



Personal information

Name / Surname

Oszkár Semeráth

Personal Email

semerath@mit.bme.hu

Home page

<https://oszkarsemerath.github.io/>

Nationality

Hungarian

Language

Mother tongue

Hungarian

English

B2 degree, 2009

German

B1 degree (writing/reading), 2019

Education

PhD in Software Engineering
2014–2019

Budapest University of Technology and Economics
Department of Measurement and Information Systems.
Honour: *summa cum laude*, Thesis work: *Formal Validation and Model Generation for Domain-Specific Languages by Logic Solvers*
Supervisor: Prof. Dániel Varró

MSc in Software Engineering
2011–2014

Budapest University of Technology and Economics,
Specialization: Safety-Critical System Engineering.
Thesis work: *Consistency Analysis of Domain-Specific Languages*

BSc in Software Engineering
2007–2011

Budapest University of Technology and Economics,
Specialization: Information Technology.
Thesis work: *Formal Analysis of Model Transformations* (*hun*)

High school
2007

Török Ignác High School, math specialization

Positions

2021 –	Assistant Professor, Budapest University of Technology and Economics
2020 – 2021	Research Fellow, Budapest University of Technology and Economics
2019 – 2020	Research Fellow, MTA-BME Lendület Cyber-Physical Systems Research Group
2016 – 2019	Research Assistant, MTA-BME Lendület Cyber-Physical Systems Research Group
2016 – 2019	3 × 2 months Graduate Research Trainee , McGill University, Canada
2014 – 2016	PhD student, Budapest University of Technology and Economics

Awards and Scholarships

2022	Young Researcher Award (<i>Hungarian Academy of Science, 22 awards annually</i>)
2022	John George Kemeny Award (<i>John von Neumann Computer Society, 2 awards annually</i>)
2021	Josef Heim Innovation Award (<i>departmental</i>)
2018, 2020	2 × László Schnell Publication Award (<i>departmental</i>)
2017, 2020, 2021	3 × New National Excellence Program (ÚNKP) (<i>national scholarship, published on official channel of the university</i>)
2016	Best Presentation Award, CSCS Conference (<i>national</i>)
2013	IEEE/ACM Best Paper Award, MODELS2013 (<i>international, 1 out of 48 papers</i>)
2011, 2013, 2014	Student Research Competition (TDK): university 1 st , 2 nd , national 1 st places

Publication Record

Summary	1 book chapter, 7 journal papers (IF), 17 conference papers
Repositories	Hungarian Scientific Bibliography (10045161) , Google Scholar
Citations	200 independent citations, selected citations: IEEE Transactions on Software Engineering , IEEE Access (1,2) , Empirical Software Engineering
International presentations	Eindhoven (The Netherlands), Saint-Malo (France), Marburg (Germany), Gothenburg (Sweden), Thessaloniki (Greece), Montreal (Canada), Luxembourg
Hungarian presentations	<i>Software Testing 2021, Budapest</i> , https://www.iir-hungary.hu/ <i>Formal Methods in Information Technology</i> , Eszterházy Károly University, 2021
Selected publications	[1] Semeráth , Nagy, Varró: <i>A Graph Solver for the Automated Generation of Consistent Domain-Specific Models</i> . International Conference on Software Engineering, 2018. Citations: 20 (Previous paper from Hungarian authors was accepted 22 years ago) [2] Semeráth , Barta, Horváth, Szatmári, Varró: <i>Formal Validation of Domain-Specific Languages with Derived Features and Well-Formedness Constraints</i> . Software and System Modeling, 2017. Citations: 20 [3] Semeráth , Varró: <i>Iterative Generation of Diverse Models for Testing Specifications of DSL Tools</i> . Fundamental Approaches to Software Engineering, 2018. Citations: 11 [4] Semeráth , Varró: <i>Graph Constraint Evaluation over Partial Models by Constraint Rewriting</i> . International Conference on Model Transformation, 2017. Citations: 11 [5] Marussy, Semeráth , Varró: <i>Automated Generation of Consistent Graph Models with Multiplicity Reasoning</i> . IEEE Trans. on Software Engineering, 2021. IF: 9.321 (Previous paper from Hungarian authors was accepted 12 years ago)

Research Projects

2024-2026	Verification of AI/ML Positioning systems with Improved Reliability, European Space Agency, Researcher
2024-2027	Simulator-based AI testing, ONR Global, Principal Investigator
2022	Amazon Research Award, co-Principal Invisigator (<i>international, 74 winners</i>)
2021 – 2022	Research Collaboration with a railway supplier (<i>testing of AI-based systems</i>)
2020 – 2021	Research collaboration with Component ltd. (<i>AI-based manufacturing and cost estimator for engineering blueprints</i>)
2020 – 2021	Competetiveness and Excellence Collaboration program, Prolan ltd. (<i>systematic generation of railway architecures for the testing of railway switches</i>)
2018 –	Higher Education Excellence Program, NRDI Fund (<i>AI/Future mobility research</i>)
2014 – 2016	"Verification of Complex Systems" collaboration, Ericsson Hungary
2013	Artemis R3-COP research project (<i>international, testing of laser-guided autonomous forklift robots</i>)

Research Visits

2021	ZalaZONE (<i>Zalaegerszeg, Hungary, autonomous vehicle test track</i>)
2019	Karr Lab (<i>New York, USA, molecular simulation for cancer research</i>)

Teaching and Talent Care

2020 –	Lead lecturer: <i>Model-based Systems Design, Critical Architectures Laboratory, Critical Systems Integration Laboratory, Project Laboratory, BSc and MSc Thesis Projects (administration of 150+ students)</i>
2013 – 2019	Teaching and Lab Assistant: <i>System Modeling, Eclipse-Based Development and Integration, Critical Architectures Laboratory, Critical Systems Integration Laboratory, Formal Methods, Model Driven Software Development, System Integration, Languages and Automata</i>
Supervising	15 thesis works, 1 ongoing PhD student
Student Research Competition	8 thesis works, 6 awards (<i>Hungary</i>) <i>Special award for the supervision of best woman researcher</i>
Research Programs	5 co-supervised Summer Undergraduate Research projects, (<i>McGill, Canada</i>)
Teaching Awards	Departmental award for the development of automated homework generation and evaluation framework (<i>System Modeling, annually 600+ students, homework in three languages</i>)
Teaching Awards	Departmental award for the management of IMSC talent care program

Academic Service

Organizing	<i>ACM/IEEE I.C. on Model-Driven Engineering Languages '23, proceedings chair</i> <i>Eur. Conf. on Modelling Foundations and Applications '24, PC member</i> <i>Language Models for Model-Driven Engineering '24, PC member</i> <i>IEEE WS. on Validation and Verification of Future Cyber-Physical Systems '23, PC member</i>
Reviewing	20+ conference reviews (including <i>BIS2020, ECMFA2018, 4×FASE, 2×ICGT, 2×ICMT 2×MODELS, SEFM2019, SLE2015</i>) 4 journal review (<i>J. Syst. Softw., Int. J. Softw. Tools Technol. Transf., Concurr. Comput. Pract. Exp.</i>)
2019–	Student research competition reviewing/scoring (<i>national/university level</i>)
2016	Local chair at Minisymposium conference (<i>departmental</i>)
2013	Student volunteer at STAF2013 research conference (<i>international</i>)