

Petros S. Bithas

Assistant Professor

Department of Aircraft Engineering

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google scholar: https://scholar.google.gr/citations?user=uviCH_gAAAAJ&hl=en&oi=ao

ACADEMIC STUDIES

PhD-2009: Electrical and Computer Engineering Department, University of Patras, Greece, with specialization in “Wireless Communication Systems”.

Diploma (5 years)-2003: Electrical and Computer Engineering Department, University of Patras, Greece.

PROFESSIONAL ACTIVITY

2018-Today Assistant Professor: Aircraft Engineering Department, Technological Educational Institute of Sterea Ellada

2015-Today Department of Digital Systems, University of Piraeus

Associate Researcher: participating in the H2020 research projects “Roadart”, “Safertec”, and MHTIS. In RoadArt, I was WorkPackage leader and performed research related to: the statistical characterization of the vehicle-to-vehicle communication channel, design and evaluation of novel transceivers and cooperative communication techniques appropriate for dynamic environments. In Safertec, my responsibilities include security threat, safety hazards, and vulnerabilities analysis, as well as the proposition of novel assurance methodology for vehicular communication networks. In MHTIS, my responsibilities include the development of signal processing and machine learning algorithms and frameworks for semantic information extraction from radars.

2016 Athena Research & Innovation Information Technologies

Research associate: Participating in FP7 research project “SOLDER”. In the framework of this project a new mode selection technique was proposed for device-to-device enabled cellular communication networks.

2013 – 2015 Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing (IAASARS), National Observatory of Athens (NOA)

Post-doctoral researcher: participating in the national research project “ENDECON”. My research responsibilities included: i) design of power efficient techniques for MIMO systems, ii) co-channel interference minimization techniques for wireless communication systems, and iii) eEnergy efficient communication techniques based on cognitive radio.

2010 – 2013 Department of Digital Systems, University of Piraeus

Post-doctoral researcher: Participating in the FP7 research project “Exalted”. In this project, I was responsible, for UPRC, for 2 WPs. The technical contributions included i) a Quality of Service optimization for machine-to-machine communications systems and ii) the proposition of energy efficient techniques for medium access control for Internet of Things (IoT) applications.

2004 – 2009 Institute for Space Applications and Remote Sensing (ISARS), National Observatory of Athens

Research assistant: Participating in the research project “Satellite Network of Excellence (SatNEx)” phases 1 and 2. In those projects, my technical contributions included i) stochastic modeling of the satellite communication channels, ii) performance analysis of communication techniques for satellite communications, iii) cognitive communication mechanisms for hybrid satellite/terrestrial communication systems.

RECOGNITION

1. 2018, Best paper award for the paper entitled “Optimal Relay Location and Opportunistic User-Scheduling for Stratospheric Communications” in [International Academy, Research, and Industry Association](#), April 22-26, Athens, Greece
2. 2013, Best paper award for the paper entitled “Performance analysis of mobile communication networks in the presence of composite fading, noise and interference” in [IEEE International Symposium on Signal Processing and Information Technology](#) December 12-15, 2013 - Athens, Greece».
3. 2010, Exemplary reviewer from [IEEE Communications Letters](#).

Associate Editor

1. [AEÜ International Journal of Electronics and Communications](#) (Elsevier)
2. [Heliyon](#) (Elsevier)

Conference Technical Committees and Program Committees

1. International Conference on Advanced Communication Technologies and Networking, Rabat, Morocco, April, 2019
2. 3rd International Conference on Recent Advances in Signal Processing, Telecommunications & Computing (SigTelCom) March 21-22 2019, Ha Noi City, Vietnam
3. “Track: 1. Antenna Systems, Propagation, and RF Design” VTC2018-Spring, Porto, Portugal
4. “14th International Wireless Communications and Mobile Computing Conference” (IWCMC 2018), Limassol, Cyprus
5. “15th International Conference on Wireless Communication Systems” (ISWCS 2018), Lisbon, Portugal
6. IEEE SmartVehicles 2018, Chania, Crete
7. IEEE 88th Vehicular Technology Conference: VTC2018-Fall, 27–30 August 2018, Chicago, USA
8. VTC2018-Fall Recent Results, Symposia and Workshops, 27–30 August 2018, Chicago, USA
9. “IEEE 14th International Conference on Wireless and Mobile Computing, Networking and Communications” (WiMob 2018), Limassol, Cyprus
10. “Recent Results on 5G Innovations”, VTC2017-Spring.
11. “Antenna Systems, Propagation, and RF Design” VTC2017-Fall, Toronto, Canada
12. “IEEE 13th International Conference on Wireless and Mobile Computing, Networking and Communications” (WiMob 2017), Rome, Italy

Publicity Co-Chair

International Conference on Advanced Communication Technologies and Networking, Rabat, Morocco, April, 2019

External Project Evaluator

1. National framework “Cooperation” of the general Secretary of Research and Technology (2010).
2. Post-doc research projects of the Czech Science Foundation for years 2011, 2012, 2014, 2016, 2017

Reviewer of Journals

IEEE Transactions on Information Theory, IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, IEEE Communications Letters, IEEE Wireless Communications Letters, IEEE Access, IEEE Communications Magazine, IET Proceeding on Communications, IET Electronics Letters, Wireless Personal Communications, International Journal of Electronics and Communications (AEU).

TEACHING/MENTORING ACTIVITIES

1. **5/2018-today**, Assistant Professor, Aircraft Engineering Department, Technological Educational Institute of Sterea Ellada, teaching courses “electric circuits” (theory and lab), “automatic control systems” (theory and lab), and “aircraft networks” (lab);
2. **2017-today**, Adjunct Academic Staff, Hellenic Open University, for distance learning course “Computer Networks, Digital Communications, and Information Theory”;
3. **2009-5/2018**, Lab instructor, Department of Electronics Engineering, Technological Educational Institute of Piraeus, for courses “Communication Systems” and “Stochastic Signals and Systems”, Greece;
4. **2011**, Adjunct Lecturer, Department of Digital Systems, University of Piraeus, for course “Stochastic Processes”;
5. Phd thesis co-supervising: 1 graduate student, 2005-2009, Institute of Space Applications and Remote Sensing, National Observatory of Athens, Greece;
6. Phd thesis co-supervising: 2 graduate student, 2015-today, Department of Digital Systems, University of Piraeus, Greece.

MAJOR INTERNATIONAL COLLABORATIONS

1. **Prof. Giovanni E. Corazza**: DEIS/ARCES, University of Bologna, Viale Risorgimento 2, 40137 Bologna, Italy. Joint research for satellite communication systems, (2005-2006).
2. **Prof. Ranjan K. Mallik**: Department of Electrical Engineering, Indian Institute of Technology, Hauz Khas, 110016 New Delhi, India. Joint research for low complexity communication techniques, (2009-2010).
3. **Prof. Daniel Benevides da Costa**: Department of Computer Engineering, Federal University of Ceará, Sobral-CE-Brazil. Joint research for physical layer security communication techniques (2016-today).
4. **Prof. Prabhat K. Upadhyay**: Discipline of Electrical Engineering, Indian Institute of Technology Indore, Madhya Pradesh, India. Joint research for hybrid terrestrial/satellite spectrum sharing communication systems (2016-today).
5. **Prof. David W. Matolak**, Department of Electrical Engineering, University of South Carolina, USA. Joint research for low complexity multiple antennas communication techniques and channel modeling (2018-today)

PUBLICATIONS

Author of 34 journal articles, 37 articles in conference proceedings, and 2 book chapters.

- In more than 70% of his published articles, Prof. Bithas is the 1st author.
- Prof. Bithas has one single-author article.

- His articles have received more than 850 citations (with self-citations excluded) and h index 14.
- 58 of 71 of his articles have received at least one citation (by other authors).
- One of them has received more than 300 citations.
- He receives, on average, more than 12 citations per article.
- He receives, on average, almost 70 citations per year, with an increasing rate.
- 17 out of 34 journal publications are published in *IEEE Transactions*

Selected publications are listed below (red text indicates citations, with self-citations excluded)

Ph.D. Dissertation

“*Digital Wireless Communication Systems over Composite Fading Channels*,” University of Patras, Electrical and Computer Engineering Department, 2009.

Selected Journals articles (24 out of 34)

- J1 **P. S. Bithas**, A. G. Kanatas and D. W. Matolak, "Exploiting Shadowing Stationarity for Antenna Selection in V2V Communications," in *IEEE Trans. Veh. Technol.*, doi: 10.1109/TVT.2018.2888802
- J2 **P. S. Bithas**, K. Maliatsos, and F. Foukalas, “An SINR-Aware Joint Mode Selection, Scheduling, and Resource Allocation Scheme for D2D Communications” accepted in *IEEE Trans. Veh. Technol.*, Jan. 2019
- J3 V. Nikolaidis, N. Moraitis, **P. S. Bithas** and A. G. Kanatas, "Multiple Scattering Modeling for Dual-Polarized MIMO Land Mobile Satellite Channels," in *IEEE Trans. Antennas Propagat.*, vol. 66, no. 10, pp. 5657-5661, Oct. 2018.
- J4 V. Bankey, P. K. Upadhyay, D. B. Da Costa, **P. S. Bithas**, A. G. Kanatas and U. S. Dias, "Performance Analysis of Multi-Antenna Multiuser Hybrid Satellite-Terrestrial Relay Systems for Mobile Services Delivery," in *IEEE Access*, vol. 6, pp. 24729-24745, 2018. (3 citations).
- J5 **P. S. Bithas**, G. P. Efthymoglou and A. G. Kanatas, "V2V Cooperative Relaying Communications Under Interference and Outdated CSI," in *IEEE Trans. Veh. Technol.*, vol. 67, no. 4, pp. 3466-3480, April 2018. (2 citations).
- J6 **P. S. Bithas**, A. G. Kanatas, D. B. da Costa, P. K. Upadhyay and U. S. Dias, "On the Double-Generalized Gamma Statistics and Their Application to the Performance Analysis of V2V Communications," in *IEEE Trans. Commun.*, vol. 66, no. 1, pp. 448-460, Jan. 2018. (8 citations).
- J7 P. K. Sharma, P. K. Upadhyay, D. B. da Costa, **P. S. Bithas**, and A. G. Kanatas, "Performance Analysis of Overlay Spectrum Sharing in Hybrid Satellite-Terrestrial Systems with Secondary Network Selection," in *IEEE Trans. Wireless Commun.*, vol. 16, no. 10, pp. 6586-6601, Oct. 2017. (7 citations).
- J8 Y. R. Ortega, P. K. Upadhyay, D. B. da Costa, **P. S. Bithas**, A. G. Kanatas, U. S. Dias, and R. T. de Sousa “Joint Effect of Jamming and Noise on the Secrecy Outage Performance of Wiretap Channels with Feedback Delay and Multiple Antennas”. *Trans Emerging Tel Tech*. <https://doi.org/10.1002/ett.3191>, 2017J5. (3 citations).
- J9 G. P. Efthymoglou, **P. S. Bithas**, and A. G. Kanatas, "Exact SNR and SIR analysis in Poisson wireless networks," in *Electronics Letters*, vol. 53, no. 5, pp. 356-358, 3 2 2017 (1 citation).
- J10 **P. S. Bithas**, K. Maliatsos, and A. G. Kanatas, “The Bivariate Double Rayleigh Distribution for Multichannel Time-Varying Systems,” in *IEEE Wireless Communications Letters*, vol. 5, no. 5, pp. 524-527, Oct. 2016 (4 citations).

- J11 K. P. Peppas, **P. S. Bithas**, G. P. Efthymoglou, and A. G. Kanatas, "Space Shift Keying Transmission for Intervehicular Communications," in *IEEE Trans. Intell. Transport. Syst.*, vol. 17, no. 12, pp. 3635-3640, Dec. 2 2016 (6 citations).
- J12 **P. S. Bithas**, A. A. Rontogiannis, and G. K. Karagiannidis, "An Improved Threshold-Based Channel Selection Scheme for Wireless Communication Systems," in *IEEE Trans. Wireless Commun.*, vol. 15, no. 2, pp. 1531-1546, Feb. 2016 (10 citations).
- J13 **P.S. Bithas** and A.A. Rontogiannis, "Mobile Communication Systems in the Presence of Fading/Shadowing, Noise, and Interference," *IEEE Trans. Commun.*, 63 (3), art. no. 7006713, pp. 724-737, (2015) (17 citations).
- J14 A.S. Lioumpas, **P.S. Bithas**, and A. Alexiou, "Partitioning of Distributed MIMO Systems Based on Overhead Considerations," *IEEE Wireless Communications Letters*, IEEE, vol.2, no.6, pp.579,582, December 2013 (4 citations).
- J15 **P. S. Bithas**, N. C. Sagias, and R. K. Mallik "On the Sum of Kappa Stochastic Variates and Applications to Equal-Gain Combining," *IEEE Trans. Commun.*, Vol. 59, Is 9, pp 2434- 2442, Sep. 2011 (3 citations).
- J16 **P. S. Bithas**, "Weibull-Gamma composite distribution: An Alternative Multipath/Shadowing Fading Model," *Electronics Letters*, vol. 45, no. 14, Jul 2009 (77 citations-single author article).
- J17 **P. S. Bithas** and P. T. Mathiopoulos, "Capacity of Correlated Generalized Gamma Fading with Dual-Branch Selection Diversity," *IEEE Trans. Veh. Technol.*, vol. 58, no. 9, pp. 5258-5263, Nov. 2009 (19 citations).
- J18 **P. S. Bithas**, N. C. Sagias, and P. T. Mathiopoulos, "The Bivariate Generalized-K (K_G) Distribution and its Application to Diversity Receivers," *IEEE Trans. Commun.*, vol. 57, no. 9, pp. 2655-2662, Sep. 2009 (38 citations).
- J19 **P. S. Bithas**, N. C. Sagias, P. T. Mathiopoulos, S. A. Kotsopoulos, and A. M. Maras, "On the Correlated K-Distribution with Arbitrary Fading Parameters," *IEEE Signal Processing Letters*, vol. 15, pp. 541-544, 2008 (15 citations).
- J20 **P. S. Bithas**, N. C. Sagias, and P. T. Mathiopoulos, "GSC Diversity Receivers over Generalized-Gamma Fading Channels," *IEEE Commun. Lett.*, vol. 11, no. 12, pp. 964-966, Dec. 2007 (18 citations).
- J21 **P. S. Bithas**, P. T. Mathiopoulos, and S. A. Kotsopoulos "Diversity Reception over Generalized-K (K_G) Fading Channels," *IEEE Trans. Wireless Commun.*, vol. 6, no. 12, pp. 4238-4243, Dec. 2007 (101 citations).
- J22 **P. S. Bithas** and P. T. Mathiopoulos, "Performance Analysis of SSC Diversity Receivers over Correlated Rician Fading Satellite Channels," *EURASIP Journal on Wireless Communications and Networking, Special Issue "Satellite Communications*, Apr 2007 (35 citations).
- J23 **P. S. Bithas**, N. C. Sagias, P.T. Mathiopoulos, G. K. Karagiannidis, and A. A. Rontogiannis, "On the Performance Analysis of Digital communications over Generalized-K Fading Channels," *IEEE Commun. Lett.*, vol. 10, no. 5, pp. 353-355, May 2006 (270 citations).
- J24. **P. S. Bithas**, G. K. Karagiannidis, N. C. Sagias, P. T. Mathiopoulos, S. A. Kotsopoulos, and G. E. Corazza, "Performance Analysis of a Class of GSC Receivers over Non-Identical Weibull Fading Channels," *IEEE Trans. Veh. Technol.*, vol. 54, no. 6, pp. 1963-1970, Nov. 2005 (31 citations).

Selected Conferences articles (11 out of 37)

- C1 **P. S. Bithas** V. Nikolaidis, A. G. Kanatas, "A New Shadowed Double-Scattering Model with Application to UAV-to-Ground Communications" accepted in *IEEE Wireless Communications and Networking Conference (WCNC)*, Marrakech, Morocco, 2019
- C2 **P. S. Bithas**, A. G. Kanatas, and D. W. Matolak, "Shadowing-Based Antenna Selection for V2V Communications", *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Sep 2018

- C3 **P. S. Bithas**, A. G. Kanatas, D. B. da Costa, P. K. Upadhyay, and U. S. Dias, "The Double-Generalized Gamma Distribution and its Application to V2V Communications," *IEEE Global Communications Conference (GLOBECOM)*, Dec 2017. (1 citation).
- C4 S. Solanki, P. K. Sharma, P. K. Upadhyay, D. B. da Costa, **P. S. Bithas**, and A. G. Kanatas, "Cognitive Amplify-and-Forward Multi-Relay Networks with RF Hardware Impairments and Channel Estimation Errors", *IEEE Global Communications Conference (GLOBECOM)*, Dec 2017.
- C5 **P. S. Bithas**, A. G. Kanatas, D. B. da Costa, and P. K. Upadhyay, "Transmit Antenna Selection in Vehicle-to-Vehicle Time-Varying Fading Channels", *IEEE International Conference on Communications (ICC)*, May 2017. (1 citation).
- C6 P. K. Sharma, P. K. Upadhyay, D. B. da Costa, **P. S. Bithas**, and A. G. Kanatas, "Hybrid Satellite-Terrestrial Spectrum Sharing System with Opportunistic Secondary Network Selection" *IEEE International Conference on Communications (ICC)*, Paris, May 2017.
- C7 K. P. Peppas, **P. S. Bithas**, G. P. Efthymoglou, and A. G. Kanatas, "Spatial Modulation for V2V and V2I Communications in a Multiple Scattering Environment," in *IEEE Global Communications Conference (GLOBECOM)*, Washington, DC, December 2016.
- C8 **P. S. Bithas**, A. Aspreas, and A. G. Kanatas, "A New Reconfigurable Antenna Scheme and its Application to Vehicle-to-Vehicle Communications" *12th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Oct. New York, 2016.
- C9 **P. S. Bithas**, G. P. Efthymoglou, and A. G. Kanatas, "A Cooperative Relay Selection Scheme in V2V Communications under Interference and Outdated CSI," in *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Valencia, September 2016. (3 citations).
- C10 **P. S. Bithas**, G. P. Efthymoglou, and A. G. Kanatas, "Intervehicular communication systems under co-channel interference and outdated channel estimates," in *IEEE International Conference on Communications (ICC)*, May, 2016 (1 citation).
- C11 **P.S. Bithas** and A. A. Rontogiannis, "Outage Probability Analysis of Multihop Cognitive Networks under Multiple Primary Users Interference" *European Wireless*, Budapest, Hungary, May 2015 (5 citations).

Book Chapters

- B-1 G. E. Corazza, P. T. Mathiopoulos, N. C. Sagias, **P. S. Bithas**, T. Javornik, S. Plevel, G. Albertazzi, S. Cioni, M. Neri, A. Quddus, and K. Narenthiran, "Modulation techniques" *Digital Satellite Communications* (Chapter 6), Springer, 2007.
- B-2 **P. S. Bithas** and G. P. Efthymoglou "Device-to-Device Communication Aspects for 5G Cellular Networks" *New Directions in Wireless Communications Systems: From Mobile to 5G (Chapter 10)*, CRC Press, 2017

LIST OF PROJECTS OR ACTIVITIES

«Multimodal Machine Learning and Signal Processing Technologies for Data from Heterogenous Sources with Application to Security and Surveillance of Critical Infrastructures» T1EΔK-01169, funded by Competitiveness, Entrepreneurship and Innovation Program, Partnership Agreement for the Development Framework 2014-2020. (1/7/2018-Today)

A collaborative project among TELESTO, NTUA, UPRC

This project aims at developing signal processing and machine learning algorithms and frameworks for semantic information extraction (object detection and recognition, motion tracking, anomaly detection) from multiple heterogeneous information sources (RGB cameras, thermal cameras and various types of radars).

Security Assurance FramEwoRk for networked vEhicular teChnology (SAFERtec), supported by the Horizon 2020 program (1/2017-Today)

A collaborative project among ICCS, UPRC (Greece), CRF, SWR (Italy), CCS, OPP (France), AUT (Israel), TOM (Germany), COMM (Hungary).

The main objective of the project is to model the varying exposure of a prototype connected vehicle system to numerous threats appearing under generic instances of the increasingly pervasive V2I setting.

Expected Completion Date: January 2020.

Research On Alternative Diversity Aspects foR Trucks (RoadArt), supported by the Horizon 2020 program (5/2015-5/2018)

A collaborative project among IMST (Germany), TNO (Netherlands), MAN (Germany) and UPRC (Greece).

The main objective of the project was the investigation of future-oriented diversity and beamforming techniques that will assure a sustainable and holistic approach for corporative Intelligent Transportation Systems in a way that state-of-the-art systems cannot provide.

Spectrum OverLay through aggregation of heterogeneous DispERsed Bands (SOLDER), supported by the FP7 framework

A collaborative project among Kings College London (UK), Thales (France), Sequans (France), Eurecom (France), IS-Wireless (Poland), ISI (Greece).

The goal of SOLDER was to develop new spectrum overlay technologies, which will provide the efficient aggregation of non-continuous dispersed spectrum bands licensed to heterogeneous networks (HetNets) and heterogeneous Radio Access Technology (h-RATs), in order to deliver higher data rates to future multi-standard handset devices in a flexible way based on cognitive radio technology.

Completed: January 2017.

Energy Efficient Design of Communication Networks (ENDECON), supported by the General secretary of research and technology

A collaborative project among University of Piraeus, National Observatory of Athens, University of Patras.

The goal of ENDECON was to optimize the main operations performed in a communication network with respect to the energy consumed, without degrading the quality of the provided services. In this spirit, an extensive study of terrestrial wireless, satellite, and optical networks was pursued, not only at the physical layer (transceiver design, hardware), but also at higher network layers (e.g., protocols, algorithms). New physical layer (PHY) techniques, network and hardware architectures were developed aiming to minimize the overall consumed power.

Completed: September 2015.

Expanding LTE for Devices (EXALTED), supported by the FP7 framework

A collaborative project among Sagem (France), Vodafone (UK), Gemalto (France), Ericsson (Serbia), Alcatel-Lucent (Germany), Telekom (Serbia), CEA (France), TST (Spain), University of Surrey (UK), CTTC (Spain), TUD (Germany), UPRC, Vidavo (Greece).

The aim of EXALTED was to propose a new scalable network architecture supporting the most challenging requirements for future wireless networks and providing secure, energy efficient, and cost effective machine-to-machine communications suitable of low-end devices.

Completed: February 2013.

Satellite Network of Excellence (SatNEx) phases 1 and 2, supported by the EU Framework Programme 6 (FP6): A collaborative project among Europe's leading academic institutions and research organizations in Satellite Communications.

The primary goal of SatNEx I and II was to achieve long-lasting integration of the European research in satellite communications and to develop a common base of knowledge. Through co-operation of excellent universities and research organizations with outstanding expertise in satellite communications, SatNEx built a European virtual centre of excellence in satellite communications and contributed to the realization of the European Research Area.

Completed: September 2009.