Dávid Gyulai
Curriculum Vitae

December 2018

Institute for Computer Science and Control (SZTAKI)
Hungarian Academy of Sciences (MTA)
Kende 13-17, H-1111 Budapest, Hungary

david.gyulai@sztaki.mta.hu
+36 1 279 6181
+36 30 450 2766
www.github.com/dgyulai
www.linkedin.com/in/davidgyulai

Personal

Born: February 3, 1988, Berettyóújfalu, Hungary
Marital status: married, 1 child

Education and qualifications

2018	Ph.D. in Mechanical Engineering	Budapest University of Technology and Economics
2015	Graduate Certificate, Lean Production Specialist	Budapest University of Technology and Economics
2012	M.Sc. in Mechatronics Engineering	Budapest University of Technology and Economics
2010	B.Sc. in Mechatronics Engineering	Budapest University of Technology and Economics

Current positions

2018-pres.	**Industrial Data Analytics Expert**	EPIC InnoLabs Ltd.
2018-pres.	**Research Fellow**	EPIC Centre of Excellence in Production Inf. and Control at MTA SZTAKI

Experience

2013–2018	Ph.D. Candidate	Budapest University of Technology and Economics (BME) Doctoral School for Mechanical Engineering Sciences
2012–2018	Research Associate	Research Institute for Automation and Control (SZTAKI), Hungarian Academy of Sciences (MTA)
2010–2012	Graduate Intern	MTA SZTAKI
2010	Intern	Tecnoweld Kkt.
2009	Intern	Continental Automotive Hungary, EBS R&D

Memberships

2018-pres.	Member of Public Body	MTA Committee of Automation and Computing

PhD Thesis

Production and capacity planning methods for flexible and reconfigurable assembly systems

➤ Budapest University of Technology and Economics, 2018
➤ Supervisor: Prof. László Monostori, academician
➤ Topics: industrial engineering, production & operations management, optimization, simulation, data analytics
➤ https://github.com/dgyulai/PhD

Interests

➤ Data analytics for production planning and control
➤ Manufacturing and operations management
➤ Capacity and production planning methods for assembly systems
➤ Modular and reconfigurable manufacturing systems
➤ Discrete-event simulation
➤ Mathematical modeling
➤ Statistical learning
➤ Robust production planning and control

Honours and awards

2017   MTA SZTAKI Award for outstanding research
2015   Young Scientist Scholarship of Hungarian Academy of Sciences
2015   Young Researcher Award of MTA SZTAKI
2015   Annual Scientific Forum of PhD students, MTA SZTAKI; 1st place
2015   Annual Scientific Forum of PhD students, Budapest Univ. of Techn. and Economics; 2nd place
2014   Annual Scientific Forum of PhD students, MTA SZTAKI; 1st place
2011   Conference of Scientific Students' Associations; 1st prize
2011   Siemens PLM Student Design Contest; 1st prize
2009   FESTO Robotino Olimpia: 4th prize

Skills

Software skills: FICO XPress, Gurobi, R, Python, Microsoft .NET, NoSQL (MongoDB, Cassandra), SQL, Siemens Plant Simulation, Siemens Preactor, Apache technologies (Spark, Filnk etc.), MATLAB, LabVIEW, Wolfram Mathematica

Language skills:
English: fluent   CEFR Level: C1 (TOEFL iBT 102 scores, 2015)
German: good   CEFR Level: B1

Key projects

➤ StaProZell – Stabile Produktion in wandlungsfähigen zellenorientierten Montagesystemen durch einen Digital Twin, FFG – Austrian Research Promotion Agency (2018 - 2021)
➤ EXCELL – Big Data Applications for Cyber-Physical Systems in Prod. and Log. Networks, EU H2020, (2016-2018)
➤ EPIC – Centre of Excellence in Production Informatics and Control, EU H2020, (2017-2024)
➤ Hitachi Yokohama Research Laboratory – MTA SZTAKI collaborative research project (2017-2019)
➤ iKOMP project, Layout planning and optimization workpackage, (2015-2017)
➤ RobustPlaNet, Shock-robust Design for Plants and their Supply Chain Networks, EU FP7, (2013-2016)
➤ E.ON service planning, Optimization-based planning of electricity network services (2012-2013)
➤ Milkrun Planner, Development of a shop-floor logistics software with Fraunhofer Austria (2012-2013)
➤ Knorr-Bremse Benchmark Factory, Reorganization of the low-volume assembly segment, (2012-2013)
➤ Knorr-Bremse SampleShop, Design and evaluation of modular assembly systems, (2010-2012)

Publications

ORCID ID: https://orcid.org/0000-0003-1422-1130
Scopus ID: 55769676800
Mendeley Profile: dvid-gyulai
MTMT publication database link
Google Scholar link

➤ All publications: 32
➤ Cumulative impact factor (published): 17.2
➤ h-index: 6
➤ Published journal papers: 7
➤ Published conference papers: 22
➤ Independent citations: 80+
➤ Patents: 1

Journal papers

1. Carvajal Soto, J. A., F. Tavakolizadeh, D. Gyulai, and E. Zudor (2018). An online machine learning framework for early detection of product failures in the Industry 4.0. *International Journal of Computer Integrated Manufacturing*. Accepted.

2. Manzini, M., J. Unglert, D. Gyulai, M. Colledani, J. M. Jauregui-Becker, L. Monostori, and M. Urgo (2018). An integrated framework for design, management and operation of reconfigurable assembly systems. *Omega* **78**. IF: 4.31, 69–84. DOI: 10.1016/j.omega.2017.08.008.

3. Tsutsumi, D., D. Gyulai, A. Kovács, B. Tipary, Y. Ueno, Y. Nonaka, and L. Monostori (2018). Towards joint optimization of product design, process planning and production planning in multi-product assembly. *CIRP Annals-Manufacturing Technology* **67**(1). IF: 3.33, 441–446. DOI: 10.1016/j.cirp.2018.04.036.

4. Gyulai, D. and L. Monostori (2017). Capacity management of modular assembly systems. *Journal of Manufacturing Systems* **43**(1). IF: 2.77, 88–99. DOI: `10.1016/j.jmsy.2017.02.008`.

5. Gyulai, D., A. Pfeiffer, and L. Monostori (2017). Robust production planning and control for multi-stage systems with flexible final assembly lines. *International Journal of Production Research* **55**(13). IF: 2.32, 3657–3673. DOI: `10.1080/00207543.2016.1198506`.

6. Colledani, M., D. Gyulai, L. Monostori, M. Urgo, J. Unglert, and F. Van Houten (2016). Design and management of reconfigurable assembly lines in the automotive industry. *CIRP Annals-Manufacturing Technology* **65**(1). IF: 2.54, 441–446. DOI: `10.1016/j.cirp.2016.04.123`.

7. Szaller, Á., D. Gyulai, and Z. J. Viharos (2016). Gyártórendszerek elrendezésének tervezése sztochasztikus paraméterek figyelembevételével. *GÉP* **67**(7-8), 107–110.

8. Gyulai, D., B. Kádár, A. Kovács, and L. Monostori (2014). Capacity management for assembly systems with dedicated and reconfigurable resources. *CIRP Annals – Manufacturing Technology* **63**(1). IF: 2.25, 457–460. DOI: `10.1016/j.cirp.2014.03.110`.

9. Gyulai, D. and L. Monostori (2013). Vehicle Routing Approach for Lean Shop-Floor Logistics. *Hungarian Journal of Industry and Chemistry* **41**(1), 1–6.

Papers in refereed conference proceedings

1. Gyulai, D., A. Pfeiffer, and V. Gallina (2018). Online lead time prediction supporting situation-aware production control. *Procedia CIRP* **78**. *6th CIRP Global Web Conference – CIRPe 2018*, 190–195. DOI: `10.1016/j.procir.2018.09.071`.

2. Gyulai, D., A. Pfeiffer, G. Nick, V. Gallina, W. Sihn, and L. Monostori (2018). Lead time prediction in a flow-shop environment with analytical and machine learning approaches. In: *Proceedings of the 16th IFAC Symposium on Information Control Problems in Manufacturing, Bergamo, Italy*. In Print. IFAC.

3. Lingitz, L., V. Gallina, F. Ansari, D. Gyulai, A. Pfeiffer, and W. Sihn (2018). Lead time prediction using machine learning algorithms: A case study by a semiconductor manufacturer. *Procedia CIRP* **72**. *51st CIRP Conference on Manufacturing Systems–CIRP CMS 2018, Stockholm, Sweden*, 1051–1056. DOI: `10.1016/j.procir.2018.03.148`.

4. Pfeiffer, A., D. Gyulai, Á. Szaller, and L. Monostori (2018). Production Log Data Analysis for Reject Rate Prediction and Workload Estimation. *Proceeding of the 2018 Winter Simulation Conerence*. *Winter Simulation Conference 2018, Gothenburg, Sweden, Accepted*.

5. Szaller, Á., F. Béres, É. Piller, D. Gyulai, and A. Pfeiffer (2018). Real-time prediction of manufacturing lead times in complex production environments. *EurOMA 2018 Proceedings*. *25th Annual EurOMA Conference – EurOMA 2018, Budapest, Hungary, In Print*.

6. Gyulai, D., B. Kádár, and L. Monostori (2017). Scheduling and operator control in reconfigurable assembly systems. *Procedia CIRP* **63**. *50th CIRP Conference on Manufacturing Systems – CIRP CMS 2017, Taichung City, Taiwan*, 459–464. DOI: `10.1016/j.procir.2017.03.082`.

7. Pfeiffer, A., D. Gyulai, and L. Monostori (2017). Improving the Accuracy of Cycle Time Estimation for Simulation in Volatile Manufacturing Execution Environments. In: *Proceedings of ASIM Simulation in Production and Logistics 2017 Conference*. *ASIM Simulation in Production and Logistics 2017, Kassel, Germany*. ASIM, pp.177–186.

8. Tavakolizadeh, F., J. Á. Carvajal Soto, D. Gyulai, and C. Beecks (2017). Industry 4.0: Mining Physical Defects in Production of Surface-Mount Devices. In: *Proceedings of the 17th Industrial Conference, Advances in Data Mining, ICDM 2017, New York, USA*, pp.146–151. `http://www.data-mining-forum.de/books/icdmposter2017.pdf`.

9. Becker, J. M. J., B. Kádár, M. Colledani, N. Stricker, M. Urgo, J. Unglert, D. Gyulai, and E. Moser (2016). The Robust-PlaNet Project: Towards Shock-Robust Design Of Plants And Their Supply Chain Networks. *IFAC-PapersOnLine* **49**(12). *8th IFAC Conference on Manufacturing Modelling, Management and Control MIM 2016, Troyes, France*, 29–34. DOI: `10.1016/j.ifacol.2016.07.545`.

10. Egri, P., D. Gyulai, B. Kádár, and L. Monostori (2016). Production Planning on Supply Network and Plant Levels: The RobustPlaNet Approach. *ERCIM (European Research Consortium for Informatics & Mathematics) News* (105), 14–15.

11. Gyulai, D., A. Pfeiffer, B. Kádár, and L. Monostori (2016). Simulation-based Production Planning and Execution Control for Reconfigurable Assembly Cells. *Procedia CIRP* **57**. *49th CIRP Conference on Manufacturing Systems–CIRP CMS 2016, Stuttgart, Germany*, 445–450. DOI: `10.1016/j.procir.2016.11.077`.

12. Gyulai, D., Á. Szaller, and Z. J. Viharos (2016). Simulation-based Flexible Layout Planning Considering Stochastic Effects. *Procedia CIRP* **57**. *49th CIRP Conference on Manufacturing Systems–CIRP CMS 2016, Stuttgart, Germany*, 177–182.

13. Pfeiffer, A., D. Gyulai, B. Kádár, and L. Monostori (2016). Manufacturing Lead Time Estimation with the Combination of Simulation and Statistical Learning Methods. *Procedia CIRP* **41**. *48th CIRP Conference on Manufacturing Systems–CIRP CMS 2015, Ischia, Italy*, 75–80. DOI: `10.1016/j.procir.2015.12.018`.

14. Gyulai, D., B. Kádár, and L. Monostori (2015). Robust production planning and capacity control for flexible assembly lines. In: *Proceedings of the 15th IFAC/IEEE/IFIP/IFORS Symposium, Information Control Problems in Manufacturing, Ottawa, Canada*. IFAC, pp.2380–2385. DOI: `10.1016/j.ifacol.2015.06.432`.

15. Gyulai, D. (2014). Bilevel Capacity Management with Reconfigurable and Dedicated Resources. In: *XIX. International Scientific Conference of Young Engineers*. *In Hungarian*. EME. `http://eda.eme.ro/handle/10598/28228`.

16. Gyulai, D. (2014). Novel capacity planning methods for flexible and reconfigurable assembly systems. In: *4th International Conference on Simulation and Modeling Methodologies, Technologies and Applications – SIMULTECH*. SCITEPRESS. `http://eprints.sztaki.hu/8142`.

17. Gyulai, D., B. Kádár, and L. Monostori (2014). Capacity Planning and Resource Allocation in Assembly Systems Consisting of Dedicated and Reconfigurable Lines. *Procedia CIRP* **25**. *8th International Conference on Digital Enterprise Technology–CIRP DET 2014, Stuttgart, Germany*, 185–191. DOI: `10.1016/j.procir.2014.10.028`.

18. Gyulai, D. and L. Monostori (2014). Capacity analysis and planning for flexible assembly lines. In: *Proceedings of International Automation Congress 2014*. MATE, pp.38–47. `http://eprints.sztaki.hu/id/eprint/8086`.

19. Gyulai, D., A. Pfeiffer, T. Sobottka, and J. Váncza (2013). Milkrun Vehicle Routing Approach for Shop-floor Logistics. *Procedia CIRP* **7**. *46th CIRP Conference on Manufacturing Systems–CIRP CMS 2018, Setubal, Portugal*, 127–132. DOI: `10.1016/j.procir.2013.05.022`.

20. Gyulai, D. and Z. Vén (2012). Order-stream-oriented system design for reconfigurable assembly systems. In: *Proceedings of the Factory Automation 2012 Conference*. University of Pannonia, pp.138–143. `http://eprints.sztaki.hu/id/eprint/7374`.

21. Gyulai, D., Z. Vén, A. Pfeiffer, J. Váncza, and L. Monostori (2012). Matching Demand and System Structure in Reconfigurable Assembly Systems. *Procedia CIRP* **3**. *45th CIRP Conference on Manufacturing Systems–CIRP CMS 2012, Athens, Greece*, 579–584. DOI: `10.1016/j.procir.2012.07.099`.

22. Popovics, G., C. Kardos, L. Kemény, D. Gyulai, and L. Monostori (2012). Uniform data structure for production simulation. In: *Proceedings of the 14th International Conference on Modern Information Technology in the Innovation Processes of the Industrial Enterprises*, *MITIP 2012*, pp.168–177. `http://eprints.sztaki.hu/id/eprint/7445`.

Patents

1. Tsutsumi, D., Y. Ueno, Y. Nonaka, T. Nakano, J. Váncza, G. Erdős, D. Gyulai, A. Kovács, and B. Tipary (n.d.). "Product design and process deign device". Patent 2017-218851 (JP).