Gregor Kosec

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GS profile:	http://scholar.google.si/citations?user=Obn5FmoAAAAJs

Education

2011	Ph.D: University of Nova Gorica, Graduate school, thesis:: Local Meshless Method For Multi-Phase Thermo-Fluid Problems
2006	BS.c: University of Ljubljana, Faculty of Mathematics and Physics

Employment

2020-	Jožef Stefan Institute :: **Head of the parallel and distributed systems Laboratory**
2015-2020	Jožef Stefan Institute :: Parallel and distributed systems Laboratory (research associate)
2011-2015	Jožef Stefan Institute :: Parallel and distributed systems Laboratory (postdoctoral researcher)
2006-2011	University of Nova Gorica :: Laboratory for Multi-Phase Processes (junior researcher/teaching assistant)

Research interest/experience

Development and analysis of local meshless numerical methods for solving partial differential equations

Generic computer implementation of numerical algorithms

Numerical modelling

Visiting researcher

2010,2011	Institut Jean Lamour, Ecole des Mines de Nancy, France, Dr. Herve Combeau
2010	Faculty of Mechanical Engineering, University of Podgorica, Montenegro, Dr. Igor Vušanovič
2009	FAST, Heat & Mass Transfer and Fluid Flow group, Orsay, France, Dr. Dominique Gobin

Awards

2017	State award, The Puh Certificate of Recognition
2014	Emerald's awards for excellence, Engineering Outstanding Doctoral Research
2013	Emerald's awards for excellence, Outstanding paper :: Solution of a low Prandtl number natural convection benchmark by a local meshless method
2010	Slovene human resources development and scholarship fund, Reward for exceptional contribution to the sustainable development
2009	Emerald's awards for excellence, Highly recommended paper :: Solution of thermo-fluid problems by collocation with local pressure correction
2009	World Federation of Scientists, National Scholarship

Leadership experiences

2020- **Head of the Parallel and distributed systems laboratory** at Jožef Stefan Institute

Principal investigator at core research grants

2021-2024	ARRS J3-3115, AiCoachU – Artificial intelligence is coaching you (17 PM)
2021-2024	ARRS J2-3048, Advanced modelling of radio channels using ray-optical and numerical meshless methods

	(15 PM)
2020-2026	**Head of the core research programme P2-0095** Parallel and distributed systems. (216 PMs) Coordination of three groups from different organisations: the Parallel and distributed Systems laboratory at the Jožef Stefan Institute (JSI), the Laboratory of algorithmics at the Faculty of computer and information Science (FRI), and the Laboratory for machine intelligence at the Faculty of electrical Engineering (FE))
2020-2023	ARRS J1-2479, Past climate and glaciation at the Alps-Dinarides junction (12 PMs, 3 years)
2020-2023	ARRS J7-2599, Decay of an invasive ctenophore bloom as a perturbation to the costal marine microbial community – from molecules to ecosystem – an integrated interdisciplinary approach, IJS (10 PMs)
2020-2024	young researcher programme – Miha Rot (48 PMs)
2017-2020	young researcher programme – Jure Slak (36 PMs)

Leader of applied research project

2021-2023	TrafoFlex : advanced concept of efficient use of transformers leveraging the dtr technology (122 k€)
2021-2022	Forecasting maintenance interventions of the on-load tap changer with advanced analytics (45 k€)
2021	Consultative Agreement for Operato company (10 k€)
2021	Coupling of BFM and Croco models (13 k€)
2020	Development of 3D printing simulation tool, SinusPro, GmbH, Austria (13 k€)
2019-2020	Conceptual solution for the uncertainty estimation of the Dynamic Thermal Rating, ELES, Ltd. (80 k€)
2019	Dynamic thermal rating: Croatian power grid system – pilot deploy, HOPS, Croatia (20 k€)
2018-2021	Development and deployment of the DTR on the Slovenian transmission network, ELES, Ltd. (200 k€)
2017	Cooling of overhead conductors at a horizontal wind velocity below 0,6 m / s, ELES, Ltd. (85 k€)
2016	DTR of Overhead Lines in icing regimes, Technology Transfer in Computing Systems, EU FP7 TTP (75 k€)
2014-2015	Analysis of de-icing by operational countermeasures, ELES, Ltd. (125 k€)
2012	Parallelization of North Atlantic Princeton Ocean Model, Nacionalni Inštitut za Biologijo (5 k€)

Active participation in other projects

2019-2023	MC Member of COST Action CA18203
2017-2018	EIMV; Development and implementation of Dynamic Thermal Model for power transformers
2016-	FWO; Multi-analysis of fretting fatigue using physical and virtual experiments
2015	TT; System for mobile monitoring of vital physiological parameters and environmental context
2014-2015	Oleum trading systems; Development and implementation of algorithms for time series analysis
2012-2014	HiPEAC; European Network on High Performance and Embedded Architecture and Compilation
2012-2013	BI-ME/012-13-005; Cellular and final automata for pattern recognition

Pedagogic work

2020-	PhD advisor, "Advanced implementation of dimension independent solution procedure for solving systems of partial differential equations", Miha Rot
2019-	PhD advisor, "Robust strong form mesh-free method for transport problems", Mitja Jančič
2019-	PhD co-advisor, "Determination of emissivity model for overhead power lines", Arin Hovanessian
2017-2020	PhD advisor, "Adaptive RBF-FD method", Jure Slak
2016-2018	PhD co- advisor "Three-Phase State Estimation in Power Distribution Systems", Urban Kuhar.
2015-2020	Advising masters' students from Faculty of Mathematics and Physics at University of Ljubljana (19 students since 2015)
2006-2011	Teaching assistant for Physics/Thermodynamics at University of Nova Gorica

Membership of professional and scientific bodies

Guest editor: International journal Algorithms ISSN 1999-4893

Member of the Editorial Board:

- International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering
- DC VIS / Distributed Computing, Visualization and Biomedical Engineering
- International Conference on Engineering Computational Technology
- Miklós Iványi International PhD-DLA Symposiums

Member of:

- European Network of Excellence on High Performance and Embedded Architecture and Compilation
- NESUS - Network for Sustainable Ultrascale Computing
- European Network of IEEE

Reviewer for (selected journals):

- Archives of Computational Methods in Engineering
- Journal of Computational Physics
- Applied Mathematical Modelling
- U.S. Department of Energy
- Applied Mathematics And Computation
- Engineering Analysis With Boundary Elements
- International Journal of Heat and Mass Transfer
- Progress in Computational Fluid Dynamics
- International Journal of Computer Mathematics
- Computational geosciences
- …

Publications stats

36 peer reviewed articles (16 Q1)

45 papers in conference proceedings

4 book chapters

2 scientific monographs (Springer)

5 invited talks

515 WoS/SCOPUS citations **h-index 14**

1105 Google Scholar citation **h-index 17**

Research interest higher than 92 % researchers on Researchgate

Descriptive CV

Gregor Kosec graduated at University of Ljubljana, Faculty of Mathematics and Physics in 2006 and obtained Ph.D. in 2011 at University of Nova Gorica. In 2011 he became a member of Parallel and Distributed Systems Laboratory at Jožef Stefan Institute. In 2020 he became head of the Parallel and Distributed Systems Laboratory. His main research interest covers numerical modelling, meshless methods, and generic programming. In cooperation with colleagues he published 36 peer reviewed original scientific papers, two scientific monographs in Springer, 4 book chapters, and presented his work at 45 international conferences. He was awarded with 4 international rewards and 2 domestic rewards, namely with reward for exceptional contribution to the sustainable development and with Puh Certificate of Recognition. He is an active reviewer for several international scientific journals, he is also active in organization of international conferences, and guest editor for international journal Algorithms. Gregor Kosec led several applied projects in total amount of 788 k€ in last seven years, starting with "Analysis of de-icing by operational countermeasures" for ELES, Ltd., Electricity Transmission System Operator, followed by project Dynamic Thermal Rating of overhead power lines in icing conditions (DTRi) funded by FP7 TETRACOM. In 2018 he led project "Cooling of overhead power lines in low wind regimes" and 2019 "Dynamic determination of DTR uncertainty" again for ELES, Ltd. In 2016 he was involved in FWO funded project "Multi-analysis of fretting fatigue using physical and virtual experiments' as a WP leader, and in a technology transfer "System for mobile monitoring of vital physiological parameters and environmental context". Together with colleagues from JSI and Elektroinštitut Milan Vidmar he proposed technological innovation DiTeR, a modular software TRL9 designed to predict the thermal state of power lines in given operating and weather conditions, that was in 2019 successfully put to operational use for 27 transmission lines in the Slovenian power network. DiTeR is from 2020 marketed on the world-wide market by company Operato. He is member of NESUS -

Network for Sustainable Ultrascale Computing (COST IC1305), IEEE International Professional Association and HiPEAC - European Network of Excellence on High Performance and Embedded Architecture and Compilation. He is an active member of program committees of international conferences: PARENG - Conference on Parallel, Distributed, GPU and Cloud Computing for Engineering, Distributed Computing and Data Science and Biomedical Engineering, ICCS - International conference on computational science. He is also advising masters' and Ph.D students from the Faculty of Mathematics and Physics at University of Ljubljana.

Selected publications

RASHKOVSKA, Aleksandra, JANČIČ, Mitja, DEPOLLI, Matjaž, KOSMAČ, Janko, KOSEC, Gregor. Uncertainty assessment of dynamic thermal line rating for operational use at transmission system operators. IEEE transactions on power systems, ISSN 0885-8950

SLAK, Jure, KOSEC, Gregor. Medusa : A C++ library for solving PDEs using strong form 1 mesh-free methods. ACM transactions on mathematical software, ISSN 0098-3500, 2021

KOSEC, Gregor, DEPOLLI, Matjaž, RASHKOVSKA, Aleksandra, TROBEC, Roman. Super linear speedup in a local parallel meshless solution of thermo-fluid problem. Computers & Structures, ISSN 0045-7949. [Print ed.], 2014, vol. 133, str. 30-38, doi: 10.1016/j.compstruc.2013.11.016.

KOSEC, Gregor. A local numerical solution of a fluid-flow problem on an irregular domain. Advances in engineering software, ISSN 0965-9978. [Print ed.], 2018, vol. 120, str. 36-44, doi: 10.1016/j.advengsoft.2016.05.010.

SLAK, Jure, KOSEC, Gregor. On generation of node distributions for meshless PDE discretizations. SIAM journal on scientific computing, ISSN 1064-8275, 2019, vol. 41, no. 5, str. A3202-A3229, doi: 10.1137/18M1231456.

TROBEC, Roman, KOSEC, Gregor. Parallel scientific computing : theory, algorithms, and applications of mesh based and meshless methods, (SpringerBriefs in computer science). Cham [etc.]: Springer, cop. 2015. XI, 107 str., ilustr. ISBN 978-3-319-17072-5.

KOSEC, Gregor, SLAK, Jure, DEPOLLI, Matjaž, TROBEC, Roman, PEREIRA, Kyvia, TOMAR, Satyendra, JACQUEMIN, Thibault, BORDAS, Stéphane Pierre Alain, WAHAB, Magd Abdel. Weak and strong from meshless methods for linear elastic problem under frettingcontact conditions. Tribology international, ISSN 0301-679X, 2019, vol. 138, str. 392-402, doi: 10.1016/j.triboint.2019.05.041.

KOSEC, Gregor, MAKSIĆ, Miloš, DJURICA, Vladimir. Dynamic thermal rating of power lines : model and measurements in rainy conditions. International journal of electrical power & energy systems, ISSN 0142-0615. [Print ed.], 2017, vol. 91, str. 222-229, doi: 10.1016/j.ijepes.2017.04.001.