Jovan Stosic, PhD

-Curriculum vitae-

CONTACT INFORMATION

Address:
Kozle 101/1, 1020, Skopje, Macedonia
E-mail 1: jstosic@t.mk
E-mail 2: jovan.stosic@ris.mk
Tel. +389 2 3080 007
Mob. +389 70 222 604
Url. http://ris.mk/
Social Network Profiles:
https://mk.linkedin.com/in/jovanstosic
https://www.researchgate.net/profile/Jovan_Stosic

EDUCATION

- **2014**: PhD in Electrical Engineering; program: Telecommunications,
University "Ss. Cyril and Methodious",
Faculty of Electrical Engineering and Information Technologies
PhD Thesis: **Cooperative Communications in wireless relay channels**
Mentor: Prof. D-r Zoran Hadzi-Velkov
Thesis is available at following URL: http://ris.mk/profile/

- **2002**: Master in Electrical Engineering; program: Telecommunications,
University "Ss. Cyril and Methodious",
Faculty of Electrical Engineering and Information Technologies
Thesis name: **Modeling, planning and optimization of survivable WDM networks**
Mentor: Prof. Boris Spasenovski
Thesis is available at: http://ris.mk/profile/

- **1993**: Dipl. Ing. in Electrical Engineering; program: Electronics and Telecommunications
University "Ss. Cyril and Methodious",
Faculty of Electrical Engineering and Information Technologies – Skopje
Thesis name: **PC compatible card for acquisition of electro – miography signals**
Mentor: Prof. D-r Ljubomir Panovski

RESEARCH INTERESTS

- Information theory
- Digital Signal Processing

- Modeling, simulation, optimization and performance analysis of wireless communication channels
- Wireless Network Optimization and Planning
- Network optimization, modeling and dimensioning
- Design and optimization of optical transport networks
- Simulation techniques in ICT
- Object oriented programming and technologies
- Application of Artificial Intelligence in telecommunication network planning and traffic engineering
- Network management and distributed computing technologies
- Operations research and management science

PUBLICATIONS

The publications are available at the publisher web site or alternatively can be obtained from my personal web site:
http://ris.mk/publications/
or my Research Gate page:
https://www.researchgate.net/profile/Jovan_Stosic.

[1] J. Stosic, and Z. Hadzi-Velkov, Performance Analysis of Decouple-and-Forward MIMO Relay Systems in Rayleigh Fading, AEÜ – International Journal of Electronics and Communications, vol. 70, no. 9, pp. 1259-1266, September 2016, doi:10.1016/j.aeue.2016.06.014. (Journal with impact factor)

> Abstract: In this paper we analyze the ergodic capacity and outage probability for a decouple-and-forward (DCF) MIMO relaying system with three nodes and direct link between the source and destination over a Rayleigh fading. The nodes employ multiple antennas and orthogonal space-time block coding (OSTBC). In the DCF relay, the incoming signal is decoupled, amplified and forwarded to the destination. Under assumption that source and destination have full CSI (Channel State Information) for source-relay, relay-destination and source-destination links we derive simple expressions for approximation of the ergodic capacity and outage probability

[2] J. Stosic, and Z. Hadzi-Velkov, "Outage probability of dual-hop MIMO relay systems with direct links", 1st EAI International Conference on Future access enablers of ubiquitous and intelligent infrastructures (FABULOUS 2015), Ohrid, Macedonia, 23-25 September 2015. (Springer-Verlag GmbH, ISBN: 978-3-319-27071-5, DOI: 10.1007/978-3-319-27072-2)

> Abstract: In this paper we present approximations of the outage probability for an amplify-and-forward MIMO relaying system with three nodes, which employs multiple antennas at the nodes and orthogonal space-time block coding (OSTBC) transmission over a flat Rayleigh fading. In the amplify-and-forward relay, the incoming signal is decoupled, amplified and forwarded to the destination. Under assumption of availability of full channel state information at the relay and destination and availability of direct link between the source and destination we derived expression for approximation of the outage probability which is sufficiently accurate in the entire SNR range of practical interest. The results obtained by this approximation are compared with the the approximations for outage probability of the system without direct link to the destination.

[3] J. Stosic, and Z. Hadzi-Velkov, "Approximate Performance Analysis of Dual-hop Decouple-and-Forward MIMO Relaying", Proc. 11th International Conference on Electronics, Telecommunications, Automation and Informatics (ETAI 2013), Ohrid, Macedonia, 26-28 September 2013.

> Abstract: In this paper we present two approximations of the error performance over the entire signal-to-noise ratio (SNR) range of practical interest for an amplify and forward (AF) MIMO relaying system, which employs orthogonal space-time block coding (OSTBC) transmission in Rayleigh fading. The AF relay decouples the incoming signal, re-encodes the decoupled symbols by usage of OSTBC, amplifies and transmits them over the relay-destination hop. Monte Carlo

simulations and exact numerical analysis show tight correspondence of these two approximations with the actual error performance of the considered system.

[4] J. Stosic, and Z. Hadzi-Velkov, "Outage probability approximations for dual-hop Amplify-and-Forward MIMO relay systems in Rayleigh fading", Proc. 11th International Conference on Telecommunication in Modern Satellite, Cable and Broadcasting Services (TELSIKS 2013), Nis, Serbia, 16-19 October 2013. (published by IEEE, ISBN: 978-1-4799-0899-8, DOI: 10.1109/TELSKS.2013.6704921, Vol.1, p. 217-220)

Abstract: In this paper we present tight approximations of the outage probability (OP) for the entire signal-to-noise ratio (SNR) range of practical interest for an amplify and forward (AF) relaying system with channel state information (CSI) at the relay and destination, which employs multiple antennas at the nodes and orthogonal space-time block coding (OSTBC) transmission over a flat Rayleigh fading. In the AF relay, the incoming signal is decoupled, amplified and forwarded to the destination. The results for the outage probability obtained by the approximations are compared with exact results of the outage probability obtained by numeric inversion of the Laplace transform of the Moment Generating Function (MGF) and with the results obtained by the Monte Carlo simulations. The comparison shows close matching of the results.

[5] J. Stosic, and Z. Hadzi-Velkov, "Simple tight approximations of the error performance for dual-hop MIMO relay systems in Rayleigh fading", AEÜ International Journal of Electronics and Communications, vol. 67, no. 10, pp. 854-960, October 2013, DOI: 10.1016/j.aeue.2013.04.010. (Journal with impact factor)

Abstract: In this paper we present tight approximations of the error performance for the entire signal-to-noise ratio (SNR) range of practical interest for an amplify and forward (AF) relaying system with channel state information (CSI) at the relay and destination, which employs multiple antennas at the nodes and orthogonal space–time block coding (OSTBC) transmission over a flat Rayleigh fading. Additionally, for a high value SNR range, we simplified the tight approximation expression in the simple asymptotic expression. The comparison of the error performance obtained by those two approximations with the error performance obtained by numeric integration of moment generating functions (MGF) and by Monte Carlo simulations shows close matching of the results.

[6] J. Stosic, Z. Hadzi-Velkov, Performance analysis of dual-hop dual-antennas MIMO systems in Rayleigh fading, International Congress on Ultra-Modern Telecommunications and Control Systems 2010, Moscow, Russia (published by IEEE, ISBN: 978-1-4244-7285-7, DOI: 10.1109/ICUMT.2010.5676615, Vol.1, p. 343-349)

In this paper we study the error and outage probability (OP) performance of dual-hop multiple input multiple output (MIMO) relay systems utilizing Alamouti coding and modified amplify and forward (MAF) relaying in flat Rayleigh fading channels. The error performances of dual-hop MIMO systems with variable gain relays is compared with dual-hop single antenna systems and regenerative i.e. decode and forward (DF) dual-hop MIMO system. Results obtained by means of simulation show that MAF MIMO systems achieve significantly better bit error performance than dual-hop single-antenna systems and comparable performance with DF dual-hop MIMO systems. The performance gap increases with usage of dual antenna in relay and the receiver. The OP performances of these systems are compared with dual-hop single-antenna and dual-antennas point-to-point systems. We show significant improvement of OP performance compared to dual-hop single-antenna and comparable performance with dual-antennas point-to-point systems. Moreover, for OP performance we show exact fit of numerical results with the results obtained by mathematical analysis.

[7] J. Stosic, and Z. Hadzi-Velkov, "Performance analysis of dual-hop MIMO systems", Proc. 2nd Conference on Information and Communication Technologies' Innovations (ICT Innovations 2010), Ohrid, Macedonia, 12-15 September 2010. (published by Springer GmbH, ISBN:978-3-642-19324-8, DOI:10.1007/978-3-642-19325-5_13, Vol.1, p. 123-132)

Abstract: In this paper we study the end-to-end bit error and outage probability (OP) performance of dual-hop multiple input multiple output (MIMO) systems with Alamouti's coding using modified amplify and forward (MAF) relaying under flat Rayleigh fading channels. The bit error

performances of dual-hop MIMO systems with variable gain relays is compared with dual-hop single antenna systems and regenerative i.e. decode and forward (DF) dual-hop MIMO system. We show that MAF MIMO systems achieve significantly lower bit error probability then dual-hop single-antenna systems and comparable performance with DF systems. The performance gap increases with usage of dual antenna in relay and the receiver. The OP performances of these systems are compared with single-antenna dual-hop and dual-antenna single-hop systems. We show significant improvement of OP performance compared to single-antenna dual-hop and comparable performance with dual-antenna single-hop systems.

[8] J. Stosic, and Z. Hadzi-Velkov, "Outage Probability of Multi-hop Relay Systems in Various Fading Channels", Proc. 1st Conference on Information and Communication Technologies' Innovations (ICT Innovations 2009), 27-30 September, 2009. (published by Springer-Verlag GmbH, ISBN: 978-3-642-10780-1, DOI: 10.1007/978-3-642-10781-8_19, p.177-186)

Abstract: In this paper we study the end-to-end outage performance of multi-hop cooperative communication systems employing amplify and forward (AaF) relaying under Rayleigh, Nakagami, Rician and Weibull fading channels. The outage probability performances of multi-hop systems with fixed gain and variable gain relays is compared. The outage probability for multi-hop systems under Rayleigh, Nakagami and Weibull fading models can be determined only by combining analytical results with numerical integration techniques. We show that fixed gain system has a better outage performance compared to the variable gain for all fading scenarios. This performance gap increases by increasing the number of hops.

[9] J. Stosic, Z. Hadzi-Velkov, L. Gavrilovska, "Deployment of Large-Scale WLANs", Electronics, Telecommunications, Automatics and Informatics Conference (ETAI 2005), 21-23 September 2005, Ohrid, Macedonia

Abstract: This paper analyzes the deployment issues for large-scale WLANs and presents our latest results on indoor propagation modeling and network planning. Proper network planning is necessary for large WLAN installations in order to achieve adequate coverage, and it relies heavily on the propagation model. We used the dominant path method to predict the propagation loss for each possible reception point in an indoor environment. Based on this propagation model, we further examined different combinatorial optimization methods to obtain close to optimal positioning of the WLAN access points and compare their cost effectives to the simple installation methods. The optimization algorithms evaluate an objective function that aims to maximize both the coverage area and the overall signal quality over a discrete search space. We propose a combination of two algorithms, Genetic Algorithms or Simulated Annealing, for the initial set of base stations positions, followed by Pattern Search algorithm, for the final accurate positions.

[10] J. Stosic, Z. Hadzi-Velkov, L. Gavrilovska, "Planning of Large-Scale WLAN Infrastructures", Wireless Personal Multimedia Communications (WPMC 2005), 17-22 September 2005, Alborg, Denmark

Abstract: Network planning is a prerequisite for proper deployment of large-scale WLAN infrastructures.. In this paper, we consider the three most important issues for the proper network planning: propagation modeling, coverage optimization and channel allocation. For the propagation modeling, we modified the dominant path propagation technique to predict the coverage matrix by using the equivalent graph representation of the room structure and the shortest path algorithm for determination of the dominant paths. The coverage optimization is realized through a known optimization function, which maximizes the average signal quality and minimizes the area with poor signal quality. The channel allocation is optimized in terms of an objective function that maximizes the signal-to-interference ratio over the entire service area. Different combinations of simulated annealing, genetic and pattern search algorithms are used as optimization algorithms. Multiple deployment scenarios in our laboratory premises are studied in order to validate our design tool.

[11] J. Stosic, B. Spasenovski, "Viable model for diversified path restoration in optical transport networks", International Scientific Conference on Information, Communication and Energy Systems and Technologies (ICEST 2003), 16-17 October 2003, Sofia, Bulgaria

Abstract: In this paper we deal with planning and optimization of survivable WDM networks. We investigate routing and planning of working and spare capacity for Wavelength Path and Virtual Wavelength Path networks. Models for recommendation of k diversified paths and diversified path restoration for WDM networks are presented. The results show the dependency of spare capacity cost from number of k recommended paths and used restoration strategy.

[12] J. Stosic, B. Spasenovski, "Practical models for design and reconfiguration of virtual topology in optical transport networks", Telecommunications in Modern Satellite, Cable and Broadcasting Service (TELSIKS 2003), 1-3 October 2003, Nis, Yugoslavia (published by IEEE, Vol.1, ISBN:0-7803-7963-2, DOI:10.1109/TELSKS.2003.1246186, Vol. 1, p. 67 - 70)

In this paper we deal with reconfiguration of virtual topology. Routing of traffic through virtual and physical topology is investigated. Practical model for minimizing the difference between initial and reconfigured virtual topology is presented. The results show the utilization of the links and augmentation of the number of the lightpaths for two types of networks with different line system and different optical channel capacities.

SCIENTIFIC PROJECTS

1. Member of the project led by Prof. Dr. Zoran Hadzi-Velkov in 2010.
Project Name: **Cooperative diversity in relay fading channels in the future mobile network**
2. Member of the project led by Prof. Dr. Zoran Hadzi-Velkov in 2007-2008.
Project Name: **Characterization and modeling of the indoor wireless channel and analysis of its impact in the contemporary wireless telecommunication systems.**
3. Member of the project led by Prof. Dr. Zoran Hadzi-Velkov in 2004-2005.
Project Name: **Development of tool for optimal placement of the access points in the large-scale Wireless LAN infrastructures.**

PROFESSIONAL APPOINTMENTS

- **Since 01.11.2014**
  - Company/department: Makedonski Telekom AD., Area of the Chief Operating Officer Business
  - Position: **Head of tenders and sales support unit**
  - Job description: Management of activities for ICT project management (team of 6 PMP certified project managers), service provisioning, SLA/OLA monitoring, Sales Potential and Payback/Business Case Analysis, Approval of Sale Project Costs, tender bidding, billing registration and SAP invoicing. Approval of proposed Technical Solutions and Business Solutions CAPEX/OPEX Project Costs.
- **01.07.2008-01.11.2014**
  - Company/department: Makedonski Telekom AD., Business and VIP Account Department
  - Position: **Head of service assurance department**
  - Job description: ICT project implementation for business customers, project management (team of 6 PMP certified project managers), service provisioning, order processing, SLA/OLA monitoring, logistic&supply of customer equipment, customer service (contact center and complains handling for business customers), billing/invoicing and business solutions CAPEX project management), Approval of proposed Technical Solutions and Sales Project Costs.
- **01.11.2007-01.07.2008**
  - Company/department: Makedonski Telekom AD,
  - Position: **Acting director of Key Customers Business Center**
  - Job description: ICT project implementation for business customers, project management (team of 6 project managers), service provisioning, SLA/OLA monitoring, order processing, customer service (contact center and complains handling for business customers) and billing/invoicing. Approval of proposed Technical Solutions and Business Solutions CAPEX/OPEX Project Costs.
- **01.01.2005-01.11.2007**

- - Company/department: Makedonski Telekom AD,
  - Position: **Head of Service Assurance Department**
  - Job description: ICT project implementation for business customers, project management (team of 6 project managers), service provisioning, order processing, SLA/OLA monitoring, logistic&supply of customer equipment, VIP contact centre, billing/invoicing and complains handling. Approval of proposed Technical Solutions and Business Solutions CAPEX/OPEX Project Costs.
- **15.06.2001-01.01.2005**
  - Company/department: Makedonski Telekom AD, Mtcom
  - Position: **Operations Director**
  - Job description: ICT project implementation and maintenance for business customers (technical solution, offer/bid preparation, project implementation and maintenance). Approval of proposed Technical Solutions and Business Solutions CAPEX/OPEX Project Costs.
- **20.10.1999-15.06.2001**
  - Company/department: Makedonski Telekom AD, International Transmission And Maintenance Department
  - Position: **Head of Transmission and Maintenance department**
  - Job description: Management and maintenance of SDH, PDH, TDM and synchronization network
- **03.04.1995 – 20.10.1999**
  - Company/department: Installation and measurement department
  - Position: **Engineer for installation and measurement, since 01.01.1999 Head engineer**
  - Job description: installation and measurement of SDH (Alcatel 1641, 1651/61), PDH (Ericsson, Siemens) and TDM network (Alcatel 1510/1513)
- **14.02.1994 – 03.04.1995 (Employed in Makedonski Telekom AD since 14.02.1994)**
  - Company/department: Makedonski Telekom AD,
  - Position: **System engineer**
  - Job description: Installation and maintenance of Nortel DPN100 Network (X.25 network)
- **20.06.1993 – 14.02.1994**
  - Company: Komsoft
  - Position: **System engineer**
  - Job description: Automation of industrial processes, Intel 8031/32 micro-controller and C programming

PROFESSIONAL DEVELOPMENT

- **Makedonski Telekom AD Internal Training**
  - Communications skills, November 2011
  - Data Privacy, December 2011
  - Compliance Training, April 2009
  - Introduction to Business Case Preparation, February 2008
  - S-OX Control – Self Assessment, June 2008
  - Personal Appraisal Training December 2005
  - Advanced Leadership skills, Concordia, Budapest, March 2005
- **One year postgraduate course with 6 exams and thesis** (14.02.1994 – 03.04.1995)
  Thesis name: **TCP/IP set of communication protocols and their implementation on Internet**
- **Alcatel, Italy**
  - "SDH Systems", April 1996
  - "Alcatel SDH 1353 SH Rel. 3.0 And SDH 1354 RM Rel. 2.3", November 1998
  - "Network Management System 1353SH And 1354RM" July 1999
- **Nortel, UK**
  - Magellan Technical Seminar, February 1995
  - DPN Operations and Maintenance February 1995
  - NMS Operations, February 1995
  - NMS Architect (DPN), March 1995

- X.25/Frame Relay, March 1995
- **Other External Courses**
  - Group Coaching organized by Croatian company „Prava Formula" (6 sessions 11.03-18.09.2015)
  - Brian Tracy, Sales, Negotiation, Success, November 2011
  - Jay Conrad Levinson, Guerrilla Marketing & Selling, November 2008
  - Dr. Jonas Ridderstrale, Funky Business, Innovative Management, May 2008

MOST SIGNIFICANT PROJECTS

- I've been a member of steering board or a direct supervisor of the project manager and his team in following large customer projects:

1. Automated Fare Collection and Automated Vehicle Location for Public Transportation Company in Skopje 2014-2016 (~2M€)
2. Software Interoperability Framework (Enterprise Service Bus) of Government Institutions intended for reform of Civil service and Public Administration in 2015-2016 (~1.5M€)
3. Corporate Voice Solution for Public Enterprise for Water Supply and Sanitation 2014 (~500k€)
4. Cisco Unified Communications and Collaboration for Stopanska Bank Bitola 2014-2015 (300k€)
5. Optical cable infrastructure for the new motorway between Ohrid and Kicevo (~350k€)
6. Solutions and support for Macedonian Radio Television during introduction of DVBT in 2013 (850k€)
7. SaaS for Agency for Real Estate Cadastre in 2013 (~500k€)
8. Corporate Audio and Video solution for Macedonian Government in 2016 (890k€)
9. System for simultaneous interpretation and translation for Association of the units of local self-government of the Republic of Macedonia (~350k€) in 2008
10. Computer Network infrastructure for Agency for employment in Republic of Macedonia in 2015 (340k€)
11. Optical Network Infrastructure for Ministry of Interiors in R. Macedonia in 2009 (330k€)
12. Computer Network Infrastructure for Macedonian Power Planes in 2015 (320k€)
13. Data infrastructure for Ministry of Finance in 2012 (260k€)
14. Computer Infrastructure for FENI Industry in 2014 (~240k€)
15. Corporate Voice Solution for Macedonian Power Planes in 2012 (220k€)
16. Corporate Data Infrastructure for Ministry of Interiors of R. Macedonia in 2015 (210k€)
17. Corporate Data Infrastructure for Stopanska Banka AD – Skopje in 2010 (205k€)
18. Markart Macedonia Computer and Data Communication Infrastructure in 2015 (203k€)
19. PaaS for Ministry of Finance of R. Macedonia in 2015 (180k€)
20. Optical Network Infrastructure for Government of R. Macedonia in 2013 (122k€)
21. Computer Network infrastructure for Alpine Bau GmbH in 2011 (122k€)
22. Implementation of EDDI for EVN Macedonia in 2008 (90k€)
23. PaaS for Government of R. Macedonia in 2015 (80k€)
24. Data Communication Solution for Sparkasse Bank Makedonija in 2009 (75k€)
25. Disaster Recovery for Sparkasse Bank Makedonija (70k€)
26. ICT Solutions for Vinery of Tikves in 2014 (65k€)
27. Migration of sytem and application platform for Government of R. Macedonia in 2012 (52k€)
28. Video Surveillance for Antera AD - Skopje in 2008 (52k€)
29. Data Communication Solution for Alkaloid AD – Skopje in 2009 (50k€)
30. Cisco Unified Communications and Collaboration for Beton AD – Skopje in 2015 (44k€)

- I've been personally involved as a leader or a member of team for following large internal projects:

1. Implementation of the X.25 and Frame Relay Network in Macedonian Telekom AD (1994-1995)
2. Implementation and Configuration of initial SDH Network (Alcatel) in Macedonian Telekom AD in 1995-1997
3. Implementation and Configuration of initial TDM Network (Alcatel and Tellabs) in Macedonian Telekom AD in 1998-1999
4. Extension of the SDH Transmission Network of Macedonian Telekom 2002-2003.

SKILLS

- Highly proficient in Microsoft Visual Basic and VBA programming.

  Mainly used for building GUI, data visualization and database connectivity needed for building successful front-end required for the research in the papers [9]-[12] and the master thesis.
- MPL- Mathematical Programming Language and ILOG CPLEX solver.

  Highly proficient in Linear Programming by usage of commercial and free solvers. The algorithms for the research performed in the master thesis and published papers [11] and [12] are developed and executed by usage of MPL and CPLEX solver.
- Administration and data manipulation of SQL database of Microsoft SQL and MySQL

  This expertise is acquired during the preparation of the master thesis. The analyzed networks in the thesis are real-life networks with huge amount of connections and connections' parameters which are stored and acquired from the database. The intermediate and final results are also stored in the database. These data are stored, acquired and visualized by usage of advanced SQL syntaxes.
- Matworks Matlab® and GNU Octave packages for numerical analysis

  Highly proficient in Matlab programming by extensive usage of Communication, Global Optimization, Database, Statistics, Symbolic Math, Signal Processing and Filter Design Toolboxes. Extremely deft in the modeling, programming and simulation of wireless communication and fading channels, performance analysis of MIMO relay systems and radio coverage optimization. Monte Carlo simulations for checking the mathematical analysis in research papers [1]-[10] are developed and visualized by usage of Matworks Matlab ® and GNU Octave.
- Computer Algebra Systems (CAS)

  Highly skilled in usage and programming in Maplesoft Maple®, Wolfram Mathematica® and open source CAS implementations (Maxima, Derive and Sage). Most of the research performed is based on extensive use of mathematics mostly performed by usage of appropriate CAS. Moreover, results for research papers [1] and [2] are visualized in Maplesoft Maple.
- Proficient in usage of Python, C/C++/C#
- Proficient in Web programing

  Standard skills in usage of HTML, CSS (Cascading Style Sheets) and PHP (Hypertext Processor for server side scripting).
- Microsoft Office and Visio

  Highly skilled in usage of VBA for automation of Excel, Access and Visio. Skill mostly used in development of the GUI for the research related to publication of the papers [9] and [10].
- Linux, HP-UX, Solaris, VMS

  Highly proficient in usage, system administration and programing on Linux and UNIX based computer systems
- Lamport TeX (LaTeX)

  Extremely proficient in usage of LaTeX document markup language. Most of the published papers are prepared in LaTeX due to the extensive usage of mathematics. Most of the current research is written in LaTeX hence it is easily shared on the web.
- Linux server system administration

  Highly experienced in setting web server, file server, pop3/imap mail server, mysql administration, OwnCloud and WordPress administration. Regularly involved in implementation of projects based on intensive usage of Linux system administration and programming on different hardware platforms (e.g. PC and raspberry pi).
- Advanced usage of Business intelligence tools (Cognos), ERP (SAP SD/MM/CO modules), Billing Support Systems (BSS) and Customer Relation Management.

  Highly proficient in usage of those systems which are indispensable for smooth running of the business in telecommunication companies. Regularly involved in business analysis, project management and testing of newly implemented systems or their upgrades with new features.
- Proficient in embedded system design and implementation by use of Arduino and Intel micro-controllers.
- Morse's telegraphy: B category, typist skills: 60 words/min
- Driving license: B category

MEMBERSHIP IN PROFFESSIONAL ORGANIZATIONS

- **IEEE Member since 1997**
- **IEEE Senior member since 2005**
- **Vice-President of IEEE Macedonia Section and IRO (Industrial Relation Officer) in 2004**
- **Election candidate for president of Macedonian IEEE Communications Chapter in 2015**

HOBBIES

- Reading magazines and journals: IEEE Spectrum, Scientific American, Astronomy, Sky & Telescope, IEEE Journal of selected Areas of Communications – JSAC, IEEE Transactions on Communications and IEEE Transactions on Information Theory.
- Reading Books and watching Documentaries and Movies
- Sports: Mounting trekking, Mounting biking, scuba diving
- Digital Photography and astro-photography: gallery available at http://ris.mk/
- Regular updating of the acquired knowledge in Astronomy, Physics, Cosmology, General Relativity and Quantum Theory
- Listening Jazz and Classical music and occasionally playing Guitar.
- Gardening, Home automation

PERSONAL DATA

- Date of birth: 28.02.1969
- Place of birth: Skopje, Macedonia
- **Languages:**
  - Macedonian: native language
  - English: fluent speaking, excellent reading and writing
  - Serbian: fluent speaking, excellent reading and writing
  - Bulgarian: speaking, reading and writing