

# ASIMAKIS K. LEROS

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## Research interests

My academic background and research interests lie in the areas of statistical signal processing and automatic control, and their applications to

- target tracking;
- direction of arrival estimation using sensor arrays;
- traffic modelling and estimation in communication networks;
- treatment of missing data in patient-reported questionnaires.

## Education

1999      PhD in Computer Engineering  
            University of Patras, Greece  
            Thesis: “Adaptive estimation algorithms for passive target tracking”  
            Advisor: Prof. D. G. Lainiotis

1987      M.S. in Electrical and Computer Engineering  
            University of Massachusetts, Amherst, MA

1985      Diploma in Electrical Engineering  
            University of Patras, Greece

## Employment

2011–present	Tenured Assistant Professor	Dept. of Information & Communication Systems Engineering (ICSD), Univ. of the Aegean, Greece
2019–2021	Adjunct Lecturer	Open University of Cyprus
2017–2018	Adjunct Assistant Professor	Dept. of Informatics, Technological Educational Institute (TEI) of Athens, Greece
2007–2011	Assistant Professor	ICSD, Univ. of the Aegean
2006–2011	Adjunct Assistant Professor	Dept. of Informatics, TEI of Athens
1998–2007	Lecturer	ICSD, Univ. of the Aegean
1989–1999	Adjunct Assistant Professor	Dept. of Informatics, TEI of Athens
1998–1999	Adjunct Assistant Professor	Hellenic Air Force Academy, Dekeleia, Greece
1995–1997	Principal Engineer	Lambda Technologies & Associates, Athens
1992–1995	Engineer	Impetus Consultants S.A., Athens
1991–1992	Military service	Hellenic Air Force Computing Center
1989–1991	Engineer	InDeCon Ltd, Athens
1987	Research Assistant	University of Massachusetts – Amherst
1985–1987	Teaching Assistant	University of Massachusetts – Amherst

## Teaching

U. Aegean	ICSD 9300	Digital Signal Processing	F'02, S'04, S'05, S'06, S'07, F'07, F'08, F'10, F'11, F'12, F'13, F'14	
	ICSD 5500	Signals & Systems	F'00, F'01, F'02, F'04, F'05, F'06, F'07, F'08, F'13, F'15, F'16, F'17, F'18	
	ICSD 7000	Performance Evaluation & Simulation	S'11, S'12, S'13, S'14, S'15, S'16, S'17, S'18, S'19, F'20, F'21, F'22	
	ICSD 6400	Computer Systems Performance Eval.	S'06, S'07, S'08, S'09, S'10	
	ICSD 4000	Perf. Eval. of Computer Networks	F'10, F'11, F'12, F'13, F'14	
	ICSD 2400	Probability & Statistics	S'99, S'00, S'01, S'02, S'03, S'08, S'09, S'10, S'13, S'14	
	ICSD10300	Digital Communications	S'03, F'15, F'16	
	ICSD 8600	Information Theory	F'02, F'03, F'07	
		Information Theory (graduate seminar)	F'03, F'04, F'05	
		Watermarking & Steganography (grad. seminar)	S'04, S'05	
	ICSD 7850	Microprocessors	S'20, S'21, S'22, S'23	
	ICSD 1500	Discrete Mathematics	F'01, F'19, F'20, F'21, F'22	
	ICSD 2450	Discrete Mathematics	S'11, S'12, S'13, S'15, S'16, S'17, S'18, S'19, S'20, S'21, S'22, S'23	
			ICSD 4200	Algorithms & Complexity
	ICSD 1000	Computer Literacy	F'98, F'99, F'00	
	Open U. Cyprus	SAE 511	Digital Communications	F'19, F'20
		SAE 610	Wireless Communications	F'19
HAF Academy		Computer Simulation	F'98	
TEI Athens	N1 4030	Signals & Systems	F'05, S'06	
	N1 6060B	Telecommunications	F'06–S'09 (6 semesters)	
	N1 3050	Computer Architecture	F'99, S'00, F'17	
		Microprocessors (Lab)	F'89–S'00 (21 semesters)	
		Programming in Assembly (Lab)	F'89–S'99 (19 semesters)	
	Introduction to Programming	F'91, S'92		

## Students

- PhD students: S. S. Pappas (2008), D. G. Giannopoulos (2020), K. Tsaramiris (2021–present), S. Proiskos (2022–present)
- Supervision of approximately 50 Diploma Theses (final year projects) at the TEI Athens and the University of the Aegean

## University service

2021–2023	Member of the Department infrastructure committee
2019–present	Member of the Department scholarships committee
2018–present	Member of the steering committee of the joint MSc program “Digital Innovation and Startup Entrepreneurship” (U. of the Aegean and National Technical U. of Athens)

2018–present	Member of the Department PhD studies steering committee
2010–present	Member of the Library committee
2005–2010	Departmental coordinator, Erasmus program for students and staff mobility
2003–2006	Departmental responsible for bilateral agreements for students exchange
2002–2005	Member of the Department undergraduate curriculum committee

## Participation in funded Research & Development projects

2021–2022	“GAME2AWE – Gaming Your Way to Ageing Well,” Greek national operational programme “Competitiveness, Entrepreneurship and Innovation” (EPANEK), project code T2EDK-04785
2019–2022	“NEOTERIC – NEuromorphic Reconfigurable Integrated photonic Circuits as artificial image processor,” EU Horizon 2020 research and innovation programme, grant agreement No 871330
2015–2016	“UndRho – Understanding diversity in Rhodes,” European Economic Area programme “Academic Research in the Priority Sectors,” grant GR07/3635
2014–2015	“ACRITAS – Advanced Coordination Center Information Technologies & Applications for Border Security,” national project funded by the Greek Ministry of the Interior / Center for Security Studies
2006–2009	“SENSE – Smart Embedded Network of Sensing Entities,” EU FP6 IST programme (Information society technologies), grant agreement 033279
1998–1999	“ISSE – Institute for continuing and complementary education,” Greek national project funded by the General Secretariat for Research and Development
1993–1994	“CORD – Task Force on Evaluation, Working Group on Hazardous Goods Monitoring and Control,” European FP2 DRIVE II programme (Telematic systems in transport services), grant agreement V2056
1992–1994	“FRAME – Freight Management in Europe,” DRIVE II Programme, grant agreement V2034
1992–1994	“CITRA – Corridor Initiative for Transit Route through the Alps,” DRIVE II programme, grant agreement V2041
1992–1994	“ARTIS – Advanced Road Transport Informatics in Spain,” DRIVE II programme, grant agreement V2043
1992–1994	“SAMOVAR – Safety Assessment Monitoring On-Vehicle with Automatic Recording,” DRIVE II programme, grant agreement V2007
1992–1994	“EWTIS: European Water Traffic Information System,” FP2 ENS programme (Telematic systems for transeuropean networks between administrators), grant agreement E2002
1992–1994	“RUNES: Rural Networking for European SMEs,” FP2 ORA programme (Telematics systems for rural areas), grant agreement O2016
1989–1992	“MARIE: Mobile Autonomous Robots for Industrial Environments,” European ESPRIT II programme, grant agreement 2043
1989–1992	“FOCUS: Front ends for Open and Closed User Systems,” ESPRIT II programme, grant agreement 2620

## Thesis

A. K. Leros, “Adaptive estimation algorithms for passive target tracking,” PhD dissertation (in Greek), University of Patras, Greece, Sep. 1998

## Journal Publications

- [J1] S. K. Katsikas, A. K. Leros, and D. G. Lainiotis, “Passive tracking of a maneuvering target: An adaptive approach,” *IEEE Trans. on Signal Processing*, vol. 42, no. 7, pp. 1820–1825, Jul. 1994. DOI: 10.1109/78.298290.
- [J2] S. K. Katsikas, A. K. Leros, and D. G. Lainiotis, “Underwater tracking of a maneuvering target using time delay measurements,” *Signal Processing (Elsevier)*, vol. 41, no. 1, pp. 17–29, Jan. 1995. DOI: 10.1016/0165-1684(94)00087-G.
- [J3] N. V. Nikitakos, A. K. Leros, and S. K. Katsikas, “Towed array shape estimation using multimodel partitioning filters,” *IEEE J. Oceanic Engineering*, vol. 23, no. 4, pp. 380–384, Oct. 1998. DOI: 10.1109/48.725232.
- [J4] S. S. Pappas, A. K. Leros, and S. K. Katsikas, “Joint order and parameter estimation of multivariate autoregressive models using multi-model partitioning theory,” *Digital Signal Processing: A Review Journal (Elsevier)*, vol. 16, no. 6, pp. 782–795, Nov. 2006. DOI: 10.1016/j.dsp.2006.06.006.
- [J5] A. K. Leros and V. C. Moussas, “Performance analysis of an adaptive algorithm for DoA estimation,” *IAENG Int. J. of Computer Science*, vol. 38, no. 3, pp. 309–313, 2011.
- [J6] I. K. Giannopoulos, A. P. Leros, A. K. Leros, and G. Tsaramirsis, “A stochastic model with an adaptive proportional controller for the evolution of user–router bandwidth demand for quality of service (QoS) aspects,” *Ad Hoc and Sensor Wireless Networks*, vol. 30, no. 1–2, pp. 65–81, 2016.
- [J7] I. K. Giannopoulos, A. K. Leros, A. P. Leros, P. Kofinas, and A. I. Dounis, “PID controller optimized by Big Bang–Big Crunch algorithm for the evolution of router bandwidth demand,” *International J. of Information Technology (Springer)*, vol. 12, no. 3, pp. 691–698, Sep. 2020. DOI: 10.1007/s41870-020-00424-w.
- [J8] I. K. Giannopoulos, A. K. Leros, A. P. Leros, G. Tsaramirsis, and M. O. Alassafi, “Real-time adaptive stochastic control of smart grid data traffic for security purposes,” *Sustainable Cities and Society (Elsevier)*, vol. 63, Art. 102473, Dec. 2020. DOI: 10.1016/j.scs.2020.102473.

## Conference Publications

- [C1] S. K. Katsikas, A. K. Leros, and D. G. Lainiotis, “Passive tracking of a maneuvering target: An adaptive approach,” in *Proc. 5th European Signal Processing Conf. (EUSIPCO 90)*, Barcelona, Spain, Sep. 1990, vol. 3, pp. 1887–1890.
- [C2] A. K. Leros, N. V. Nikitakos, and S. K. Katsikas, “An adaptive technique for towed array shape estimation,” in *Proc. of the 3rd European Conf. on Underwater Acoustics*, Heraklion, Crete, Greece, Jun. 1996, vol. 2, pp. 1043–1048.

- [C3] N. V. Nikitakos, A. K. Leros, and S. K. Katsikas, “Multiple source localization using partitioning algorithms,” in *Proc. of the IEEE Oceanic Engineering Society OCEANS’98 Conf.*, Nice, France, Sep. 1998, vol. 3, pp. 1418–1421. DOI: 10.1109/OCEANS.1998.726303.
- [C4] N. V. Nikitakos, A. K. Leros, and S. K. Katsikas, “On the dynamic motion of a towed array in the ocean,” in *Recent Advances in Information Science and Technology; Proc. of the 2nd Int. Conf. on Circuits, Systems, Communications and Computers (CSCC 1998)*, Piraeus, Greece, Oct. 1998, World Scientific Publ., pp. 257–263. DOI: 10.1142/3946.
- [C5] A. K. Leros and S. K. Katsikas, “Adaptive tracking of a maneuvering target by a towed array using multimodel partitioning algorithms,” in *Proc. 5th Int. Conf. on Information Systems Analysis and Synthesis (ISAS 99)*, Orlando, FL, USA, Jul. 1999, vol. VI, pp. 500–507.
- [C6] N. V. Nikitakos, A. K. Leros, and S. K. Katsikas, “Target estimation using multimodel partitioning techniques,” in *Proceedings, 5th Int. Conf. on Circuits, Systems, Communications and Computers (CSCC 2001)*, Rethymno, Crete, Greece, Jul. 2001, pp. 7131–7135.
- [C7] A. K. Leros, “Estimation of a discontinuous bias term in linear systems,” presented at the 1st Int. Conf. on Scientific Computing and Computational Engineering, Athens, Greece, Jun. 2004.
- [C8] S. K. Katsikas, S. D. Likothanassis, A. K. Leros, and V. C. Moussas, “An adaptive algorithm for multiple source detection,” presented at the 1st Int. Conf. on Scientific Computing and Computational Engineering, Athens, Greece, Jun. 2004.
- [C9] A. Platis, C. Lambrinoudakis, and A. K. Leros, “A probabilistic model for evaluating the operational cost of PKI-based financial transactions,” in *Public Key Infrastructure: Proc. of the 1st European PKI Workshop (EuroPKI 2004)*, Samos, Greece, Jun. 2004, ser. Springer Lecture Notes in Computer Science, vol. LNCS 3093, pp. 149–159.
- [C10] V. C. Moussas, S. D. Likothanassis, S. K. Katsikas, and A. K. Leros, “Adaptive on-line multiple source detection,” in *Proc. of the IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP ’05)*, Philadelphia, PA, USA, Mar. 2005, vol. IV, pp. 1029–1032. DOI: 10.1109/ICASSP.2005.1416187.
- [C11] C. Lambrinoudakis, A. Platis, and A. K. Leros, “A PKI security reliability assessment methodology,” in *Advances in Safety and Reliability: Proc. of the European Safety and Reliability Conf. (ESREL 2005)*, Gdynia, Poland, Jun. 2005, CRC Press, vol. 2, pp. 1229–1234.
- [C12] S. S. Pappas, A. K. Leros, and S. K. Katsikas, “Multivariate AR model order identification using partitioning theory,” in *Proc. of EURASIP 12th Int. Workshop on Systems, Signals and Image Processing (IWSSIP 2005)*, Chalkis, Greece, Sep. 2005, pp. 51–55.
- [C13] S. S. Pappas, A. K. Leros, and S. K. Katsikas, “Multivariate AR model order estimation with unknown process order,” in *Advances in Informatics: Selected papers from the 10th Panhellenic Conf. in Informatics (PCI 2005)*, Volos, Greece, Nov. 2005, ser. Springer Lecture Notes in Computer Science, vol. LNCS 3746, pp. 787–797. DOI: 10.1007/11573036\_75.

- [C14] V. C. Moussas and A. K. Leros, “Design of a multiple model simulation testbed for a common-based comparison of tracking filters,” presented at the 2nd International Conference on Experiments, Process, System Modelling, Simulation and Optimization, Athens, Greece, Jul. 2007.
- [C15] V. C. Moussas, A. K. Leros, and S. K. Katsikas, “Adaptive DoA source location using acoustic sensor arrays,” presented at the 3rd Int. Conf. on Scientific Computing and Computational Engineering, Athens, Greece, Jul. 2008.
- [C16] A. K. Leros, “Estimation of time-varying bias terms in linear systems,” in *Proceedings of the IASTED 2009 Int. Conf. on Intelligent Systems and Control (ISC 2009)*, Cambridge, MA, USA, Nov. 2009, ACTA Press, pp. 252–259.
- [C17] A. K. Leros and V. C. Moussas, “Performance analysis of an adaptive algorithm for DoA estimation,” presented at the 2011 Int. Conf. on Signal and Image Engineering (ICSIE 2011), Imperial College, London, UK, Jul. 2011.
- [C18] A. K. Leros and V. C. Moussas, “Performance of the MMPF algorithm for DoA estimation under sensor failures,” in *Proc. of the 2011 IASTED Int. Conf. on Intelligent Systems and Control (ISC 2011)*, Cambridge, UK, Jul. 2011, ACTA Press, pp. 74–81. DOI: 10.2316/P.2011.744-084.
- [C19] I. K. Giannopoulos, A. K. Leros, and A. P. Leros, “Qualitative assessment of traffic in computer networks,” presented at the MIC–Telecom 2013, Barcelona, Spain, Dec. 2013.
- [C20] I. K. Giannopoulos, A. P. Leros, and A. K. Leros, “A model for the evolution of router bandwidth demand using an adaptive PID controller,” in *Proc. of the World Congress on Engineering 2015*, Imperial College, London, U.K. Jul. 2015, ser. IAENG Lecture Notes in Engineering and Computer Science, vol. 2217, pp. 547–551.
- [C21] M. Almshari, A. O. Khadidos, G. Tsaramirsis, F. Q. Khan, A. Khadidos, I. K. Giannopoulos, A. K. Leros, D. Piromalis, and M. Bukya, “Setting up local private smart grids with data collection sensors for scientific experiments using MQTT and Node-Red,” in *Intelligent Computing Techniques for Smart Energy Systems: Proc. of ICTSES 2021*, Jaipur, India, Sep. 2021, ser. Springer Lecture Notes in Electrical Engineering, vol. LNEE 862, pp. 743–755. DOI: 10.1007/978-981-19-0252-9\_67.

## Awards

**Best Paper Award:** 2015 International Conference of Signal and Image Engineering, IAENG 2015 World Congress on Engineering — paper [C20] above.

**Best Paper Award:** 2nd International Conference on Intelligent Computing Techniques for Smart Energy Systems (ICTSES-2021) — paper [C21] above.