Vladimir Filipovic
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Faculty of Mathematics
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Research Interests

- Operational research
- Computational intelligence
- Big data
- Soft - computing
- Metaheuristics
- Evolutionary algorithms

Professional Experience

- **Associate Professor (**May 2013 – present), Computer Science Department, Faculty of Mathematics, University of Belgrade, Serbia, (http://www.math.rs)
  - Teaches graduate Computer Science courses: Genetic Algorithms, Soft Computing, Methodology of professional and scientific work and Software Development – Advanced Concepts
  - Teaches undergraduate Computer Science courses: Software Development (C#), Object - Oriented programming (Java), Microprocessors and their Usage in Education (Assembler)
  - Manager of the project "Developing new study program in English language for PhD studies in Informatics", supported and funded by Serbian Ministry of Education, Science and Technology, within program activity 0014 "High Education Development" in program 2005 “High Education"
- **Associate Professor – Adjunct (**Oct 2013 – present), Faculty of Natural Science and Mathematics, Banja Luka University, Republic of Srpska, Bosnia and Hercegovina (http://unibl.org/en/members/faculties/faculty-of-natural-sciences-and-mathematics)
  - Teaches undergraduate Computer Science courses: Methodology of Computer Science Teaching (HTML, Moodle), Multimedia in Education (HTML, JavaScript, TreeJS), Object - Oriented programming (Java), Internet Programming (SQL, PHP), Computers and their Usage in Biology (R, Bioclipse)
- **Visiting Fellow (**Feb 2018 – Oct 2018) Department for Computer Science, Systems and Communications , University Milano-Bicocca, Milano, Italy, (http://www.disco.unimib.it/)
- **Head of Computer Science Department (**Feb 2017 – Oct 2017), Faculty of Mathematics, University of Belgrade, Serbia, (http://www.racunarstvo.matf.bg.ac.rs/?content=okatedri)
- **Head of Software Testing and Certification Laboratory** (Jan 2007 – Jun 2016), Faculty of Mathematics, University of Belgrade, Serbia
  - Development and implementation of embedded software testing in various devices like watt meters, weighing instruments and gaming machines
  - Implemented projects: Information System for the Directorate of Measures and Precious Metals; Software Testing of Embedded Systems (watt meters, weighing instruments, etc.); Gaming Machines Testing throughout Serbia;
  - Member of Commission for Software and Commission for Application of Regulation in Gambling Industry within Directorate for Measurements and Precious Metals (Serbia)
- **Vice Dean for Academic Affairs** (Jan 2008 – Dec 2011), Faculty of Mathematics, University of Belgrade, Serbia
- **Assistant Professor (**Sep 2006 – May 2013), Computer Science Department, Faculty of Mathematics, University of Belgrade, Serbia

- Taught graduate Computer Science courses: Genetic Algorithms, Soft Computing, Methodology of professional and scientific work and Software Development – Advanced Concepts
- Taught undergraduate Computer Science courses: Software Development (C#), Object - Oriented programming (Java), Microprocessors and their Usage in Education (Assembler)
- Project team member – eSerbia – Human Resource Information System for the Government of Serbia
- Principal software architect and project manager: eMunicipality of Bar – Integrated Information System for the Municipality of Bar, Montenegro

- **Teaching and Research Assistant** (Sep 1993 – Sep 2006), Computer Science Department, Faculty of Mathematics, University of Belgrade, Serbia
  - Taught several Computer Science courses: Bases of Programming (PASCAL, C), Programming Languages (Java, PROLOG, LISP), Microprocessors and their Usage in Education (Assembler for Intel processors)
- **Senior Web Programmer** (Feb 2000 - July 2001)**,** AnalytX, Inc, Alexandria, Virginia, USA
  - Lead a team of programmers on the design and development of Web-based financial management software, using XML/XSL paradigm
  - Created and integrated a number of Web services deploying .NET architecture
  - Reengineered and normalized legacy databases
  - Supported clients from Fortune 500 companies
- **Senior Programmer** (Jan 1998–Feb 2000), TRAX Corporation, Luxembourg, (http://www.trax.lu)
  - Lead a team of programmers on the conversion of the existing stand-alone Access application to client-server application in Visual Basic, with MS SQL Server and Oracle back-end
  - Ported Visual Basic based financial application from Access to Oracle database
  - Modeled and deployed new business requirements and reengineered existing applications upon those new requirements
  - Created, profiled and tuned complex queries, views, stored procedures and triggers in MS SQL Server, Oracle and Sybase SQL Anywhere
  - Supported many clients, among them are: BGL Luxembourg, BNP-Paris Bas Luxembourg, Credit Agricole …

Education

PhD in Computer Science (June 2006)

Faculty of Mathematics, University of Belgrade, Serbia

Dissertation: "Selection and Migration Operators and Web Services in Evolutionary Applications".

MS in Computer Science (January 1998)

Faculty of Mathematics, University of Belgrade, Serbia

Dissertation: "Proposition for Improvement Tournament Selection Operator in Genetic Algorithms".

GPA: 10.00 / 10.00

BS in Computer Science (May 1993)

Faculty of Mathematics, University of Belgrade, Serbia

Dissertation: "Iterative Algorithms for Solving Linear Equation System on Transputer Computers".

GPA: 9.71 / 10.00

Secondary school diploma (June 1986)

Secondary school, Podgorica, Montenegro

GPA: 5.00 / 5.00

Scholarship and awards

- eMunicipality of Bar - Best practice for introducing information technologies in public services, Montenegro, 2010, (http://www.uom.co.me/en/?p=647)
- Best Paper Award - Online World Conference on Soft Computing WSC 2008: "Two Hybrid Genetic Algorithms for Solving the Super-Peer Selection Problem" by Kratica Jozef, Kojić Jelena, Tošić Dušan, Filipović Vladimir, Dugošija Đorđe
- Best Paper Award - Student Computer Science Conference SINFON 94: "Realization of the Iterative Method on Transputer System" by Filipović Vladimir
- Best student of the class '93, Faculty of Mathematics, University of Belgrade
- 1989-1993 Scholarship awarded by the Government of Serbia to 100 best students of all Serbian universities.
- 1988 Scholarship awarded by the University of Belgrade to 40 best students of the University.
- Best student of the class '86 - Secondary high school, Podgorica

Research activities

- More than 200 citations, over 80 of them from SCI list journals
- Selected papers:
    - Filipović Vladimir: Proposition for Improvement Tournament Selection Operator in Genetic Algorithms, MSc paper (in Serbian), Faculty of Mathematics, Belgrade University, January 1998.
    - Kratica Jozef, Tošić Dušan, Filipović Vladimir, Ljubić Ivana: Solving the Simple Plant Location Problem by Genetic Algorithms, RAIRO - Operations Research, Vol. 35, No. 1, pp. 127-142, 2001.
    - Kratica Jozef, Tošić Dušan, Filipović Vladimir, Ljubić Ivana: A Genetic Algorithm for the Uncapacitated Network Design Problem, Soft Computing in Industry - Recent Applications, pp.329-338, Springer Verlag, 2002.
    - Filipović Vladimir: Fine-grained Tournament Selection Operator in Genetic Algorithms, Computing and Informatics, Vol.22, No. 2, pp.143-162, 2003.
    - Kratica Jozef, Stanimirović Zorica, Tošić Dušan, Filipović Vladimir: Genetic Algorithm for Solving Uncapacitated Multiple Allocation Hub Location Problem, Computing and Informatics – CAI, Vol.24 No 4, pp. 415-426, 2005
    - Kratica Jozef, Stanimirović Zorica, Tošić Dušan, Filipović Vladimir: Two Genetic Algorithms for Solving the Uncapacitated Single Allocation p-Hub Median Problem, European Journal of Operational Research – EJOR, 182, pp. 15-28, 2006.
    - Filipović Vladimir: Selection and Migration Operators and Web Services in Parallel Evolutionary Algorithms, PhD dissertation (in Serbian), Faculty of Mathematics, Belgrade University, jun 2006.
    - Đurić Brankica, Kratica Jozef, Tošić Dušan, Filipović Vladimir: Solving the Maximally Balanced Connected Partition Problem in Graphs by Using Genetic Algorithm, Computing and Informatics Vol. 27 No 3, pp. 341-354, 2008.
    - Stanimirović Zorica, Kratica Jozef, Filipović Vladimir, Tošić Dušan: Evolutionary approach for Solving Hab Location Problems, monography (in Serbian), Zavod za udžbenike, Belgrade, 2011.
    - Kratica Jozef, Kostić Tijana, Tošić Dušan, Filipović Vladimir, Dugošija Đorđe: A genetic algorithm for the routing and carrier selection problem, Computer Science and Information Systems – COMSIS, Vol. 9 No 1, pp. 49-62, 2012.
    - Lazović Bojana, Marić Miroslav, Filipović Vladimir, Savić Aleksandar: An Integer Linear Programming Formulation and Genetic Algorithm for the Maximum Set Splitting Problem, Publications de l'Institut Mathématique, Nouvelle série, tome 92(106), pp. 25–34, 2012.
    - Savić Aleksandar, Kratica Jozef, Filipović Vladimir: A New Nonlinear Model for the Two-Dimensional Rectangle Packing Problem, Publications de l'Institut Mathématique, Nouvelle série, tome 93(107), pp. 95–107, 2013.
    - Filipović Vladimir, Kartelj Aleksandar, Matić Dragan: An electromagnetism metaheuristic for solving the Maximum Betweenness Problem, Applied Soft Computing, Applied Soft Computing, Vol. 13 No 2, pp. 1303–1313, 2013.

- Kartelj Aleksandar, Mitić Nenad, Filipović Vladimir, Tošić Dušan: Electromagnetism-like algorithm for support vector machine parameter tuning, Soft Computing, Vol. 18, Iss. 10, pp. 1985-1998, 2013.
- Dražić Zorica, Savić Aleksandar, Filipović Vladimir: An integer linear formulation for the file transfer scheduling problem, TOP, Vol. 22, Iss. 3, pp. 1062-1073, 2014.
- Matić Dragan, Kratica Jozef and Filipović Vladimir: Variable Neighborhood Search for solving Bandwidth Coloring Problem, Computer Science and Information Systems, Vol. 14, Iss. 2, pp. 309-327, 2017.

- Other papers:
  - Kratica Jozef, Filipović Vladimir, Šešum Vesna, Tošić Dušan: Solving of the Uncapacitated Warehouse Location Problem Using a Simple Genetic Algorithm, Proceedings of the XIV International Conference on Material handling and warehousing, pp. 3.33-3.37, Belgrade, 1996.
  - Filipović Vladimir, Tošić Dušan, Urošević Dragan, Kratica Jozef: General Parallel Algorithm to the Solution of the Geophisical Inversion Problem Applied to the Transputer System, Proceedings of the VII Conference on Logic and Computer Science LIRA '97 - Separate Volume, pp. A3-A8, Novi Sad, 1997.
  - Kratica Jozef, Filipović Vladimir, Tošić Dušan: Solving of the Uncapacitated Warehouse Location Problem by SGA with Add-Heuristic, Proceedings of the XV ECPD International Conference on Material Handling and Warehousing, pp.2.28-2.32, Belgrade, 1998.
  - Kratica Jozef, Tošić Dušan, Filipović Vladimir, Ljubić Ivana: Genetic Algorithm for Designing a Spread-Spectrum Radar Polyphase Code, Proceedings of the 5th Online World Conference on Soft Computing in Industrial Applications WSC5, pp. 191-197, 2000.
  - Filipović Vladimir, Kratica Jozef, Tošić Dušan, Ljubić Ivana: Fine Grained Tournament Selection for the Simple Plant Location Problem, Proceedings of the 5th Online World Conference on Soft Computing in Industrial Applications WSC5, pp. 152-158, 2000.
  - Filipović Vladimir, Tošić Dušan, Kratica Jozef: Experimental Results in Applying of Fine Grained Tournament Selection, Proceedings of the 10th Congress of Yugoslav Mathematicians, Belgrade, pp. 331-336, 2001.
  - Kratica Jozef, Tošić Dušan, Filipović Vladimir, Ljubić Ivana: Comparing Performances of Several Algorithms for Solving the Simple Plant Location Problem, Proceedings of the 10th Congress of Yugoslav Mathematicians, Belgrade, pp. 337-341, 2001.
  - Tošić Dušan, Filipović Vladimir, Kratica Jozef: Using SVG–XML for representation of historical graphical data, Review of the National Center for Digitization, Vol. 9, pp. 39-45, Faculty of Mathematics, Belgrade, 2006.
  - Tošić Dušan, Filipović Vladimir, Tuba Milan, Kratica Jozef: Potential Role of SMIL in Digitalization of National Heritage, Review of the National Center for Digitization, Vol. 10, pp. 33-39, Faculty of Mathematics, Belgrade, 2007.
  - Kratica Jozef, Kojić Jelena, Tošić Dušan, Filipović Vladimir, Dugošija Đorđe: Two Hybrid Genetic Algorithms for Solving the Super-Peer Selection Problem, Applications of Soft Computing - Advances in Soft Computing, Vol. 58/2009, pp. 337-346, Springer, 2009.
  - Filipović Vladimir, Kratica Jozef, Tošić Dušan, Dugošija Đorđe: GA Inspired Heuristic for Uncapacitated Single Allocation Hub Location Problem, Applications of Soft Computing - Advances in Soft Computing, Vol. 58/2009, pp. 149-158, Springer, 2009.
  - Kratica Jozef, Savić Aleksandar, Filipović Vladimir, Milanović Marija: Solving the Task Assignment Problem with a Variable Neighborhood Search, Serdica Journal of Computing, Vol. 4 No. 4, pp. 435-446, 2010.
  - Filipović Vladimir: An Electromagnetism Metaheuristic for the Uncapacitated Multiple Allocation Hub Location Problem, Serdica Journal of Computing, Vol. 5 No. 3, pp. 261-272, 2011.
  - Matić Dragan, Filipović Vladimir, Savić Aleksandar, Stanimirović Zorica: A Genetic Algorithm for Solving Multiple Warehause Layout Problem, Kragujevac Journal of Mathematics, Issue 35 Vol. 1, pp. 119-138, 2011.

- Savić Aleksandar, Šukilović Tijana, Filipović Vladimir: Solving the Two-Dimensional Packing Problem With m-M Calculus, Yugoslav Journal of Operations Research – YUJOR, Vol. 21 No. 1, pp. 93-102, 2011.
- Kratica Jozef, Tošić Dušan, Filipović Vladimir, Dugošija Đorđe: A New Genetic Representation for Quadratic Assignment Problem, Yugoslav Journal of Operations Research – YUJOR, Vol. 21, No. 2, pp. 225-238, 2011.
- Matić Dragan, Kratica Jozef, Filipović Vladimir, Dugošija Đorđe: Variable Neighborhood Search for Multiple Level Warehouse Layout Problem, Electronic Notes in Discrete Mathematics, Vol. 39, pp. 161-168, 2012.
- Filipović Vladimir, Kratica Jozef, Savić Aleksandar, Dugošija Đorđe: The Modification of Genetic Algorithms for Solving the Balanced Location Problem, ACM International Conference Proceeding Series - 5th Balkan Conference in Informatics BCI 2012 , pp. 243-246, ISBN: 978-145031240-0 DOI: 10.1145/2371316.2371365, 2012.
- Kartelj Aleksandar, Filipović Vladimir, Milutinović Veljko: Automated Personality Classification, Proceedings of the 18th Conference on Information and Communication Technologies, YUINFO 2012, pp. 652 - 663, 2012.
- Kartelj Aleksandar, Filipović Vladimir, Milutinović Veljko: Novel Approaches to Automated Personality Classification: Ideas and their Potentials, Proceedings of the 35th International Convention MIPRO 2012, pp. 1017 - 1022, ISBN: 978-1-4673-2577-6, 2012.
- Nikolić Zorana, Brajušković Goran, Savić Dušanka, Kojić Aleksandar, Vujović Vinka, Tomović Saša, Cerović Snežana, Filipović Vladimir, Mišljenović Đura, Romac Stanka: Assessment of Possible Association Between rs3787016 and Prostate Cancer Risk in Serbian Population, International Journal of Clinical and Experimental Medicine, Vol. 6, No. 1, pp. 57-66, 2012.
- Filipović Vladimir, Zagarčanin Mladen, Tošić Dušan, Stanišić Sanja: Digitalization in the Bar County Museum – Pilot Project, NCD Review, pp. 57-66, 2013.

- Member of editorial board of following journals:
  - Statistics, Optimization & Information Computing
  - American Journal of Operational Research (AJOR)
  - Mathematical Colloquium – MAT-KOL
- Member of program committee for following conferences:
  - Balkan Conference in Informatics (BCI) - 2012, 2013, 2015
  - International Conference on Hybrid Intelligent Systems (HIS) – 2012, 2013, 2014, 2015
  - International Conference on Agents and Artificial Intelligence (ICAART) – 2016, 2017, 2019
  - International Conference on Green Computing and Internet of Things (ICGCIoT) -2015
  - International Conference on Information Society and Technology (ICIST) - 2016
  - International Conference on Intelligent Technologies and Applications (INTAP) - 2018
  - International Conference on Intelligent Systems Design and Applications (ISDA) – 2012, 2013, 2015
  - International Conference of Soft Computing and Pattern Recognition (SoCPaR) -2013
  - International Conference on Web Intelligence, Mining and Semantics (WIMS) - 2018
  - Conference on Information and Communication Technologies (YUINFO) – 2012, 2014, 2016
- Also reviewed papers for following journals:
  - Applied Soft Computing
  - Annals of Operations Research
  - IEEE Transactions on Cybernetics
  - IEEE Transactions on Instrumentation and Measurement
  - Computer Science and Information Systems – ComSIS

- Expert Systems With Applications
- Engineering Optimization
- Journal of Mathematical Modelling and Algorithms in Operations Research
- Journal of Manufacturing Systems
- Serdica Journal of Computing
- International Journal Computational Intelligence Studies
- International Journal of Production Economics
- IPSI Transactions on Advanced Research
- IPSI Transactions on Internet Research
- Serbian Journal of Electrical Engineering
- NCD Review

- Member of the Project 174010: Mathematical Models and Optimization Methods for Large-Scale Systems, coordinated by Mathematical Institute in Serbia Academy of Science and Art and supported by the Ministry of Science, Technology and Development, Republic of Serbia. The main goal of the research is consideration of real-word large scale systems that needs to be improved using mathematics and optimization methods. Such large scale systems appear in industry, telecommunication, transportation, medicine, electronics, education, chemistry, in public and private sector, etc.
- Member of IEEE Systems, Men and Cybernetics Society - Technical Committee for Soft Computing, IEEE Computational Intelligence Society, IEEE Big Data Community, IEEE Smart Cities Community, IEEE, Serbian mathematical society.

PhD student supervision

- Milena Bogdanović (http://www.pfvr.ni.ac.rs/prof.php?id=7&zvanje=10), associated professor at the Faculty for Education, University of Niš, graduated in October 2010. with thesis: Solving the Problem on the Maximum Degree-bounded Connected Sub-graphs in Computer Science as a Contribution to the Graph Theory (co-advised with Jozef Kratica).
- Dragan Matić (http://matinf.pmfbl.org/?p=333), assistant professor at the Faculty of Natural Sciences and Mathematics, University of Banja Luka, graduated in June 2013. with thesis: Solving Some Problems in Teaching by Using Combinatorial Optimization Methods.
- Zorica Dražić (http://poincare.math.rs/~zdrazic/), assistant professor at the Faculty of Mathematics, Belgrade University, graduated in December 2014. with thesis: Modifications of the Variable Neighborhood Search Method and its Applications to the File Transfer Scheduling Problem.
- Aleksandar Kartelj (http://poincare.math.rs/~kartelj/), assistant professor at the Faculty of Mathematics, Belgrade University, graduated in December 2014. with thesis: Application of the Electromagnetism-based Metaheuristics to the Solving Classification Problem.

Projects

- From December 2006, researcher on project 174010: **Mathematical models and opimizational methods for large-scale systems**. Project is coordinated by Mathematical Institute in Serbia Academy of Science and Art. The main goal of our research is consideration of real-word large scale systems that needs to be improved using mathematics and optimization methods. Such large scale systems appear in industry, telecommunication, transportation, medicine, electronics, education, chemistry, in public and private sector, etc. In the process of getting good solution, there are some steps, common for all kind of problems mentioned.
- From December 2017, leader of a project **Developing new study program in English language for PhD studies in Informatics** at Faculty of Mathematics, University of Belgrade. Project is supported and funded by Serbian Ministry of Education, Science and Technology, within program activity 0014 "High Education Development" in program 2005 "High Education".
  This project is the first step in defining new study program in English language for PhD studies in Informatics. It encompasses content innovation and preparation of material required for accreditation and realization of the six PhD courses: Computational Intelligence, Genetic Algorithms, Machine Learning, Bioinformatics, Data Mining in Bioinformatics and Web Mining.

- From 2009 to 2012, took part in Tempus project: 144703-TEMPUS-1-2008-1-BATEMPUS-JPCR SEE **Doctoral Studies in Mathematical Sciences**.
  Project objectivities: to develop structured doctoral studies in mathematical sciences through networking Western Balkans universities in a way that overcomes fragmentation and foster the reciprocal development of human resources in accordance with EHEA-ERA goals; to strengthen master programs in mathematical modelling and financial mathematics; to upgrade laboratories for applied mathematics at consortium members in Western Balkans countries.