

Maurice Gagnaire – Curriculum Vitae

Professor 1st level at the Computer Science and Networks Dpt.

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1. Education, honors and expertise

- **Diplomas** : Habilitation to manage research activities (**HdR**) from Versailles-St Quentin-en-Yvelines University – section #27 of CNU, « *Multiple access and traffic management in high-speed optical networks* » (1999) – **PhD** from Telecom Paris, « *An extension of the distributed queue access protocol* » (1992) - **MSc** in computer science from Sorbonne-UPMC University (1990) – Engineering degree (**ED**) from Telecom SudParis.
- **Honors**: Past-chair of the European IFIP Working Group WG-6.10 (Optical networks) - IEEE member (*Communications society*) – IBM Faculty Award from IBM *Global University Program* (2014), French “Chevalier des Palmes Académiques » (2005) - IEEE DRCN 2016 best paper award.
- **Expertise** : Core translucent WDM networks planning under non-linear effects – Traffic grooming strategies in WDM core networks – Optimal electrical regenerator placement in long-haul WDM networks - Service disciplines for WDM passive optical trees – Innovative electric Vehicle (EV) charging infrastructures and electro-mobility – Temperature-aware VM migration strategies in datacenters - Pricing strategies for federated Cloud and Cloud brokering -. Mobile Edge and Fog Computing - Digitized Radio-over-Fiber for Open-Radio Access Networks (O-RAN).

2. Teaching activities at Telecom Paris and at other academic institutions

2.1. At Telecom Paris

- **MSc “Advanced Communication Networks” (**ACN-907**)** - Ecole. Polytechnique & Telecom Paris [2014- 2018]
Optical core networks : Routing and Wavelength Assignment - Electrical regenerators’ placement - Impact of non-linear effects on WDM routing and waveband aggregation strategies - Cloud : on-the-flow: *bin packing*- analytical formulation of datacenter’s availability and response time –Pareto optimization for dual CPU resource optimization and thermal balancing..

- **3rd year teaching track: « Towards radio-cellular networks cloudification » (RIO-205), Telecom Paris [2018-2021]**
Analog (A-RoF) or Digital (D-RoF) Radio-over-Fiber: - Open RAN (O-RAN) architecture for 4G/5G radio-cellular networks - Introduction to Energy Harvesting in IoT and radio-cellular networks.
- **3rd year teaching track: « Large digital infrastructures » (GIN-207), Telecom Paris [2018-2021]**
Datacenters' architecture – Towards serverless datacenters and disaggregated RAM memory – Pareto optimization for dual TCO//CPU load optimization. – Cloud Radio Access Network (CRAN) -
- **3rd year teaching track: ATHENS program for European students [2017-2021] : an enlighten version of GIN 207.**
- **REGNUM:** at the invitation of my Colleague Prof. Laurent GILLE, annual program for the managers of African public authorities, 6 hours lecture on “Technological advances in public fix and radio-mobile networks” - Executive Education Dpt. Telecom Paris [2017-2020]
State of the art in matter of recent technical innovations in public networking – audience: leading engineers from African public administrations (once per year for the Executive Education Dpt.)
- **Broadband Local Loops** : 3rd year teaching track on xDSL, FITL and HFC access systems , Telecom Paris [1992 – 2000]
Discrete MultiTone (DMT) modulation for xDSL – IP/Ethernet traffic engineering in PON and Super-PON optical access systems. Wimax wireless access.
- **3rd year teaching track « Queueing theory » [1990 – 1995]**
Queueing systems – data sources' characterization, self-similarity, statistical multiplexing, work-conserving and non-work conserving service disciplines, cyclic servers.

2.2. At other academic institutions

- MSc in Digital communication (STN) – **Sorbonne-UPMC Université** – [1990-2000]
- MSc in high-speed networks – **Supelec-Rennes** – [1992-2001]...

2.3. Executive education

- Setting, coordination and teaching of numerous technical sessions on high-speed networks, either from the catalogue at TPT premises or hand-sewn sessions within enterprises (Orange, Alcatel, Thales, HEC ...) [1990-2015]

3. Research activities, collaborative contracts and patents

3.1. PhD advisor (19) and MSc thesis advisor (8)

T. Delmas, « Key functions for an embedded network manager in a civil transport aircraft», *in progress* - **P. Faroughi**, « Potentialities of drones' networks for IoT opportunistic traffic agregation», **2019** - **Y. Kacem**, « Load control in a domestic electric grid in presence of local alternative energy sources», **2018** - **A. Ellouze**, « Applications' offloading for Mobile Cloud environment », 2nd best PhD granted by the “Fondation Telecom” **2017** – **A. Fressancourt**, « Improved resiliency for inter-datacenter network connections », **2016** – **B. El Zant**, « Economical models for Federated Cloud », **2015** – **M. Alvarado-Ruiz**, « Charging strategies for electric vehicles connected to a street lighting system », **2015** – **M. Mijic**, « Comparison between various pricing strategies for Cloud services », **2014** – **F. Diaz-Sanchez**, «Economic models for Cloud Brokering », **2013** - **A. Haddad**, «Mutualized infrastructure for fix and mobile access », **2013** -- **JP. Vasseur** , «Traffic engineering in IP/MPLS core networks », **2013** – **M. Youssef** « WDM core network regenerators' placement and green networking », **2011** – **R. Aoun**, « Pricing policies for Cloud environment », **2010** – **C. Cardenas**, « Flow-oriented architectures for Grid traffic », **2009** – **T. Youssef**, « Hybrid optical-wireless networks for Wimax antennas federation », **2008** – **K. Patel**, « Electrical characterization of a new copper wire cable for the emergence of xDSL+ modems », **2008** - **A. Pichot** « Co-allocation of distributed

resources: architectures, protocols and optimization », **2008** – **S. Al Zhar**, «Optimal regenerators' placement for QoT management in WDM long-haul networks », **2007** - **E. A. Doumith**, « Traffic grooming and rerouting in multi-layer WDM networks », **2007** – **A. Morea**, « Translucent optical networks: technical feasibility and economic benefit », **2006** – **M. Koubaa**, « Routing, protection and traffic engineering in all-optical WDM networks», **2005** – **C. Müller**, « Dynamic GMPLS resource management in WDM mesh networks », **2005** - **J. Kuri**, « Scheduled Lightpath Demands in transparent WDM core networks », **2003** – **S. Stojanovski**, « Traffic engineering in APON access systems», **1999** - **T. Stroesslin** - « Dynamic wavelength allocation for active WDM dual rings », **1999** - **H. Maisonniaux**, « Real-time multi-point transport protocols for embedded systems », **1997** - **E. Pastore**, « Bandwidth management in metropolitan area networks », **1992**.

3.2. Collaborative projects with French companies and foreign universities:

- Companies: Safran-Airbus, Alcatel, Nokia-Bell-Labs, Nexans, Nexedi, Atos, Engie, Cisco, DGA, Dassault-Systèmes, EDF-Citelum, Orange-Labs, Thales, DGA/CELAR ... As an indication, during the [2004-2013] time period, the budget generated by my industrial contracts reached **2.26 millions of Euros** (source: Telecom Paris Finance Division).
- Foreign universities: Prof. B. Mukherjee, **Univ. of California at Davis – USA**, Prof. John Cioffi, **Stanford Univ – USA**, Prof. Noaki Yamanaka, **Keio Univ – Japan**, Prof. Bijan Jabbari, **George Mason Univ. – USA**, Prof. Piet Demester - **Ghent Univ.- Belgium**, Prof. Marco Ajmone MARSAN **Politecnico di Torino – Italy**, Prof. Dimitra Simoneidou – **Essex Univ. – UK**, Prof. Paul Kuehn - **Univ. of Stuttgart – Germany**, Prof. Zita Vale - **Univ. of Porto - Portugal**, Prof. Ioanis Tomkos, **Tech. Univ. of Athens - Greece**, Prof. Javier Aracil - **Univ. of Madrid – Spain**, Prof. Harmen Van As - **Vienna Tech. Univ.. Austria**, Prof. Tibor Cinkler, **Budapest Univ. - Hungary**, Prof. Ken-Ichi Kitayama, **Univ. of Osaka – Japan**, Prof. Carmo Medeiros – **Algarve Univ. - Portugal** – Prof. Adam Woliz – **Technical Univ. of Berlin – Germany** – Prof. Ton Koonen - **Antwerpen Univ. - Netherlands** ...
- National and European projects: Resilience: **RYTHME**: long-haul optical networks - **ITEA-SEAS**: next generation electric grid - **TELEWATT**: electric vehicle charging systems - **e-Photon-ONE**: European network of Excellence excellence (NoE) in optical networking - **Compatible-1**: Cloud brokering with Nexedi - **ITEA-Easi-Clouds**: European project on Cloud federation - **DICONET**: Dynamic Impairment Constraint NETWORKing for transparent mesh optical networks - **Greenfeed**: pricing strategies for EV charging infrastructures ...

3.3. Patents

- European patent: **SORELEC**: “Numerical simulator for the optimal scheduling and charging policy to be applied to electric vehicles charging infrastructures exploiting public lighting systems” – Fadi ABI- ABDALLAH, Maurice GAGNAIRE, 2013.
- French patent: **MEMOTA** « Meta-heuristic for Monitoring Trail Assignment», Elias A. DOUMITH, Sawsan Al Zahr, Maurice GAGNAIRE, 2010.

4. PhD juries in France and abroad, PhD manuscripts evaluation

4.1. PhD defense evaluator

- In France (16) :
Jean-Thierry CALVET (**UPMC**), Thierry F. KWENKEU (IRISA-Rennes), J.P VASSEUR (**Cisco**), Minh Thanh NGO (**Telecom-Br**), Sébastien SOUDAN (**Normale-Sup Lyon**), Amel HAMDY (**Univ. Versailles**), Demba. DIALLO (**Telecom Paris**), Stéphane ROUSSEAU (**Univ. Versailles**), Lieven VERSLEGERS (**Telecom-Paris**), Wenjing SHUAI (**Telecom Br**), Ion POPESCU (**Telecom Br.**), Ines HOUDI (**UPMC**), Halima ELBIAZE (**UVSQ**), Viet Hung NGUYEN (**Univ. Evry**), Shadi JAWAR (**IRISA Rennes**), Bénédicte BOULET (**Univ. Bretagne Occidentale**).

- Abroad (11) :
Bart LANOO (Univ. of Ghent - Belgium), Admela JUKAN (Technical Univ. of Vienna - Austria), Joan TRIAY-MARQUES (Univ. Politecnica de Catalunya - Spain), Jose Luis GARCIA DORADO (Universidad Autonoma de Madrid - Spain), Victor LOPEZ-ALVAREZ (Universidad Autonoma de Madrid, Spain), Nguyen-Cac TRAN (University of Eindhoven – Netherlands), Marilet des Andrade JARDIN (Universitat Politecnica de Catalunya, Spain), Paola LAFACE (Politecnico di Torino, Italie), Carlos BOCK (Univ. Politecnica de Catalunya – Espagne) - Enrico SHIATTARELLA, (Politecnico di Torino, Italie), Ahmad ROSTANI (Univ. de Berlin, Allemagne).

4.2. PhD manuscript evaluationr

- In France (17) :
Rosa CARMO (Univ. Paul Sabatier -Toulouse), Charles UFONGENE (UPMC, Paris), Thierry CHICH (Ecole Normale Supérieure de Lyon), Abdelhakim LACHMINE (Univ. de Nantes), Halima HELBIAZE (UVSQ), Paul GHOBRIIL (Telecom Paris), Hugo Cruz SANCHEZ (ENSHEIT Toulouse), Salma KTARI (Telecom Paris), Ahmed HAMDJ (Université de Versailles St Quentin), Raluca INDRE (Telecom ParisTech) ; Lida M. SADEGHIOON (Telecom Bretagne), Marouen MECHTRI (Telecom SudParis), Karel de VOGELEER (Telecom Paris), Nihel Djohar BENZAOUI (Telecom Paris), Fatma BEN JEMAA (Paris-Sorbonne Univ.), Stéphane ROUSSEAU (Université de Versailles St Quentin), Bahram ALINIA (Telecom Sud-Paris).

5. Jurys of habilitation to supervise research activities (HdR)

Tulin BERBER-ATMACA, « *Optical Metropolitan Networks : packet format, MAC protocols and Quality of Service* », Sorbonne Université, UPMC, Institut National des Télécommunications, 2008 - Jean-Louis ROUGIER, "Rerouting and Traffic Engineering in networks", Sorbonne Université - UPMC, 2010 - Philippe MARTINS , « *Evaluation de performances dans les réseaux mobiles EGPRS et OFDMA* », Université de Rennes-1, 2012, Thi Mai Trang NGUYEN, « *Multihomed, Cognitive and Cooperative Future Internet* », UPMC-Sorbonne Université, 2012 ...

6. Expertise for French or foreign Institutions – Guest editor

6.1. Expertise for French institutions

- Expertise for the evaluation of **ANR research projects**: Musico - May 2017, Ultimo - May 2018.
- 49th national session of **IHEDN** (Institute for High studies of National Defense): contribution to Annex #5 - Committee #1 with Mr Yves POILANE, Head of Telecom Paris, – 2012-2013.
- **ARCEP** (French national regulation authority for electronic communications) – Presentation of my research activities in the field of analog and digitized Radio-over-Fiber for a dynamic time-space radio resources allocation – 2013.
- Call for emerging research projects within Dpt. STIC of **Paris-Saclay University**, 2017.
- Expertise for call for projects of French **CEA** (Centre d'Etudes Atomiques), at the invitation of Prof. J-N- Patillon, 2017 ...

6.2. Expertise for foreign institutions

- French representative in the **COST 291 European action** on digital optical networks.
- **National Science Foundation (NSF) of the USA** – invited as an international expert for the evaluation of American research projects submitted to a national selection for a funding support – Arlington-VA-USA, 1994.
- **National Research Council of Canada**:– expertise of a research project « *Optical network dimensioning, traffic engineering, Pricing for Cloud Computing, Resource allocation in Smart Grid*” (Prof. Christine TREMBLAY) –2016.

- Prof. Kevin HAWES, **City University of New-York - USA** – Project expertise “*Developing a converged-PON-4G flexible access network testbed*”, 1998.
- **Research Foundation of Flanders (Belgium)** – evaluation of an academic and industrial research project in the field of optical networking (Prof. Piet DEMEESTER, Univ. of Ghent) - July 2011.
- French representative within **IFIP European WG 6.10** « *Photonic networking committee* » of IFIP (*International Federation for Information Processing*), Brussels (**Belgium**), 1995 -2005.
- At the invitation of my colleague **Prof. Tibor Cinkler** - Budapest University, three hours tutorial on “Translucent WDM long-haul optical networks”, IEEE Networks conference Budapest 2008 (**Hungary**) ...

6.3. Guest editor for international journals

- Co-guest editor with Prof. Pascale Vicat-Blanc Primet (**ENS-Lyon**) and Prof. Dimitra Simoneidou (**Univ. of Essex - UK**) of a **special issue of the Springer Telecommunications journal** entitled « *Towards market-oriented Cloud* » –2010.
- Co guest-editor with Prof. R. Sabella (**Ericsson**) of a special issue “*New generation DWDM optical networks*”, **Computer Networks**, Vol.2, N.5, May, **North Holland ed., USA**, 2000.
- Co-guest editor with Dr Roberto Sabella (**Ericsson**) of a special issue “*New-generation DWDM optical networks*”, **Computer Networks**, Vol. 21, N°5, May 2009.
- Co-guest editor of the “**Information Engineering and Applied Computing journal**”, Whioce Publishing Pte. Ltd., Singapore...

7. Chair of international conferences, invited tutorials, honors

- Member during more than 20 years of the Steering Committees of the **IEEE RNDM** and **IFIP/IEEE ONDM** international conferences
- Co-chair with **Prof. Naoaki Yamanaka** (Keio University, Japan) of the annual joint workshop Keio-University & Telecom ParisTech on High Speed Optical networks, [2007 - 2015].
- Co-chair with **Prof. Paul KUEHN** (IND Stuttgart Univ. – Germany) of the annual Joint Workshop IND-Suttgart-Univ. & Telecom ParisTech on High-Speed Networks [1991 - 1998]
- Co-chair with **Prof. Bijan JABBARI** (George Mason Univ., Fairfax – USA) of the IEEE HPSR conference in Paris in 2009..
- Member of the steering committee of the **IEEE HPSR** “*High Performance Switching and Routing*”.
- Chairman of the Symposium “*Advanced Technologies & Protocols for Optical Networks*” - **IEEE Globecom**, San Francisco-USA, 2006.
- Co-founder and co-chair with Dr-Ing Guy Mesquida (head of Alcatel-Lucent Optronics) of the annual **OPNET conference** [1994, 2001], the unique European conference associating vendors, engineers and researchers in optoelectronic devices and systems.
- Co-chair with Prof. **Nirsan Ansari** (New-Jersey Institute of Technology – USA) of the **IEEE Chinacom** conference, 2008.
- Member of the TPC of other numerous IEEE/IFIP conferences along my carrier: **ICNS**, **ICTON**’, **ITNAC**...

8 Publications in conferences, journals, books, guest editor, mainstream media

8.1 Citations, h-number

According to the Publish or Perish version 7 database : **198 referenced papers** for an **h-number of 23** for a total of **2038 citations**, that is in average 65 citations per year (Cf. IEEE Xplore).

8.2. Author or co-author for International technical journals

- N. Puech, J. Kuri, M. Gagnaire, "Topological design and lightpath routing in WDM mesh networks: a combined approach", Photonic Network Com., Vol. 4, N°2/4, 2002.
- M. Gagnaire, S. Al Zahr, "Impairment-aware routing and wavelength assignment in translucent networks", IEEE Communication magazine, Vol. 47, N.5, 2009.
- M. Gagnaire, J. Kuri, N. Puech, "On the resource efficiency of virtual concatenation in SONET/SDH mesh transport networks bearing protected scheduled connection", Journal of lightwave technology, Vol. 23, N.10, October 2005.
- J. Kuri, M. Gagnaire, "A MAC protocol for IP differentiated services in a WDM metropolitan area network", Photonic Network Communications V.3, N°1/2, June 2001.
- M. Gagnaire, "An overview of broadband access technologies", Proceedings of the IEEE, pp. 1958-1972, Dec. 1997.
- J. Kuri, M. Gagnaire, "On the resource efficiency of virtual concatenation in SDH/SONET mesh transport networks hearing protected scheduled connections", Journal of Lightwave technologies, IEEE-OSA, Vol. 23, issue 10, pp. 3012, 2005 ...

8.3. Books and chapters

- M. Gagnaire, "Broadband Local loops for high-speed Internet access", **Artech-House-USA**, 2003 - M. Gagnaire "Boucles d'accès hauts débits: xDSL, LMDS, voix & vidéo/DSL, Bluetooth", **Dunod**, 2001 – D. Kofman, M. Gagnaire, "Réseaux ATM et réseaux locaux", **Masson**, (2nd edition), 1999 – M. Gagnaire; "Analog and digitized RoF", chap.4 in Fiber-wireless convergence in NG com. Networks, **Springer-USA**, 2017 – M. Gagnaire et al., "Evolution of optical access networks", chap. 4 in "Towards digital optical networks", COST action 291 report, **Springer-USA**, 2009 – M. Gagnaire et al., "Traffic grooming for optical networks", Springer, 2008 – M. Gagnaire et al., "Encyclopédie de l'Informatique et des Systèmes d'Information", chapter on xDSL technologies", **Vuibert**, 2006...

8.4. French mainstream media

- "Energy autonomy of micro-generators for connected objects", in French in "Cahier technique de la revue mensuelle IT-Industrie & Technologies", N. 1006, February 2018.
- Publication of a tenth of invited articles in the "Revue Telecom" of Telecom Paris alumni monthly journal in French.
- Several oral interviews for mainstream French newspapers (Le Parisien, Les Echos, Challenge, 20 minutes...).
- Revue TEC-Mobilité Intelligente, N°244, « Le Cloud et ses nouveaux services pour le transport intelligent (ITS) », Janvier 2000. ...

9 Management activities

- **Leader of the Networks, Mobility and Services (NMS) teaching and research group** of Telecom Paris **[2009 - 2011]** including 12 permanent members (3 Professors, 6 Associate Professors, 3 Research Engineers from CNRS) and 21 PhD students. Editor of the tri-annual activity report of the NMS group as a research unit attached to the National CNRS-LTCI laboratory.