Curriculum Vitae

Personal information

Name / Surname	**Márton Elekes**
Telephone	+36 1 463 3579
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Nationality	Hungarian

Language certificates

English	B2 complex, 2013
German	B1 complex, 2019

Education

Computer Science PhD 2020–	Budapest University of Technology and Economics (BME), Critical Systems Research Group (ftsrg) Supervisor: Dr. Zoltán Micskei Thesis: Assessing the quality of graph-based models and modelling languages
Computer Science Engineer MSc 2018–2020	MSc degree (with honours), Budapest University of Technology and Economics Critical Systems major, IT Security minor Thesis: Analysis of graph queries
Computer Science Engineer BSc 2014–2018	BSc degree (with honours), Budapest University of Technology and Economics Software Engineering specialization Thesis: Model-driven Automaton Learning (in Hungarian)

Experience

2024–	Budapest University of Technology and Economics – Research associate
2020–2024	Budapest University of Technology and Economics – Research assistant
2019	ETH Zürich, Network Security Group – Student Summer Research Fellowship (Study the scalability of the path exploration system in SCION Internet architecture, supervisor: Prof. Adrian Perrig)
2017–2018	Simonyi Károly College for Advanced Studies (student organization) – Chief project manager for over 50 people in 9 projects (robotics, aerospace, embedded and control systems, AI, computer vision)
2017	Simonyi Károly College for Advanced Studies – Project manager of the PLC programming project
2017	IncQuery Labs – Internship (Demonstrator application for the VIATRA model transformation engine)

Knowledge

Research interests	Modelling languages, Model-driven Engineering Software testing Graph databases, Graph processing, Query languages

Selected publications

Full list: ꝺ Google Scholar, [mt] MTMT

IEEE Trans. Software Eng. 2024 — M. Elekes, V. Molnár and Z. Micskei. To do or not to do: semantics and patterns for do activities in UML PSSM state machines. pp. 2124–2141. 🔵 10.1109/TSE.2024.3422845. arXiv:2309.14884.

Softw. Qual. J. 2023 — M. Elekes, V. Molnár and Z. Micskei. Assessing the specification of modelling language semantics: a study on UML PSSM. pp. 575–617. 🔵 10.1007/S11219-023-09617-5.

Softw. Syst. Model. 2022 — G. Hinkel, A. García-Domínguez, R. Schöne, A. Boronat, M. Tisi, T. L. Calvar, F. Jouault, J. Marton, T. Nyíri, J. B. Antal, M. Elekes and G. Szárnyas. A cross-technology benchmark for incremental graph queries. pp. 755–804. 🔵 10.1007/s10270-021-00927-5.

IEEE High Performance Extreme Computing Conference (HPEC) 2020 — M. Elekes, A. Nagy, D. Sándor, J. B. Antal, T. A. Davis and G. Szárnyas. A Graph-BLAS solution to the SIGMOD 2014 Programming Contest using multi-source BFS. pp. 1–7. 🔵 10.1109/HPEC43674.2020.9286186.

Research visits

2022, 2024	ResilTech, Italy, 2×1 month – Testing modelling languages and tools for safety and security analysis
2018	Cornell, Maryland, Max Planck Pre-doctoral Research School 2018
2018	Huawei Hungary Seeds for the Future program

Research projects

EDGE-Skills 2024–	Develop testing strategy for an EU Digital Europe Programme project about data space for education and skills data
ADVANCE 2022–2024	Validation & verification of modelling languages in a H2020 project about V&V of cyber-physical systems
Arrowhead Tools 2020–2022	Testing microservice architectures in a H2020 project about industrial digitalization, IoT and automation

Talks

Scientific Association for Infocommunications – seminar	M. Elekes: Mapping Graph Queries to Relational Databases (extended slides)
4th openCypher Implementers Meeting	M. Elekes, A. Gujgiczer, G. Szárnyas: Learning Timed Automata with Cypher
Neo4j Budapest 2018 Meetup	G. Szárnyas, R. Farkas, M. Elekes, A. Gujgiczer: Learning Timed Automata with Cypher
Simonyi Conference 2017	A. Gujgiczer, M. Elekes: Regression Testing with Artificial Intelligence

Teaching experience

2020–	Head TA, assistant lecturer, course managment (homework, exam, for up to 600+ students) incl. Software Engineering, System Modeling, Software and systems verification
2019	Languages and Automata – Teaching assistant
2016–2018	Programming 1–2 – Teaching assistant

Mentoring

Student scientific competition	Formal modelling of the UML PSSM state machine semantics, 2nd prize (faculty level) – co-advisor
Thesis works	I supervised 2 graduate and 6 undergraduate thesis works.

Academic services

Organizing conferences	29th Minisymposium of BME-DMIS 2022 – member of organizing committee International Symposium on Distributed Computing (DISC) 2019 – member of local organizing team
Reviewer	IEEE International Conference on Software Quality, Reliability, and Security (QRS)

Scholarships

2016, 2018, 2023	New National Excellence Program (research award)
2016, 2017, 2018, 2019	Scholarship of the Hungarian Republic
2016, 2017, 2018, 2019	Scholarship of the Faculty of Electrical Engineering and Informatics