

## Jure Slak

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### EDUCATION

Currently 2nd 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  
with average study grade of 9.91 September 2015

### WORK HISTORY

- PhD researcher October 2017 – present  
"Jožef Stefan" Institute  
Working on a library for PDE solving using meshless methods with concrete applications in fretting fatigue of materials.
- 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 – present  
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  $\sim 100$  students every year, 10 hours per week.

- Software developer (summer job) Summer 2013, 2012, 2011  
Javna Razsvetljiva 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

<b>AWARDS and SCHOLARSHIPS</b>	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, Less, jQuery, Bootstrap, PHP, SQL; example: <http://gimvic.org>)
- 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 CEOI team
- Member of committee for high school and student programming contests at ACM Slovenia
- President of the student council October 2016 – October 2017
- Member of the student council October 2015 – October 2016
- 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, and 18) 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, *RBR-FD based dynamic thermal rating of overhead power lines*, in: Advances in fluid mechanics XII, Twelfth International Conference on Advances in Fluid Mechanics, AFM 18, July 10–12, 2018, Ljubljana, Slovenia (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] J. Slak, *Reševanje linearnih elastostatičnih problemov z brez mrežnimi metodami*, mathesis, University of Ljubljana, Faculty of mathematics and physics, 2017.
- [5] 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.
- [6] 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, 41st International Conference on Boundary Elements and other Mesh Reduction Methods, September 11–13, 2018, New Forest, UK (eds. A. Cheng and C. A. Brebbia), WIT transactions on engineering sciences **122**, Wessex institute, WIT press, 2018, pp. ??–??
- [7] 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.
- [8] 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.
- [9] J. Slak and G. Kosec, *Refined meshless local strong form solution of Cauchy–Navier equation on an irregular domain*, Engineering Analysis with Boundary Elements (2018), doi:10.1016/j.enganabound.2018.01.001.
- [10] 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.