

Dr. Victoria Sgardoni

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KEY RESEARCH AREAS and INTERESTS

- 5G wireless networks, WiFi, LTE, PHY and MAC layers, Cross-layer design, MIMO
- Reliable wireless live video streaming, FEC, Raptor codes, spectrum efficiency
- Internet of Things
- Algorithm development, Stochastic modelling, Statistical analysis

KEY SKILLS

- Project Management, successful cross-team collaboration
- Effective written communication skills, presentation and teaching skills
- Computing and system modelling: MATLAB, C(C++), FORTRAN; Windows and UNIX

ACADEMIC QUALIFICATIONS

- **University of Bristol, Centre for Communications Research – PhD 7/2012**
Wireless Communications: “Enhanced wireless video transmission using a cross-layer design”
- **School of Pedagogical and Technological Education of Athens (ASPETE) (ex PATES/SELETE)**
Diploma in Pedagogical Studies - 10/1999 - 2/2001
- **Imperial College, University of London – Master of Science (MSc) - 11/1988**
Electrical Engineering Department - MSc in Communications Engineering
- **University of Patras, Greece – Dipl. Ing. Electrical Engineering – 10/1980 - 7/1985**
Department of Electrical and Computer Engineering

EMPLOYMENT HISTORY

July 2005 - now	Lecturer TEI of Sterea Ellada , Department of Aircraft Engineering
2012-2013	Research Associate University of Bristol, Dept. of Electrical & Electronic Engineering
2003 - 2005	Lecturer TEI of Epirus , Department of Computer Engineering
1999 - 2003	Project Manager/Senior Telecoms Engineer OTEnet , Greece
1997-1999	Project Manager Treasury Systems Alpha Credit Bank Athens, Greece
1996 -1997	Senior Telecoms Design Engineer OTE Athens, Greece
1994 - 1996	Project Manager/Technical Sales Consultant Reuters , Greece
1989 - 1994	Senior Consultant Logica , Cambridge, UK

TEACHING EXPERIENCE

8/2005 - now: *Lecturer* – Technological Educational Institute (TEI) of Sterea Ellada, Greece

Dept. of Aircraft Engineering – Responsible for teaching, designing course modules, supervising students' final year dissertation. Organised seminars and workshops. Modules taught include: Digital Electronics, Microprocessors & Sensors, Circuit Analysis, Numerical Analysis, Intro to Computing, Intro to Communications. (On leave 5/2008-7/2013 when I visited the University of Bristol, UK, to carry out PhD and postdoc research.)

2/2003 - 8/2005: Lecturer – Technological Educational Institute (TEI) of Epirus, Greece

Dept. of Computer Engineering – Responsible for teaching Telematics, Project Management Principles and Principles of Computer Programming, designed a new module on Telematics and set-up the lab, supervised final year dissertations, organised company visits.

RESEARCH ACHIEVEMENTS

9/2012 – 8/2013: Research Associate - Department of Electronic & Electrical Engineering, University of Bristol, UK

Worked as a Research Associate (RA) at the Communication Systems and Networks (CSN) group on research projects (see below), participated in research proposals and guided postgraduate student projects.

- Coordinated the work of the UoB team, led the architecture design and field trials for the TSB project Archive-In-Your-Pocket (AIYP) (11/2012-8/2013), that enabled reliable multicasting of multiple HD *live* video streams over 802.11n, implementing Raptor code FEC at the application layer with throughput optimisation, <http://www.aiyponline.org/>. The project was based on results from my PhD work put into practice.
- Significantly contributed to the writing of the successful EPSRC proposal TOUCAN (2013), as part of a 3-person team on SDN-enabled WiFi and LTE networks, for the convergence of wireless and optical networks.
- Simulated the performance of 802.11n wireless links to speeding trains for different types of antennas at the rail track, for First Great Western (9/2012-1/2013).
- Guided the work of two PhD projects on the application of Raptor Q codes for live video multicasting over 802.11n networks and the implementation of Raptor codes for video carousels.

1/2004 - 4/2012 (part-time): PhD in Wireless Communications - University of Bristol, UK

Investigated the use of Raptor codes application layer FEC for HD live H.264 video transmission over mobile broadband and 802.11 networks. Focused on a cross-layer design for enhanced spectral efficiency. Performed time-correlated wireless channel modelling, studying the effects of user speed on performance. Proposed a resource scheduling scheme and novel link adaptation, based on a cross-layer optimisation of the 802.16e PHY and MAC layers. Presented results at conferences, published and guided MSc student projects.

2/1989 - 12/1992: Senior Consultant - Logica Cambridge Ltd., Cambridge, UK

- Development of a Voice Verification Pilot system (1/1992 - 12/1992)
 - Led a novel algorithm development on classification of the speakers.
 - Organised and defined system acceptance tests, liaised with the client for enhancements based on the test results.
- Speech Recognition ESPRIT-II projects (3/1989 - 12/1991)

Worked on the EU ESPRIT R&D projects ARS (Adverse Environment Recognition of Speech) for speaker-dependent recognition of isolated words in noisy environments, and SUNDIAL (Speech Understanding and Dialogue) for speaker-independent recognition of continuous speech.

- Developed novel algorithms for speech recognition based on Hidden Markov Models (HMM) of phonemes and HMM adaptation to different environments and continuous speech, resulting in international publications.
- Collaborated with EU partners (ENST, MATRA, CNET, SIEMENS, CSELT).
- Contributed to deliverables and presented results at conferences and meetings.

PROFESSIONAL EXPERIENCE IN THE TELECOMS/IT INDUSTRY

10/1999–2/2003: *Project Manager/Senior Telecoms Engineer – OTEnet ISP, Greece*

- Project Manager for the OTEnet Billing and Provisioning System (2002-2003):
 - Managed a project team for the delivery of an Internet services Billing and Provisioning system supplied by CONVERGYS.
 - Led the formal capture of user requirements and system design specifications.
 - Collaborated with the Technical Dept., Marketing and Sales on user requirements and deployment.
 - Negotiated with the system provider on customisations required; coordinated Accenture subcontractors.
 - Led the roll-out of 11 Internet services and coordinated system acceptance tests.
 - Project planning using PM tools, meeting timescales and budget, reported to Directors.
- Project Manager for the Voice over IP (VoIP) deployment in Greece (1999-2001):
 - Managed a project team for the design, installation, setup of VoIP services over the IP network of OTEnet.
 - Led the technical solution for the VoIP network (H.323), working with Cisco.
 - Collaborated with Marketing and Sales, selected an international carrier.
 - Coordinated Technical, Marketing and Sales teams and organised the first deployment of VoIP service in Greece.
 - Reported to the General Manager, meeting timescales, budget; project planning using PM tools.

12/1997-10/1999: *Project Manager Treasury Systems - Alpha Credit Bank Athens*

Led the specification and design of software customisations required for the Dealing Room and Risk Management systems at Alpha Credit Bank Athens, collaborating with suppliers Reuters and UNISYS. Did project planning using PM tools.

9/1996-12/1997: *Senior Telecoms Design Engineer – OTE, Greece*

Participated in the EURESCOM projects JAMES (Joint ATM Experiment on European Services), TEN-34 (Trans-European Network at 34 Mbps) and P917-BOBAN (Building and Operating Broadband Access Network).

- Led a proposal for the delivery of tele-education and tele-medicine services over ISDN.

8/1994-8/1996: *Project Manager/Technical Sales Consultant – Reuters, Greece*

I managed a \$3 million project for the integration of the Reuters Dealing Room system (Kondor+) with the Treasury systems at Alpha Bank, Athens.

- Managed a team of 8 international employees, coordinated subcontractor s/w developers.
- Collaborated with the Bank's Treasury team, specified software customisations.
- Did project planning using PM tools, met timescales and budget, reported to M. Director.

1/1993-6/1994: *Senior Consultant – Logica UK*

Worked on the design and development of the 'Reuters Database' to offer worldwide access to financial data over the Reuters bespoke data network within 30sec, based on the RDBMS Teradata.

OTHER SKILLS

- **Languages:** English (excellent), French (very good), Greek (native)
- **Training** on CISCO networking, RDBMS design, SSADM (Logica), Project Management (Reuters)

CITATIONS (Google scholar 12-2015)

- Total citations 51
- Citations since 2011 36
- h-index 4
- Impact points 6.60 (Researchgate 1-2016)

PUBLICATIONS in PEER REVIEWED JOURNALS

1. V. Sgardoni, A. Nix, "Raptor Code-Aware link adaptation for spectrally efficient unicast video streaming over mobile broadband networks", *IEEE Transactions on Mobile Computing*, vol.14, no.2, pp.401-415, Feb. 2015, doi: [10.1109/TMC.2014.2331967](https://doi.org/10.1109/TMC.2014.2331967). (Impact factor 2.54)
2. V. Sgardoni, D. Bull, A. Nix, "Spectrum efficient cross-layer adaptation of Raptor codes for video multicasting over mobile broadband networks", *Elsevier Journal of Pervasive and Mobile Computing*, June 2014, doi: [10.1016/j.pmcj.2014.05.002](https://doi.org/10.1016/j.pmcj.2014.05.002). (Impact factor 2.08)
3. V. Sgardoni, D. Bull, A. Nix, "ARQ-Aware scheduling and link adaptation for video transmission over mobile broadband networks", *Journal of Computer Networks and Communications*, vol. 2012, Article ID 369803, 13 pages, 2012, doi: [10.1155/2012/369803](https://doi.org/10.1155/2012/369803).
4. V. Sgardoni et al, "Robust video broadcasting over 802.11a/g in time-correlated fading channels", *IEEE Transactions on Consumer Electronics*, vol.55, no. 1, February 2009, doi: [10.1109/TCE.2009.4814416](https://doi.org/10.1109/TCE.2009.4814416). (Impact factor 1.05)
5. M. Tesanovic, D.R. Bull, A. Doufexi, V. Sgardoni and A.R. Nix, "Impact of CSI latency on video quality in MIMO systems employing singular value decomposition", *IEEE Electronics Letters*, vol. 43, 2007, p. 972-973, doi:[10.1049/el:20071629](https://doi.org/10.1049/el:20071629). (Impact factor 0.93)

PUBLICATIONS in PEER REVIEWED CONFERENCES

1. B. Bulut, D. Berkovskyy, V. Sgardoni, A. Doufexi and A. Nix, "Robust Multicast Delivery for WLANs: Transforming Theory into Practice", *ICCMIT'15 (Elsevier International Conference on Communication, Management and Information Technology)*, Prague, April 2015.
2. V. Sgardoni, D. Halls, S.M.M. Bokhari, D. Bull and A. Nix, "Mobile WiMAX video quality and transmission efficiency", *IEEE PIMRC 2011* (IEEE International Symposium on Personal, Indoor and Mobile Radio Communications), Toronto, September 2011, doi: [10.1109/PIMRC.2011.6139662](https://doi.org/10.1109/PIMRC.2011.6139662).
3. V. Sgardoni, P. Ferré, A. Nix, D. Bull, "Robust video broadcasting over 802.11a/g in time-correlated fading channels," *IEEE ICCE'09* (International Conference on Consumer Electronics 2009), Las Vegas, January 2009, pp.1-2, doi: [10.1109/ICCE.2009.5012279](https://doi.org/10.1109/ICCE.2009.5012279).
4. V. Sgardoni, P. Ferré, A. Doufexi, A. Nix, D. Bull, "Frame Delay, Loss Rate and Throughput Analysis for Video Applications over time correlated 802.11a/g channels", *IEEE ICSPC'07* (IEEE International Conference on Signal Processing and Communications), Dubai, November 2007, doi: [10.1109/ICSPC.2007.4728342](https://doi.org/10.1109/ICSPC.2007.4728342).
5. V. Sgardoni, P. Ferré, A. Doufexi, A. Nix, D. Bull, "Frame Delay and Loss Analysis for Video Transmission over time-correlated 802.11a/g channels", *IEEE PIMRC 2007* (IEEE International Symposium on Personal, Indoor and Mobile Radio Communications) Athens, Greece, September 2007, doi: [10.1109/PIMRC.2007.4394641](https://doi.org/10.1109/PIMRC.2007.4394641).

6. V. Sgardoni, D. Gaganelis, E. Frangoulis, "Continuous density HMM context-dependent phones for speech recognition over the telephone", *EUROSPEECH-1991*, p.33-36, Genova, Sept. 1991.
7. E. Frangoulis and V. Sgardoni, "A novel Speaker adaptation approach for continuous density HMMs", *ICASSP 1991* (IEEE International Conference in Acoustics, Speech and Signal Processing), Toronto, May 1991, doi: [10.1109/ICASSP.1991.150474](https://doi.org/10.1109/ICASSP.1991.150474).
8. V. Sgardoni, M.E. Anagnostou, E.N. Protonotarios, "Stochastic Analysis of Data, Voice, and Video Packet Channels", *MELECON'87*, Rome, March 1987.

RESEARCH ABSTRACTS

- **PhD Thesis:** "Enhanced wireless video transmission using a cross-layer design"

Implemented systematic Raptor codes as a Forward Error Correction (FEC) mechanism at the application layer, offering error resilience for real-time video unicast or multicast transmission over time-correlated fading channel models. Performed an optimisation of Raptor code FEC and Modulation and Coding schemes at the PHY layer, in order to increase system throughput and spectral efficiency while attaining quasi-error free transmission. Proposed a Raptor-aware link adaptation method and a MAC/PHY cross-layer optimisation. Modelled the systems by developing my own simulators. Developed a channel model for WiFi and used the 3GPP SCM for WiMAX. Studied the system performance in terms of packet error rate, delay/jitter and bandwidth required, using the Automatic Repeat Request (ARQ) mechanism and Raptor codes.

- **Speech Recognition ESPRIT II research projects at Logica Cambridge:**

I developed speech recognition algorithms based on the creation of word and subword models, using stochastic Hidden Markov Models (HMM). Worked on the adaptation of the HMM parameters to new speakers and different background noise environments, using a novel technique based on multivariate statistical classification. Implemented the same technique for adaptation of context-independent subword models to new contexts. Also developed a network-search algorithm for continuous speech recognition.