

# CURRICULUM VITAE

MARTÍN VARELA RICO

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## CONTACT INFORMATION

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## PERSONAL INFORMATION

Date of birth: January 8th, 1978.

Place of birth: Montevideo, Uruguay.

Nationalities: Uruguayan, Finnish.

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## EDUCATION

10/2002–11/2005 PhD (Computer Science) at Université de Rennes 1, Rennes, France.

Title: *"Pseudo-subjective Quality Assessment of Multimedia Streams and its Applications in Control"*.

Advisor: Prof. Gerardo Rubino.

This work was financed by a French Government grant.

9/2001–7/2002 MSc (Computer Science - Networks and Systems) Université de Rennes 1, France.

Title: *"Quality Assessment of a Multimedia Stream Transported Over the Internet"*.

Advisor: Prof. Gerardo Rubino.

4/1996-4/2001 Computing Engineering, Universidad de la República, Uruguay.

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## WORK EXPERIENCE

03-2017 – Senior SW Engineer at callstats.io. I work in the analytics team, where I develop our understanding of QoE for WebRTC services. My duties involve the design and development of the “Extended MOS” feature in callstats.io’s product, as well as related features such as Root Cause Analysis, etc. This is an end-to-end process, from designing suitable quality models to implementing them in production (in Clojure and Java, in the context of a real-time stream processing pipeline).

02/2017–07/2017 Senior Systems Engineer at EXFO. I work in the Network Function Virtualization (NFV) team, for Service Assurance. My role was to guide the design EXFO’s SA solutions for NFV. In Spring 2017, EXFO decided to cease all NFV-related activities in Finland, and this work was cut short.

9/2013–02/2017 Principal Scientist at VTT. Network Performance team. At VTT I have led the work on QoE research, both in scientific and commercial contexts, over the past 10 years. This work involved both scientific research, and the development of prototypes and production-ready customer solutions.

9/2014–11/2014 Visiting Senior Research Fellow at the Cooperative Systems group, Faculty of Computer Science, University of Vienna.

6/2007–8/2013 Senior Scientist at VTT. Quality of Service Technologies team.

4/2009–12/2009 Founder and CTO at MOS4 Oy.

12/2005–5/2007 Ercim post-doctoral fellow. From 12/2005 to 9/2006 I worked at the Computer and Networks Architectures laboratory of the Swedish Institute of Computer Science (SICS). I then worked from 9/2006 until 5/2007 at VTT in Oulu, Finland, in the Quality of Service Technologies team.

11/2002–2/2005 Lab monitor at École National Supérieur de Télécommunications de Bretagne (ENST Bretagne) for networking courses.

10/1999–10/2003 Teaching Assistant at the Computer Science Institute of the School of Engineering, Universidad de la República, Uruguay.

I have worked there on Computer Architecture and Operating Systems courses.

8/2000–5/2001 Systems Analyst at the Informatics Division of the Uruguayan Department of Justice (Poder Judicial, División Informática).

Duties included the specification of requirements and design of the institution's web portal and maintenance tools, and network design and security.

1/2000–5/2001 Consultant work, freelance programming, training courses on Object–Oriented programming and Java programming for enterprises.

12/1998–12/2000 Teaching Assistant / Lecturer at the Instituto Universitario Autónomo del Sur, Montevideo, Uruguay.

I have worked on Programming, Software Engineering, and Compilers courses, and also in summer labs.

4/1998–12/1999 Computing teacher at an elementary school (Colegio Bilingüe Ciudad Vieja), Montevideo, Uruguay.

3/1998–2/1999 English teacher at the Uruguayan Military High-school (Liceo Militar General Artigas), Montevideo, Uruguay.

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## SKILLS

I am familiar with a number of technologies, tools and programming languages. In my daily work, I use mostly Clojure, Java, Julia, R, git, Bash/Zsh, sed/awk, Emacs lisp and  $\LaTeX$ . Throughout my career I have also used other languages/technologies such as Ruby, Haskell, Python, C, C++, SQL, and gnuplot.

In addition to the languages mentioned above, my current work also involves dealing with Kafka, Storm, and some operations-related tools such as Kubernetes and ZooKeeper, but my knowledge of them is limited.

Besides my work on QoE and QoE management, I have done work on Unified Communications, QoS (measurement techniques, monitoring, model-based performance analysis), Software-defined Networking (SDN) and Network Function Virtualization (NVF).

I can work comfortably with the major OS environments (though I much prefer Mac OS and Linux).

In what follows, you can find a self-assessment of my skills in different areas, with the following scale as a guide:

Score	Meaning
1	I know it exists
2	I understand the basics
3	I can work ok with this
4	Work at high capacity
5	I master this

Category	Tech	Score	Comment
Languages	Clojure	4.5	I use it for work and personal projects (still much to learn)
	Java	3.5	For work, not necessarily by choice
	Ruby	3	I used it quite a bit in the past
	Haskell	2.5	Have done some work in it, I need to learn more
	R	3.5	
	Python	2.5	Similar to Haskell
	Julia	2.5	I have started learning it recently, have used it for work
	C	3	It's been a long time
	C++	2	It's been a long time, and the language has evolved since then
	SQL	3	
	Datalog	2.5	Currently learning this for my own projects
	Javascript	1.5	I have not really used it
Tools/techs	Linux / Posix utils	4	I can get around a shell, do basic admin, use standard tools
	L <sup>A</sup> T <sub>E</sub> X	4	
	Data visualization	4	R / Julia / gnuplot
	Neural Nets	3	I worked quite a bit with them in the past, not recently (no DL, etc.)
	Virtualization	3	VMs, Network Virtualization
	Containers	2.5	I use Docker daily as a user, but I need to learn more
	Kafka / ZK	2.5	Similar situation to docker
	Storm	2.5	Similar situation to docker
	AWS	2	
Domains	Networked Media Quality	5	
	Networked Media techs	4.5	
	Data Analysis / Modeling	3.5	
	ETL / Data architecture	3	
	Architecture	3.5	
	DB design	3	
	Back-end / stream processing	3.5	Done a bunch of this for work recently
	Back-end / service APIs	2.5	I haven't worked much on this, but I have a decent understanding
	Front-end / app logic	2.5	I have a bit of experience (with Clojurescript, re-frame / reagent)
	Front-end / design	2	Not my forte
Other skills	Research	5	
	Communication / writing	5	I can communicate very clearly, and explain complex issues in a simple way
	Communication / presenting	4.5	I am very good at presenting, have given over 25 invited talks, 3 keynotes
	Project Management	3.5	I have experience in this, and have managed large projects
	Mentoring	3.5	I enjoy mentoring people
	Teamwork	4	I work best as part of a team
	Problem solving	5	I am very good at solving hard problems

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## PARTICIPATION IN RESEARCH PROJECTS AND INDUSTRIAL PARTNERSHIPS

03-2016–02-2017 H2020 FUTEBOL.

Participants: VTT, Intel, Trinity College Dublin, U. Bristol, Federal University of Rio Grande Do Sul, Federal University of Ceará, among others.

Duties: In charge of implementing testbed federation tools into VTT's 5GTN and LSA platforms. This involved mainly an SDN-based control framework and federation APIs for integrating lab resources into the FED4FIRE system. Leading a showcase related to LSA implementation and QoE aspects of the convergence of optical and wireless networks.

03-2015–05-2016 Celtic-Plus NOTTS.

Participants: VTT, Orange Labs Poland, Acreo, Anvia, among others.

Duties: Scientific coordination and WP5 leadership. Development of QoE models and management mechanisms for OTT video traffic.

06/2012– Contract research for the European Space Agency – "QuoTe – Quality of Experience for Telemedicine Applications".

Duties: Project preparation (all technical aspects) and management. Development of quality models for telemedicine video-based applications. Creation of a system for measuring and monitoring the quality of said applications.

11/2011–03/2015 Celtic-Plus QuEEN (Winner of the Celtic-Plus Excellence Award for Services and Applications, 2016).

Participants: VTT, Orange Labs, Deutsche Telekom Labs, INRIA, EXFO, IBBT, ftw, among others.

Duties: Project scientific coordination. Development of QoE monitoring framework for generic services (with a focus on Cloud services).

01/2011–04/2013 Celtic IPNQSIS (Winner of the Celtic-Plus Innovation Award, 2016).

Participants: VTT, Indra, Alcatel Lucent, Ericsson, INT ParisSud, IP-Label Newtest, among others.

Duties: Finnish consortium coordination, development of QoE metrics and QoE-based network management algorithms for streaming media (mobile IPTV in particular). Work-package leadership.

2010–2012 Several contract research projects for Nokia Siemens Networks.

Participants: VTT, NSN Munich

Duties: Studies on the quality of mobile video services (both over-the-top and managed).  
Responsible for the project preparation and management.

11/2010– COST Action QUALINET (IC1003).

Participants: VTT, EPFL, ftw., Orange Labs, INRIA, among others. Duties: Finnish representative to the management committee. Finnish coordination for QoE activities.

4/2010–12/2010 FP7 IST OptiBand.

Participants: VTT, ftw., Telecom Italia, Thomson GrasValley, among others.

Duties: Consulting for HDTV QoE measurement.

5/2008–4/2009 Celtic Scalnet.

Participants: VTT, Sanoma Entertainment, Moviquity, University of Murcia, among others.

Duties: Celtic-level technical coordination of the project (12/2008–4/2009). Development of novel mechanisms to exploit Scalable Video Coding (SVC) properties in different networking contexts, and to develop a QoE-based approach to perform content and network-level adaptation.

1/2009–9/2011 CELITC Easy Wireless 2.

Participants: VTT, EXFO-NetHawk, Moviquity, UC3M, among others. Duties: QoS monitoring tool development, QoE-based mobility management, passive network monitoring across NATs.

2008–2009 Contract research for 7Signal Oy.

Participants: VTT, 7Signal

Duties: Creation of an active, PSQA-based VoIP QoE measurement system for integration in 7Signal's Sapphire monitoring platform. Responsible for the project preparation and management, as well as implementation work.

9/2006–10/2008 ITEA Easy Wireless.

Participants: VTT, Telefonica, Thales, University of Twente, Nethawk, among others.

Duties: development of a user-level QoS monitor to be included into a network performance measurement tool. Assessment of new wireless systems' fitness for VoIP (e.g. UMA, Skype on mobiles).

4/2004–11/2005 LAFMI. Franco-Mexican cooperation program.

Participants: INRIA, ENST Bretagne, ITAM, CONACYT, among others.

Duties: joint work on the quality assessment of H.264 video transmitted over DiffServ-aware and UMTS networks.

6/2004–11/2005 EuroNGI NoE.

Participants: INRIA, GET, University of Vienna, KTH, Politecnico de Torino, among others.

Duties: participation in working group WP.JRA.6.1 (Quality of service from the users' perspective and feedback mechanisms for quality control)

3/2003–6/2004 Partnership INRIA / France Télécom R&D for a comparative assessment of Real Audio 9 and Windows Media 9 codecs and players for high quality audio streaming over the Internet.

Participants: INRIA, France Télécom R&D.

Duties: development of a wide-area network emulator for the tests, media samples generation and treatment of the data obtained.

1/2003–6/2004 IST FABRIC

Participants: Philips, INRIA, Thomson Multimedia, University College of London, Technische Universiteit Eindhoven, among others.

Duties: proposals for multimedia streaming quality assessment.

7/2001–2/2002 ITEA RTIPA

Participants: Philips, Ericsson, INRIA, France Télécom R&D, Siemens, Technische Universiteit Eindhoven, among others.

Duties: test and validation of a flow control protocol for ATM networks in a ring topology. Development of a simulator to perform said tests and validation.

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## PROFESSIONAL ACTIVITIES

I am currently co-chair of the IEEE MMTC's QoE Interest Group (<http://mmc.committees.comsoc.org/interest-groups/qoeig/>). Since June 2015, I have been a Level-1 Associated Researcher in the Uruguayan SNI (<http://www.sni.org.uy/>). I was also a member of the IEEE 1907.1 standardization group for "Network-Adaptive Quality of Experience (QoE) Management Scheme for Real-Time Mobile Video Communications".



I am an associate editor for Springer's recently founded "Quality and User Experience" journal, and was involved in its founding.

I am also active in a number of program committees and have provided reviews for a large number of venues. Recent activities include:

- Publicity chair for QoMEX 2021, General co-chair for QoE-Management 2020, TPC member for QoMEX 2019, QoE-Management 2019, ICC 2019
- Guest editor for ACM TOMM, special issue on QoE Management (2017), Publicity Chair for QoMEX 2018
- TPC Chair for IEEE IM 2017 Workshop of QoE Management, TPC member for QoMEX 2017, ACM SIGCOMM/Internet-QoE 2017
- General co-chair for ACM SIGCOMM Workshop on QoE-based Analysis and Management of Data Communication Networks (Internet-QoE 2016)
- TPC member for PQS 2016, IEEE ICCE 2016, QCMAN 2016, ITC28, ACM MMSys 2016
- Special session chair and TPC member for QoMEX 2016
- Editor for IEEE MMTC E-Letter 10(3), special issue on "QoE Management for Next Generation Multimedia Services"
- Publicity chair for QoMEX 2015
- General co-chair for IEEE QoENAM 2014
- TPC member for ACM MultiMedia 2014, QoMEX 2014, ICC'14 (CSSMA), Globecom QoEMC 2013
- TPC co-chair for QoMEX 2013
- Special session organizer and TPC member for IEEE Eurocon 2013 "From QoS to QoE and Back"
- TPC member for ICME 2012-2014 (awarded as one of the "Quality Reviewers" for ICME 2013), TPC member for IWQM 2013 (co-located with IEEE SaCoNet 2013)
- Guest editor for JCNC special issue "Improving QoS and QoE for Mobile Communications"
- Various reviews / TPC memberships for IEEE J-SAC, Internet Computing, Springer MTAP, MMSP 2013, Signal Processing: Image Communication, QoMEX, ACM MM, IEEE Communication letters, IEEE Infocom, ICC, SVCVision/MOBIMEDIA, NTMS, MediaWiN, PIMRC, among others.

I have been invited to participate in the following doctoral thesis committees:

1. Arslan Ahmad. *"QoE-aware Multimedia Service Management and Monitoring through OTT and ISP Collaboration"*. University of Cagliari, Italy, January 2019. (I was a rapporteur for this thesis)
2. Sabina Baraković. *"Multidimensional Modelling of Quality of Experience for Mobile Web Browsing"*. University of Zagreb, Croatia, October 2014 (I was an evaluator for this thesis)
3. Claudio Enrique Risso Montaldo. *"Using GRASP and GA to design resilient and cost-effective IP/MPLS networks"*. Universidad de la República, Uruguay, May 2014. (I was a rapporteur for this thesis)
4. Pablo Gabriel Romero Rodríguez. *"Mathematical Analysis of Scheduling Policies in Peer-to-Peer Video Streaming Networks"*. Universidad de la República, Uruguay, November 2012. (I was a rapporteur for this thesis)
5. Almudena Díaz Zayas. *"Performance Evaluation of IP Multimedia Services in Live Mobile Networks"*. Universidad de Málaga, Spain, December 2009.

I have also been invited to participate in the following Magister thesis committees:

1. Pablo Berger. *"Análisis de Calidad para Servicios de distribución de Video Adaptativo (HTTP Adaptive Streaming)"* Magister thesis in Informatics. Universidad de la República, Uruguay.
2. Gustavo Guimaerans. *"Performance Testing Applied to Critical Systems"*. Magister thesis in Informatics. Universidad de la República, Uruguay, May 2016.
3. Javier Pereira Lucas. *"Routing Cost Optimization in Multi Overlay Robust Networks"*. Magister thesis in Mathematical Engineering. Universidad de la República, Uruguay, May 2013.

Over the past few years, I have also acted as an evaluator for projects (both proposals and execution) for the NSERC (Natural Sciences and Engineering Research Council of Canada) and the Uruguayan ANII (National Agency for Research and Innovation).

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## LANGUAGES

Spanish – Mother tongue.

English – CEF C2 (CPE grade A – University of Cambridge)

French – Full working proficiency.

Finnish – CEF B2 (YKI intermediate level).

Portuguese – Can communicate.

Swedish – Basic notions.

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## PUBLICATIONS

I have an extensive publication record in the QoE domain, which can be found online at <https://martin.varela.fi/publication/>

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## SEMINARS AND TALKS

Besides paper presentations at conferences and workshops, I have given over 25 invited talks and lectures, including three keynotes.

A full list of these can be found online at <https://martin.varela.fi/talk/>

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## PERSONAL

I am married and have two young children (boys, 7 and 5 years old). I enjoy a variety of activities outside of work, which nowadays include photography<sup>1</sup>, calligraphy, cooking, badminton, reading, and diving. In younger (and lighter!) years I was an avid rock climber. In each of those activities, part of the enjoyment comes from developing my abilities and knowledge, and the same frame of mind applies to my work; a significant part of what makes me tick is learning and understanding new things, and seeing how they can be brought together in interesting ways.

I also enjoy tinkering with technology, and have for instance dabbled with Arduino, built my own quad-copter, a mechanical keyboard from an old typewriter, etc.

<sup>1</sup>[https://www.flickr.com/photos/mvr\\_photo/](https://www.flickr.com/photos/mvr_photo/)