Jure Slak date of birth: 20. december 1993
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EDUCATION

Currently 3rd year PhD student of Mathematics at Faculty of Mathematics and Physics, University of Ljubljana, Slovenia

- Master's thesis grade 10 out of 10
  September 2017 with average study grade of 10.00
- Bachelor's thesis grade 10 out of 10 September 2015
  with average study grade of 9.91

WORK HISTORY

- Young researcher October 2017 – present
  "Jožef Stefan" Institute

  Researching strong form meshless methods (specifically Adaptivity in RBF-FD) for solving PDEs and developing a library that supports testing and prototyping for various methods.

- Teaching assistant October 2017 – present
  Faculty of Mathematics and Physics
  University of Ljubljana

  Teaching courses on programming, data structures and algorithms, numerical mathematics, basic calculus.

- Software Engineering Intern Summer 2016
  Google Inc., Zürich, Switzerland

  Worked on Gmail Analytics team. I established an end to end anomaly detection system that analyses billions of time series per day, extracts and orders anomalies and displays them to the analysts through our frontend.

- Student research assistant August 2015 – September 2017
  Laboratory for Parallel and Distributed Systems
  "Jožef Stefan" Institute

  Collaborated in a team of three people to develop a production system for Slovenian Electricity Transmission System Operator to alert of possible icing conditions and calculate the amount of needed electrical current to prevent it. This included the development of the mathematical model, implementation, testing against field measurements and numerical testing, implementation with a web interface for manual simulations and controls, connecting many different data sources. The system was launched on schedule and runs live without any reported outages.

  Collaborated in development of a PDE solver – implemented domain discretization algorithms and used it to solve fluid flow problems and do ECG detection, resulting in a published paper.

- Software Engineering Intern Summer 2014
  Google Inc., Mountain View, California

  Worked on Gmail spam detection system. I worked on transitioning the spam detection system to a new reputation based model, more specifically, I developed a tool that saves the reputation history of a feature and allows programmatic access for querying as well as linking it to the frontend tool used by analysts.

- Student teaching assistant — October 2013 – October 2017
  Faculty of Mathematics and Physics
  University of Ljubljana

  Teaching course "Computing Laboratory" for students of Mathematics and students of Physics. Included preparing lectures and exercises, giving lectures and leading lab exercises, preparing and grading exams for ∼100 students every year, 10 hours per week.

- Software developer (summer job) — Summer 2013, 2012, 2011
  Javna Razsvetljava d.d, Ljubljana, Slovenia

  Programmed AVR microcontrollers for public light system, helped develop a system which allowed to monitor and control every component in Ljubljana's highway lighting system.

- Leading a school programming club — September 2012 – present
  Gimnazija Vič, St. Stanislav's Institution (only 2014 and 2015), Ljubljana

  Teaching around 30 high schoolers from basic programming, algorithmic and computer skills one afternoon per week. After a year, all of them made a simple project, eg. a computer game.

- Other projects
  - Collaborated in development of economic model using to model investment risk in renewables with stochastic methods. I arrived in the middle of the project to add some additional modules and improve the computational speed. I improved the speed by factor of 8 and made it possible to store, load and display the results of analyses.
  - Solved and implemented solutions for algorithmic tasks (see: `https://bitbucket.org/jureslak/codebook`)
  - Developed small desktop applications using SDL and OpenGL

AWARDS and SCHOLARSHIPS

Faculty Prešern's award — 2017

Dean's award — 2013, 2015 – 2017

Slovenian ACM - ICPC
- 1st place — October 2017
- 3rd place — October 2016
- 2nd place — October 2015
- 2nd place — October 2014
- 1st place — October 2013
- 3rd place — October 2012

International Olympiad in Informatics
- Bronze medal (Sirmione, Italy) — September 2012
- Participated (Pattaya, Thailand) — July 2011

Baron Sigmund Zois von Edelstein Scholarship — September 2008 – September 2017

SKILLS

- Good knowledge and experience in C++, Python, Java,
- Good knowledge of common algorithms
- Familiar with MATLAB, Mathematica, R
- Solving problems using mathematical background (numerical methods, mechanics, statistics)
- Familiar with web technologies (HTML, CSS, JS, PHP, Sass, jQuery, Bootstrap, Django, SQL)
- Familiar with Windows and Linux
- Familiar with version control systems (Git, Mercurial) and unit test frameworks (Google Test, JUnit, unittest)
- Completed CCNA Exporation: Network Fundamentals course

LANGUAGE SKILLS

- Slovenian: native language
- English: fluent (speaking, reading, writing)
- German: basic (speaking, reading, writing)

VOLUNTEER WORK

- Leader of Slovenia's 2018, 2019 CEOI team
- Member of committee for high school programming contests at ACM Slovenia 2013 – present
- Member of committee for university programming contests at ACM Slovenia 2017 – present
- President of the student council October 2016 – October 2017
- Member of the student council October 2015 – October 2019
- Tutor for younger students at university 2013 – 2017
- Preparing high school students for American Computer Science League and accompanied them to one week competition every year (our team was top 3 in 2015, 16, 17, 18, and 19) 2012 – present
- Teaching first aid to elementary school children and helped organize first aid awareness events and competitions 2007 – 2011

PUBLICATIONS List of published scientific works that I have coauthored is displayed below.

[1] G. Kosec and J. Slak, *Numerical simulation of natural convection from a heated cylinder*, in: Proceedings of the International Conference on Computational Methods, ICCM2018, August 6–10, 2018, Rome, Italy (eds. G.-R. Liu and P. Trovalusci), Proceedings of the international conference on computational methods **5**, Scientech Publisher, 2018, pp. 887–896.

[2] G. Kosec and J. Slak, *Numerical simulation of overhead power line cooling in natural convection regime*, in: ECT2018, The Tenth International Conference on Engineering Computational Technology 2018, September 4–8, 2018, Stiges, Barcelona, Spain, Civil-comp proceedings, Elsevier, 2018.

[3] G. Kosec and J. Slak, *RBF-FD based dynamic thermal rating of overhead power lines*, in: Advances in fluid mechanics XII (eds. S. Hernández, L. Škerget and J. Ravnik), WIT transactions on engineering sciences **120**, Wessex institute, WIT press, 2018, pp. 255–262, doi:10.2495/afm180261.

[4] G. Kosec and J. Slak, *Parallel RBF-FD solution of the Boussinesq's problem*, in: Proceedings of the Sixth International Conference on Parallel, Distributed, GPU and Cloud Computing for Engineering, June 5–6, 2019, Pécs, Hungary (eds. P. Iványi and B. H. V. Topping), Civil-comp proceedings, Stirlingshire: Civil-Comp Press, 2019.

[5] G. Kosec et al., *Weak and strong from meshless methods for linear elastic problem under fretting contact conditions*, Tribology International **138** (2019) 392–402, doi:10.1016/j.triboint.2019.05.041.

[6] M. Maksić et al., *Cooling of overhead power lines due to the natural convection*, International Journal of Electrical Power & Energy Systems **113** (2019) 333–343, doi:10.1016/j.ijepes.2019.05.005.

[7] J. Močnik Berljavac, J. Slak and G. Kosec, *Parallel simulation of time-domain acoustic wave propagation*, in: MIPRO 2019: 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics, May 20–24, 2019, Opatija, Croatia (ed. K. Skala), MIPRO proceedings, IEEE, Croatian Society for Information and Communication Technology, Electronics and Microelectronics, 2019, doi:10.23919/mipro.2019.8756946.

[8] J. Slak, *Reševanje linearnih elastostatičnih problemov z brezmrežnimi metodami*, mathesis, University of Ljubljana, Facutly of mathematics and physics, 2017.

[9] J. Slak, *Priprave na srednješolske računalniške olimpijade*, Presek : list za mlade matematike, fizike, astronome in računalnikarje **46**(3) (2018) 28–29.

[10] J. Slak, *Problem dveh jajc*, Presek : list za mlade matematike, fizike, astronome in računalnikarje **46**(2) (2018) 23–28.

[11] J. Slak and G. Kosec, *Detection of heart rate variability from a wearable differential ECG device*, in: MIPRO 2016: 39th International Convention on Information and Communication Technology, Electronics and Microelectronics, May 30–June 3, 2016, Opatija, Croatia (ed. P. Biljanović), MIPRO proceedings, IEEE, Croatian Society for Information and Communication Technology, Electronics and Microelectronics, 2016, pp. 430–435, doi:10.1109/mipro.2016.7522182.

[12] J. Slak and G. Kosec, *Fast generation of variable density node distributions for mesh-free methods*, in: Boundary elements and other mesh reduction methods XXXXI (eds. A. H.-D. Cheng and S. Syngellakis), WIT transactions on engineering sciences **122**, Wessex institute, WIT press, 2018, pp. 163–173, doi: 10.2495/BE410151.

[13] J. Slak and G. Kosec, *Generic implementation of meshless local strong form method*, in: ECT2018, The Tenth International Conference on Engineering Computational Technology 2018, September 4–8, 2018, Stiges, Barcelona, Spain, Civil-comp proceedings, Elsevier, 2018.

[14] J. Slak and G. Kosec, *Parallel coordinate free implementation of local meshless method*, in: MIPRO 2018: 41st International Convention on Information and Communication Technology, Electronics and Microelectronics, May 21–25, 2018, Opatija, Croatia (ed. K. Skala), MIPRO proceedings, IEEE, Croatian Society for Information and Communication Technology, Electronics and Microelectronics, 2018, pp. 194–200, doi:10.23919/mipro.2018.8400034.

[15] J. Slak and G. Kosec, *Refined RBF-FD solution of linear elasticity problem*, in: Proceedings of the 3rd International Conference on Smart and Sustainable Technologies, SpliTech 2018, June 26–29, 2018, Split, Croatia (ed. T. Perković), FESB, University of Split, 2018, pp. 393–398.

[16] J. Slak and G. Kosec, *Adaptive radial basis function-generated finite differences method for contact problems*, International Journal for Numerical Methods in Engineering **119**(7) (2019) 661–686, doi: 10.1002/nme.6067.

[17] J. Slak and G. Kosec, *Adaptive RBF-FD method for Poisson's equation*, in: Boundary elements and other mesh reduction methods XXXXII (eds. A. H.-D. Cheng and A. Tadeu), WIT transactions on engineering sciences **126**, Wessex institute, WIT press, 2019, pp. 149–157.

[18] J. Slak and G. Kosec, *High order RBF-FD approximations with application to a scattering problem*, in: Proceedings of the 4th International Conference on Smart and Sustainable Technologies, SpliTech 2019, June 18–21, 2019, Bol, island of Brač and Split, Croatia (ed. T. Perković), FESB, University of Split, 2019.

[19] J. Slak and G. Kosec, *On generation of node distributions for meshless pde discretizations*, SIAM Journal on Scientific Computing **41**(5) (2019) A3202–A3229, doi:10.1137/18M1231456.

[20] J. Slak and G. Kosec, *Refined meshless local strong form solution of Cauchy–Navier equation on an irregular domain*, Engineering Analysis with Boundary Elements **100** (2019) 3–13, doi:10.1016/j.enganabound.2018.01.001.

[21] B. Stojanovič, J. Slak and G. Kosec, *RBF-FD solution of electromagnetic scattering problem*, in: MIPRO 2019: 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics, May 20–24, 2019, Opatija, Croatia (ed. K. Skala), MIPRO proceedings, IEEE, Croatian Society for Information and Communication Technology, Electronics and Microelectronics, 2019, doi:10.23919/mipro.2019.8756943.