent Talk Award, Conference of PhD Students in Computer Science, Szeged, 2000.

First prize at the Hungarian Scientific Conference for Students, Eger, Hungary, 2001.

Excellent student of the Faculty of Science Award, University of Szeged, 2001.

UPS-SOLA Dissertation Award of the INFORMS' Section on Location Analysis, 2007.

Gyula Farkas memorial price from the János Bolyai Mathematical Society, Hungary, 2007.

Finalist of the EURO Doctoral Dissertation Award, 2009.

János Bolyai Research Grant, Hungary, 2009-2012.

Woman in Science Excellence Award, NATE, Hungary, 2017.

Tamás Rapcsák Award, Tamás Rapcsák Foundation, 2018.

Science Award of the Faculty of Science and Informatics, University of Szeged, 2022.

Editorial work:

- Central European Journal of Operations Research (editor)
- Acta Cybernetica (managing editor)
- Alkalmazott Matematikai Lapok (in Hungarian, editor)

Evaluation of projects:

- 2017, and 2019, evaluator of the National Research, Development and Innovation Office, the Ministry for Innovation and Technology projects.
- 2010 evaluator and committee member for the decisions of the Juan de la Cierva and Ramón y Cajal grants of the Spanish Ministry of Science and Innovations.
- 2017 – 2022 evaluator for EU H2020 Marie-Sklodowska-Curie IF/PF projects.

Conferences organized:

Chair:

- COST Workshop on Mathematical Models and Methods for Energy Optimization (CWM^{3}EO), Budapest, Hungary, September 25–26, 2014.
- 22nd EURO Working Group on Locational Analysis Meeting (EWGLA2015), Budapest, Hungary, May 20–22, 2015.

Program committee member:

- COST Workshop on Mathematical Models and Methods for Energy Optimization (CWM^{3}EO), Budapest, Hungary, September 25–26, 2014.
- 22nd EURO Working Group on Locational Analysis Meeting (EWGLA2015), Budapest, Hungary, May 20–22, 2015.
- 27th European Conference on Operational Research (EURO2015), Glasgow, United Kingdom, July 12–15, 2015.
- 23nd EURO Working Group on Locational Analysis Meeting (EWGLA2016), Malaga, Spain, Sep 14–16, 2016.
- 24nd EURO Working Group on Locational Analysis Meeting (EWGLA2018), Edinburgh, United Kingdom , May 23–25, 2018.
- 16th EUROPT Workshop on Advances in Continuous Optimization (EUROPT2018), Almería, Spain, July 12–13, 2018.
- 25nd EURO Working Group on Locational Analysis Meeting (EWGLA2019), Brussels, Belgium, June 5–7, 2019.

Local organizer:

- The Third Conference of PhD Students in Computer Science (CSCS2002), Szeged, Hungary, July 1–4, 2002.
- IV Seminario Español de Localización, Lorca, Murcia, Spain, November 26–29, 2003.
- International Workshop on Global Optimization (GO'05), San José, Almería, Spain, September 18–22, 2005.
- Toulouse Global Optimization workshop (TOGO10), Toulouse, France, August 31 – September 3, 2010.
- Hungarian Operations Research Conference (MOK2013), Balatonőszöd, Hungary, June 10–13, 2013.
- COST Workshop on Mathematical Models and Methods for Energy Optimization (CWM^{3}EO), Budapest, Hungary, September 25–26, 2014.
- 22nd EURO Working Group on Locational Analysis Meeting (EWGLA2015), Budapest, Hungary, May 20–22, 2015.
- Hungarian Operations Research Conference (MOK2019), Szeged, Hungary, May 20–22, 2019.
- 19th International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations (SCAN2020), online, September 13-17, 2021.

Participation in Research Projects:

Leader:

- 2016–2019 Global optimization methods for solving location problems, National Research, Development and Innovation Office – NKFIH, PD 115554 (OTKA). Coordinator: Boglárka G.-Tóth

- 2020-2021 In order to promote the scientific career of women researchers with young children and researchers with minor children alone, the Hungarian Academy of Sciences supports the writing of the thesis required for the application for the degree of Doctor of the Hungarian Academy of Sciences.

Participant:

- 2001–2004, Globális optimalizálási eljárások fejlesztése (Developing global optimization methods), OTKA (Hungarian Scientific Research Fund), Coordinator: Dr. Tibor Csendes (University of Szeged).
- 2001–2003, Globális optimalizálási eljárások fejlesztése (Developing global optimization methods), OMFB, Coordinator: Dr. Tibor Csendes (University of Szeged).
- 2002–2004, Métodos seguros de Optimización Global y su paralelización (Reliable methods of Global Optimization and its paralelization) Spanish Ministry of Foreign Affairs, Spanish-Hungarian Scientific Cooperation (SP25/01), Coordinator: Dr. Inmaculada García Fernández (University of Almería) and Dr. Tibor Csendes (University of Szeged).
- 2002–2005, Análisis y optimización de estrategias para la localización de actividades económicas en sutuaciones de competencia. Spanish Ministry of Science and Technology (National plan of I+D+I) (BEC2002-01026), 30.630 euros, Coordinator: Dr. Blas Pelegrín Pelegrín (University of Murcia).
- 2005–2006, Red temática de Análisis y Aplicaciones de Decisiones sobre Localización de Servicios y Problemas Relacionados, Spanish Ministry of Science and Technology (MT004-22566-E), 6.000 euros, Coordinator: Dr. Elena Fernández (Universitat Politècnica de Catalunya).
- 2005, International Workshop on Global Optimization, Spanish Ministry of Science and Technology (MTM2004-20220-E), 7.000 euros, Coordinator: Dr. Inmaculada García Fernández (University of Almería).
- 2006–2007, Red temática de Análisis y Aplicaciones de Decisiones sobre Localización de Servicios y Problemas Relacionados, Spanish Ministry of Education and Science (MTM2005-24550-E), 20.000 euros, Coordinator: Dr. Elena Fernández (Universitat Politècnica de Catalunya).
- 2005–2008, Métodos rigurosos de optimización y sus aplicaciones, Spanish Ministry of Education and Science, Spanish-Hungarian integrated action (HH2004-0014), 8.000 euros, Coordinator: Dr. Leocadio González Casado (University of Almería) and Dr. Tibor Csendes (University of Szeged).
- 2006–2009, Toma de decisiones sobre localización y diseño para la expansión de una firma, Spanish Ministry of Science and Innovation (National plan of I+D+I), (SEJ2005-06273/ECON), 46.529 euros, Coordinator: Blas Pelegrín Pelegrín (University of Murcia).
- 2009–2014, Computación de altas prestaciones en acción. Procesamiento de imágen, Optimización global y Multimedia. Spanish Ministry of Science and Innovation (National plan of I+D+I), (TIN2008-01117/TIN) Coordinator: Dr. Inmaculada García Fernández (University of Almería).
- 2010–2012, Estrategias de localización de una firma y determinación de equilibrios, Spanish Ministry of Science and Innovation (National plan of I+D+I), (SEJ2009-06273 /ECON), Coordinator: Blas Pelegrín Pelegrín (University of Murcia).
- 2009–2011, Computación de altas prestaciones en localización de recursos, Junta de Andalucía (National plan of I+D+I), Coordinator: Dr. Pilar Martínez Ortigosa (University of Almería).

- 2011-2014, Localización competitiva con nuevas reglas de elección de los consumidores (Competitive location with new customer choice rules), Spanish Ministry of Science and Innovation (National plan of I+D+I), Coordinator: Dr. José Fernández Hernández (University of Murcia).
- 2013–2017, Mathematical Optimization In The Decision Support Systems For Efficient And Robust Energy Networks, ICT COST action TD1207, European Cooperation in Science and Technology, 600.000 euros. Coordinator: Andrea Lodi (University of Bologna) and Thorsten Koch (ZIB, Berlin).
- 2015–2017, Influencia del criterio de elección del consumidor en la localización óptima de una nueva empresa Fundación Séneca (Agencia Regional de Ciencia y Tecnología, Spain), 19241/PI/14, Coordinator: Pascual Fernández Hernández (University of Murcia - Spain).
- 2016–2018, Métodos de optimización exactos y heurísticos para la resolución de nuevos modelos de localización competitiva, Spanish Ministry of Economy and Competitivity (plan Nacional de I+D+I), MTM2015-70260-P. Coordinator: José Fernández (University of Murcia - Spain).
- 2016–2019, Metodologías Computacionales para Desafíos de la Sociedad (MeCoDeS). (Computational methodologies for challenges of the society) Spanish Ministry of Science and Innovation (National plan of I+D+I), TIN2015-66680-C2-1-R. Coordinators: Leocadio González Casado, and Pilar Martínez Ortigosa (University of Almería).
- 2016–2019, Mathematical Optimization for Data Visualization and Decision Making, Spanish Ministry of Economy and Competitivity (plan Nacional de I+D+I), MTM2015-65915-R, Coordinators: Emilio Carrizosa Priego and Rafael Blanquero Bravo (University of Sevilla).
- 2019–2022 Soluciones de Alto Rendimiento para retos actuales de la computación científica (HPC4Sci). Spanish Ministry of Science and Innovation (National plan of I+D+I) RTI2018-095993-B-100. Coordinators: Pilar Martínez Ortigosa and Ester Martín Garzón (University of Almería).

Research, Development and Innovation (R+D+I):

- Mathematical methods in planning for the selling of goods, TESCO, 2013
- Interconnection of day-ahead energy markets, MAVIR, 2016
- Possibilities and limitations of a controllable laser system and its cost-effective design, HUNIMAT, 2018
- Designing a controllable laser system, University of Szeged, University of Debrecen and Adamant Kft., 2020–2021

Other scientific activities:

- 2013–2017 Management committee member of the COST action TD1207 titled "Mathematical Optimization In The Decision Support Systems For Efficient And Robust Energy Networks".
- 2013–2017 STSM Coordinator of the COST action TD1207 titled "Mathematical Optimization In The Decision Support Systems For Efficient And Robust Energy Networks".
- 2001-2007 technical editor of Acta Cybernetica.
- Technical editor of the book "Avances en localización de servicios y sus aplicaciones" published in 2004.

- Referee of the following journals: Acta Cybernetica, European Journal of Operational Research, Computers and Operations Research, Journal of Computational and Applied Mathematics, Central European Journal of Operations Research, Journal of Global Optimization, Journal of the Operational Research Society, Information Processing Letters, Computing and many others.

Research area: global optimization, interval-arithmetic, reliable methods, location analysis

Publications

Books:

1. García, I., Casado, L.G., Hendrix, E.M.T. and Tóth, B. (eds.), Proceedings of the International Workshop on Global Optimization, Universidad de Almería, Almería, 2005.
2. E.M.T. Hendrix and B. G.-Tóth. Introduction to Nonlinear and Global Optimization. Springer, New York, ISBN 978-0-387-88669-5, 2010.
3. B. G.-Tóth and J. Fernández Hernández. Interval Methods for Single and Bi-objective Optimization Problems: applied to Competitive Facility Location Models, LAP - Lambert Academic Publishing, ISBN: 978-3-8383-6624-1, 2010.
4. S. Cafieri, B. G.-Tóth, E.M.T. Hendrix, L. Liberti, and F. Messine (eds.), Proceedings of the Toulouse Global Optimization workshop (TOGO10), Toulouse, 2010.

Papers and chapters of books:

1. M. Jelasity, B. Tóth, and T. Vinkó, Characterizations of trajectory structure of fitness landscapes based on pairwise transition probabilities of solutions. In *Proceedings of the 1999 Congress on Evolutionary Computation (CEC99)*, pages 623–630. IEEE Press, 1999.
2. B. Tóth and T. Vinkó, An efficient computer tool solving mathematical problems. In Hungarian. *Polygon*, **XI**, 19–42, 2002.
3. J.A. Martínez, L.G. Casado, I. García, Ya.D. Sergeyev, and B. Tóth, On an efficient use of gradient information for accelerating interval global optimization algorithms. *Numerical Algorithms*, **37**(1-4), 61–69, 2004.
4. J.A. Martínez, L.G. Casado, I. García, and B. Tóth. AMIGO: Advanced Multidimensional Interval analysis Global Optimization algorithm. *Nonconvex Optimization and Its Applications*, **74**, 313–326, Kluwer Academic Publisher, 2004.
5. J. Fernández, B. Pelegrín, B. Tóth and F. Plastria. Localización competitiva en el plano con decisiones en diseño. In *Avances en localización de servicios y sus aplicaciones*, 109–138, Ed. Servicio de Publicaciones de la UMU (ISBN: 84-8371-507-4), 2004.
6. B. Tóth and Csendes T. Empirical investigation of the convergence speed of inclusion functions. *Reliable Computing*, **11**(4), 253–273., 2005.
7. J. Balogh and B. Tóth, Global optimization on Stiefel manifolds: a computational approach. *Central European Journal of Operations Research*, **13**, 213–232, 2005.
8. J. Fernández, B. Tóth, F. Plastria and B. Pelegrín. Reconciling franchisor and franchisee: a planar biobjective competitive location and design model. In A. Seeger, editor *Recent Advances in Optimization*, Lectures Notes in Economics and Mathematical Systems **563**, 375–398, Springer-Verlag, 2006.
9. B. Tóth, J. Fernández, and T. Csendes, Empirical convergence speed of inclusion functions for facility location problems. *Journal of Computational and Applied Mathematics*, **199**(2), 384–389, 2007.

10. J. Fernández, B. Pelegrín, F. Plastria and B. Tóth, Solving a Huff-like competitive location and design model for profit maximization in the plane, *European Journal of Operational Research*, 179(3), 1274–1287, 2007.

11. J. Fernández, F. Plastria, B. Pelegrín and B. Tóth, Planar location and design of a new facility with inner and outer competition: an interval lexicographical-like solution procedure. *Network and Spatial Economics*, 7(1), 19–44, 2007.

12. B. Tóth and L.G. Casado, Multi-dimensional pruning from the Baumann point in an Interval Global Optimization Algorithm, *Journal of Global Optimization*, 38(2), 215–236, 2007.

13. J. Fernández and B. Tóth, Obtaining an outer approximation of the efficient set of nonlinear biobjective problems. *Journal of Global Optimization*, 38(2), 315–331, 2007.

14. B. Pelegrín, J. Fernández and B. Tóth, The 1-center problem in the plane with independent random weights, *Computers and Operations Research*, 35(3),737–749, 2008.

15. J. Fernández, B. Tóth, L. Cánovas and B. Pelegrín, Decomposition of a polygon with holes into convex polygons, *TOP*, 16(2), 367–387, 2008.

16. B. Tóth, J. Fernández, B. Pelegrín and F. Plastria., Sequential versus simultaneous approach in the location and design of two new facilities using planar Huff-like models, *Computers and Operations Research*, 36, 1393–1405, 2009.

17. J. Fernández and B. Tóth, Obtaining the efficient set of nonlinear biobjective optimization problems via interval branch-and-bound methods. *Computational Optimization and Application*, 42, 393–419, 2009.

18. B. Tóth, F. Plastria, J. Fernández and B. Pelegrín, On the impact of spatial pattern, aggregation, and model parameters in planar Huff-like competitive location and design problems, *OR Spectrum*, 31, 601–627, 2009.

19. B. G.-Tóth, and V. Kreinovich, Validated methods for computing Pareto sets: general algorithmic analysis, *International Journal of Applied Mathematics and Computer Science*, 19(3), 369-380, 2009.

20. B. Torma and B. G.-Tóth, An efficient descent direction method with cutting planes, *Central European Journal of Operations Research*, 18(2), 105–130, 2010.

21. L.G. Casado, I. García, B. G.-Tóth and E.M.T. Hendrix, On determining the cover of a simplex by spheres centered at its vertices, *Journal of Global Optimization*, 50(4), 645–655, 2011.

22. J. Fernández, S. Salhi, B. G.-Tóth, Location equilibria for a continuous competitive facility location problem under delivered pricing, *Computers and Operations Research* 41, 185–195, 2014.

23. G. Aparicio, L.G. Casado, E.M.T. Hendrix, B. G.-Tóth, and I. García, On the minimum number of simplex shapes in longest edge bisection refinement of a regular n-simplex, *Informatica* 26 (1), 17–32, 2015.

24. E. Carrizosa, B. G.-Tóth, Anti-covering Problems, *Location Science*, 115-132, Springer, 2015.

25. B. G.-Tóth and K. Kovács. Solving a Huff-like stackelberg location problem on networks. *Journal of Global Optimization*, 64(2):233–247, 2016.

26. R. Blanquero, E. Carrizosa, and B. G.-Tóth. Maximal covering location problems on networks with regional demand. *Omega*, 64:77–85, 2016.

27. R. Blanquero, E. Carrizosa, B. G.-Tóth, and A. Nogales-Gómez. p-facility Huff location problem on networks. *European Journal of Operational Research*, 255(1):34–42, 2016.

28. B. G.-Tóth, E.M.T. Hendrix, L.G. Casado, and I. García. On refinement of the unit simplex using regular simplices *Journal of Global Optimization*, 64(2):305–323, 2016.

29. J. Fernández, B. G.-Tóth, J. L. Redondo, P. M. Ortigosa, and A. G. Arrondo. A planar single-facility competitive location and design problem under the multi-deterministic choice rule. *Computers & Operations Research*, 78:305–315, 2017.

30. J. Fernández, J. L. Redondo, P. M. Ortigosa, and B. G.-Tóth. Huff-like stackelberg location problems on the plane. In *Spatial Interaction Models*, pages 129–169. Springer International Publishing, 2017.

31. J.M.G. Salmerón, G. Aparicio, L.G. Casado, I. García, E.M.T. Hendrix, and B. G.-Tóth, Generating a smallest binary tree by proper selection of the longest edges to bisect in a unit simplex refinement. *Journal of Combinatorial Optimization*, 33(2):389-402, 2017.

32. L.G. Casado, E.M.T Hendrix,J.M.G. Salmerón, B. G.-Tóth, I. García, On Grid Aware Refinement of the Unit Hypercube and Simplex: Focus on the Complete Tree Size. In: Gervasi O. et al. (eds) *Computational Science and Its Applications – ICCSA 2017.* Lecture Notes in Computer Science, **10406**. Springer, Cham, 2017.

33. J. Fernández, B. G.-Tóth, J. L. Redondo, and P. M. Ortigosa. The probabilistic customer's choice rule with a threshold attraction value: Effect on the location of competitive facilities in the plane, *Computers & Operations Research*, **101**:234–249., 2019.

34. B. G.-Tóth, L. Anton-Sanchez, J. Fernández, J. L. Redondo, and P. M. Ortigosa. A Continuous Competitive Facility Location and Design Problem for Firm Expansion In: Pham Dinh, Tao; Le, Hoai Minh; Le Thi, Hoai An Optimization of Complex Systems: Theory, Models, Algorithms and Applications, Springer International Publishing, 1013–1022, 2020.

35. E.M.T. Hendrix, B. G.-Tóth, F. Messine and L.G. Casado. On derivative based bounding for simplicial branch and bound, *RAIRO-Operations Research* 55(3), 2023-2034, 2021.

36. B. G-Tóth, L.G. Casado, E.M.T. Hendrix, and F. Messine. On new methods to construct lower bounds in simplicial branch and bound based on interval arithmetic, *Journal of Global Optimization*, 80(4), 779-804, 2021.

37. A.T. Anaqreh, B. G.-Tóth, T. Vinkó. Symbolic Regression for Approximating Graph Geodetic Number *Acta Cybernetica*, **25**(2):151-169, 2021.

38. G.-Tóth B., E.M.T. Hendrix, and L.G. Casado. On monotonicity and search strategies in face-based copositivity detection algorithms. *Central European Journal of Operations Research*, **30**:1071-1092, 2022.

39. A. Anaqreh T, B. G-Tóth and T. Vinkó. Algorithmic upper bounds for graph geodetic number. *Central European Journal of Operations Research*, **in print**, 2022.

40. K. Kovács and G.-Tóth Boglárka. Optimized location of light sources to cover a rectangular region, *Central European Journal of Operations Research*, **in print**, 2022.