Curriculum

Curriculum Vitae of Giorgio Ventre

Education

- *Laurea Degree in Electronic Engineering, magna cum laude,University of Napoli Federico II, 1985*
- *Dottorato di Ricerca (PhD) in Computer Engineering, University of Napoli Federico II, 1989*

Experience

Giorgio Ventre is Full Professor of Computer Networks in the Department of Computer Engineering and Systems of the University of Napoli Federico II. He owns a Laurea Degree in Electronic Engineering and a Ph.D. in Computer Engineering, both from University of Napoli Federico II.

His Ph.D. thesis was on the design of a programming environment for the development of applications for distributed memory computers. From 1989 to 1991 Giorgio Ventre worked at CPS, the Center for Research on Parallel Computers of the Italian National Research Council (CNR), Napoli, doing research in the area of system support for distributed memory computers.

From 1991 to 1993 he was with the Tenet Group at the International Computer Science Institute and at the University of California, Berkeley, working in the area of network support for distributed multimedia applications. In that group he contributed to the design of one of the first protocol suites for the Quality of Service support of real-time applications.

Since 1993 he is working at the University of Napoli Federico II, where he is leader of the COMICS team. COMICS stands for Computers for Interaction and Communications and is an initiative of people interested in the areas of networking and multimedia communications (www.comics.unina.it).

In 1999 he was co-founder of ITEM, a research laboratory working in the areas of telematics and multimedia applications. ITEM is owned by the Italian National University Consortium on Informatics (CINI) and currently is staffed by more than 20 researchers active on projects funded by the EU, the italian government and by a number of private institutions. Giorgio Ventre has been Director of ITEM until february 2004.

From March 2004 he is President and CEO of CRIAI, a research company created in 1980 by the University of Napoli Federico II. CRIAI operates in the area of Computer and System Engineering and has a staff of around 50 researchers. It is one of the largest ICT technological transfer centers in southern Italy.

Teaching Experience

Giorgio Ventre is currently Professor of Computer Networks at the Faculty of Engineering of the University of Napoli Federico II. He was one of the first professors at the University of Napoli Federico II to have his classes in English. Giorgio Ventre has 20 years of teaching experience at both the undergraduate and graduate level.

He is member of the scientific board of the Dottorato (Ph.D. program) in Computer Engineering and in Information Technology. He is also Visiting Professor at the Military Academy of the italian Air Force (Accademia Aereonautica) and at University Suor Orsola Benincasa.

Giorgio Ventre has been advisor for 15 Ph.D. students at the University of Napoli Federico II and has been co-advisor and member of the evaluation panel for several Ph.D. candidates in Italy and abroad.

Research Activities

Giorgio Ventre is leader of the COMICS research group on computer networks. The group is composed of around 25 people among professors, associate researchers and Ph.D students. The research activities are in several areas of networking:

- *Multimedia content provisioning and adaptation*
- *Traffic Engineering and QoS in MPLS networks*
- *Dynamic service engineering and autonomic communications*
- *Wireless, Ad-Hoc networking and QoS*
- *Wireless Mesh Networks*
- *Mobile applications on 3G networks and Location-aware Services*
- *Internet Traffic Modeling and Generation*
- *Traffic Monitoring, Analysis and Anomaly Detection*
- *Performance Modeling*
- *Distributed architectures for reliable and scalable conferencing*
- *Distributed simulation of protocols and network architectures*
- *Experimental analysis of protocols and distributed architectures*

These activities are performed in cooperation with several other research and academic institutions around the world, as well as with private companies such as Intel, CISCO, Alcatel-Lucent, ERICSSON, Italtel, ELSAG, DATAMAT, Selex Sistemi Integrati, Telecom Italia.

During the period at ICSI, he had the chance to work with Domenico Ferrari in the Tenet Group on real-time protocols for multimedia applications. He worked in several interesting projects like BAGNET and XUNET/Blanca, two of the largest Gigabit Testbeds funded by NSF.

From 1993 to 1996 he has been involved in the NeaNet Project. NeaNet was the first ATM based geographical public network operational in Italy; it was funded by the Italian National Research Council (CNR) in cooperation with Telecom Italia. Neanet connected seven sites and involved more than 20 research institutions in Napoli for experimenting high-speed network technology in areas such as Distributed Computing, Remote Visualization, Telemedicine, Distant Learning, CSCW, and Multimedia Protocols. In September 1994 we had the first experiments of teleconfererencing on a wide area ATM connection. NeaNet was then part of the ATM experimental service SIRIUS deployed by Telecom Italia and was included in the Italian National Host at the time of the ACTS projects. NeaNet was "decommissioned" in 1998.

Giorgio Ventre was involved in the COST 237 European research project on multimedia teleservices, in which he was the Italian representative in the Management Committee. COST stands for "COperation europeenne dans le domaine de la recherche Scientifique et Technique". It provides a mechanism for basic research collaboration throughout Europe. COST 237 goals were the specification of communication service requirements for multimedia applications and the definition of service characteristics and quality of service parameters for interactive, multi-party applications. From the work performed in this action two new projects were born: COST 263, on the Quality of Future Internet Services, and COST 264, on Enabling Networked Multimedia Group Communications. He was member of the MC in both these actions.

Giorgio Ventre has also been involved in several research projects related to broadband communications, multimedia applications and protocols, and distance learning:

- *BRAIN (RACE Program)*
- *NICE (ACTS Program)*
- *Renaissance (ACTS Program)*
- *GESTALT (ACTS Program*
- *EASEL (IST Program)*
- *GUARDIAN (IST Program))*
- *CADENUS (IST Program)*
- *INTERMON (IST Program)*
- *NGN-I (IST Program)*
- *E-NEXT (IST Program)*

Currently is involved in several international and national projects. In particular he is involved in the NETQOS and ONELAB research project and in the CONTENT Network of Excellence of the VI Framework Programme of the European Union where he is leading the activities of the WG on Traffic Engineering and Monitoring. In the recent calls for proposals for the VII Research Framework of the European Union, the group lead by Giorgio Ventre has achieved the approval of 4 research projects: INTERSECTION, ONELAB2, DIESIS, SHARE. Following is a brief description of some of the current research projects

CONTENT

www.ist-content.org

The CONTENT Network of Excellence targets Content Delivery Networks for Home Users, as an integral part of Networked Audio-Visual Systems and Home Platforms. CONTENT aims to build the European Research Area in this important communication topic by integrating a group of experts with the purpose of taking forward the state of the art and increasing European leadership in Content Networks. The overall goal of the CONTENT Network-of-Excellence is to integrate the research efforts of the members to address the technical challenges at the different system levels to enable easy-to-install and easy-to-use AV services in and between homes. In particular, the main technical objective will be to boost the potential of European Community Networking by improving Content Distribution infrastructures for the delivery of live (streaming) content and interactive stored content, and by integrating, in an open way, tools and mechanisms that would.enable the curation of multimedia assets and their subsequent access for the benefit of the communities of users, producing a set of appropriate services for them, both in the context of the "long tail" or applied to assets created by traditional broadcasters. Giorgio Ventre is interested in the definition of novel schemes for the dynamic creation and management of Content Delivery Networks, according to an on-demand scheme.

NETQOS

www.ist-netqos.org

The NETQOS project proposes an autonomous policy-based management for wired/wireless heterogeneous communications networks aimed to provide enhanced end-to-end QoS and efficient resource utilisation. The proposed approach assembles policies at run-time under sets of imposed constraints and goals, based on learning and context identification. The automation of network level policy management allows for dynamic adaptation of the managed system in response to changing requirements of the operational environment while coping with the originally imposed business objectives.

The new approach gives more flexibility to users and applications to dynamically change their Quality of service (QoS) requirements while maintaining a smooth delivery of the required QoS. Management of communication systems refers to the task of configuring, administering and optimizing the network resources. One aspect of management that best exemplifies the magnitude of those challenges is encountered in QoS provisioning. QoS management refers to the activities in QoS specification, negotiation, monitoring and control of network resources to meet end-to- end users and applications requirements, business objectives and resources availability. The notion of predefined policies has been introduced as a promising solution to address the needs for automated adaptation and optimisation of QoS, traffic and resources. Giorgio Ventre is interested in the definition of new SLA based schemes for policy definition in an interdomain scenario.

OneLab

www.one-lab.org

There are many testbeds available today to support research in communication networks and large scale distributed systems. However, these testbeds tend to be specific. Furthermore, network environments are becoming ever more heterogeneous. Emerging wireless technologies may soon make it common for data to cross multiple wireless hops while being routed in unconventional ways.

These new environments are instrumental to enable the emergence of new architectures, applications and services. For their development and evaluation, there is a recognized lack of evaluation and benchmarking facility. The OneLab project will knit together the best of today's networking testbeds, to provide a unified environment for the next generation of network experiments. The availability of such a large scale, open, heterogeneous testbed will be beneficial not only to the world of research and academics, but industry at large will benefit from access to computing and networking resources. Small and medium enterprises (SMEs) that are developing novel distributed systems and services will be able to use OneLab to test the deployment of their products in realistic scenarios, providing them with invaluable information about the performance, resiliency and scalability of their products.

OneLab will extend the highly successful and widely used PlanetLab infrastructure by enabling deployment of PlanetLab nodes in new wireless environments. Additionally, the capabilities of the PlanetLab platform will be extended in order to allow seamless controlled instantiation of new services, while improving its monitoring capabilities to take into account both networking and system performance issues. In the process, OneLab will create a European testbed administration, and will peer with PlanetLab, maintaining interoperability through a commonly defined set of interfaces. In this project, Giorgio Ventre and the members of his research group is responsible for the inclusion in the Onelab/Planetlab architeture of an UMTS testbed, in cooperation with Alcatel-Lucent Italia.

NADIR

NADIR is a three year national project on Wireless Mesh Networks recently funded by the Italian Ministry for Research. The COMICS group will be mainly involved in the areas of radio channel assignment, as well as of routing algorithms.

In the context of channel assignment, the COMICS group will design a new algorithm satisfying precise requirements. Channel assignment algorithms typically work by assigning channels to either radios or links. In the former case, the algorithm needs to ensure the connectivity of the induced graph. In the latter case, connectivity is guaranteed provided that a channel is assigned to all the links, but the algorithm needs to ensure that the number of distinct channels assigned to the links incident on each node does not exceed the number of available radios. The algorithm we are going to develop for the channel assignment problem follows the latter approach.

RECIPE: Robust and Efficient traffic Classification in IP nEtworks

Correct and efficient classification of network traffic according to application layer protocols is essential for most network management, resource allocation, network anomaly detection and security. The main goal of this project is then to design and develop robust and efficient traffic classification tools for IP networks. Provided tools will be tested over real traffic coming from real networks. A number of traffic traces will be made publicly and freely available through the project web-site.

Traffic classification techniques will be also applied in the context of network security, for improving the performance of existing Intrusion Detection Systems (IDS) based on anomaly detection techniques, and for developing a network-based Intrusion Prevention Systems (NIPS).

Giorgio Ventre has co-authored more than 200 publications and has been an invited presenter in several major workshop, conferences and technical meetings. He is member of IEEE, ACM, IET, AICA.

Giorgio Ventre is reviewer for several national and international research agencies. He is also member of several scientific and technical commissions of the Italian government and for the governments of several countries, as well as the European Commission. He is consultant for the Italian Regulatory Agency for Telecommunications (AGCOM).

He is currently serving in the Steering Committee and in the Program Committee of several international conferences and workshops. He was General Chair for the ACM CoNext 2009 conference. Giorgio Ventre ha been also co-editor of special issues for several journals. He is Area Editor for the Computer Networks Journal, Elsevier.

Major publications

Multimedia Telecommunications and Applications
(edited by G. Ventre, J. Domingo-Pascual and A. Danthine)
Lecture Notes in Computer Science, Springer-Verlag, Vol. 1185, Nov. 1996.

Interactive Multimedia on Next Generation Networks
(edited by G. Ventre, and R. Canonico)
Lecture Notes in Computer Science, Springer-Verlag, Vol. 2899, Nov. 2003

Mtools
(in cooperation with S.Avallone, M.D'Arienzo, M.Esposito, A.Pescapè, S.P.Romano)
IEEE Networks Magazine, Column: Software Tools for Networking, September 2002

Advanced QoS-Provisioning in IP networks: The European Premium IP Projects
(in cooperation with Silvia Giordano, Stefano Salsano, Steven Van den Berghe, Dimitrios Giannakopoulos)
IEEE Communications Magazine, Vol. 41, N. 1, January 2003

QoS advances: the European IST Premium IP Projects
(in cooperation with Silvia Giordano, Martin Potts, Mikhail Smirnov)
Guest Editorial Introduction, IEEE Communications Magazine, Vol. 41, N. 1, January 2003

A Real Time-Based Architecture for QoS Multimedia Provisioning
(in cooperation with G. Iannello, S. Russo, D. Cotroneo)
Microprocessors and Microsystems, Elsevier, March, 2003

Multimedia Distribution
(in cooperation with D. Hutchison, L. Mathy and L. Rowe)
Editorial introduction, Special Issue of ACM / Springer Multimedia Systems Journal, January 2003

Introducing QoS awareness in distributed programming: Tcl
(in cooperation with R. Canonico, M. D'Arienzo and S.P. Romano)
Software Practice & Experience, Volume 33, Issue 10, August 2003

Transparent SLA and SLS Management for Dynamic Service Creation in Heterogeneous Networks
(in cooperation with M. D'Arienzo and A. Pescapè)
International Journal of Network and Systems Management, Special issue on Distributed Management, Kluwer, Vol. 12, No. 3, Sep. 2004.

Performance evaluation of an open distribution platform for realistic traffic generation
(in cooperation with S. Avallone, D. Emma, A. Pescapè)
Performance Evaluation: An International Journal, Elsevier, 2004

A simulation environment for GPRS traffic in an advanced travellers information system (ATIS)
(in cooperation with A. Pescapè)
Journal of Simulation Modelling Practice and Theory, Elsevier, 2004

Managing Service Level Agreements in Premium IP Networks: a Business-oriented Approach
(in cooperation with Simon Pietro Romano, Salvatore D'Antonio, Marcello Esposito, Maurizio D'Arienzo)
Computer Networks Journal, Elsevier, 2004

Performance evaluation of an open distribution platform for realistic traffic generation

(in cooperation with S. Avallone, D. Emma, A. Pescapè)

Performance Evaluation: An International Journal, Elsevier, Vol. 60, Issue ¼, pag. 359-392, March 2005

High Performance Internet Traffic Generators

(in cooperation withS. Avallone, D. Emma, A. Pescapè)

The Journal of Supercomputing, Kluwer Academic Press, 2005

Time-aware admission control on top of time-unaware network infrastructures,

(in cooperation with S. D'Antonio, M. Esposito, S. P. Romano)

Computer Communications, vol 28/4, pp 405-416, 2005

Design Principles and Algorithms for Effective High Speed IP Flow Monitoring,

(in cooperation with A. Chiosi, S. D'Antonio, M. Molina)

Computer Communications, 2005

Experimental Analysis of Attacks Against Intradomain Routing Protocols,

(in cooperation with A. Pescapè)

Journal of Computer Security (JCN), 2006

Research Challenges in QoS Routing

(in cooperation with X. Masip-Bruin et al.)

Computer Communications, 2006

Systematic Performance Modeling and Characterization of Heterogeneous IP Networks,

(in cooperation with A. Botta, D. Emma, A. Pescapè)

Journal of Computer and System Sciences(Elsevier) - Volume 72, Issue 7 , November 2006, Pages 1134-1143

A SCTP performance evaluation over Heterogeneous Networks,

(in cooperation with A. Dainotti, S. Loreto, A. Pescapè)

Concurrency and Computation: Practice and Experience (Wiley)

Measurement of Processing and Queuing Delays Introduced by an Open-Source Router In a Single-Hop Network.

(in cooperation with L. Angrisani, L. Peluso, A. Tedesco)

IEEE Transactions on Instrumentation and Measurement, 55(3), Agosto 2006.

Performance measurement of IEEE 802.11b-based networks affected by narrowband interference through cross-layer measurements",

(in cooperation with L. Angrisani, A. Pescapè, M. Vadursi)

IET Communications (formerly IEE Proceedings - Communications), 2007.

Quality of Service Statistics over Heterogeneous Networks: Analysis and Applications,

(in cooperation with A. Botta, A. Pescapè, G. Ventre)

Special Issue of Elesevier EJOR on 'Performance Evaluation of QoS-aware Heterogeneous Systems, 2007

A Channel Assignment Algorithm and a Layer-2Routing Protocol for Multi-Radio Wireless Mesh Networks,

(in cooperation with S. Avallone e I. F. Akyildiz)

IEEE/ACM Transactions on Networking, February 2009

Dynamic Routing in QoS-Aware Traffic Engineered Networks

(in cooperation with S. Avallone et al.)
C. Delgado Kloos, A. Marín, and D. Larrabeiti, editors. EUNICE 2005: Networks and Applications Towards a Ubiquitously Connected World,
volume 196 of IFIP Transactions pages 45-58. Springer, 2006 ISBN: 0-387-30815-6.

A New Hybrid Traffic Engineering Routing Algorithm for Bandwidth Guaranteed Traffic

(in cooperation with S. Avallone et al.)
K. Cho and P. Jacquet, editors. Technologies for Advanced Heterogeneous Networks II, volume 4311 of Lecture Notes in Computer Science, pages 159-171. Springer, 2006. ISBN: 978-3-540-49364-8.

Network Emulation on Globus-based Grids: mechanisms and challenges.

(in cooperation with R. Canonico, P. Di Gennaro, V. Manetti)
F. Davoli editor, GRID Enabled Instrumentation and Measurement, Lecture Notes in Computer Science, Springer, 2007.

Virtualization Techniques in Network Emulation Systems.

(in cooperation with R. Canonico, P. Di Gennaro, V. Manetti)
L. Bougè et al. Editors, Euro-Par 2007 Workshops, LNCS 4854, pp. 137-146, 2008.

Invited Presentations

A scheme for distributed advance reservations in IP Networks, International Workshop on Quality of Telecommunications Services, QUTE 99, EURESCOM, Invited Presentation, Heidelberg, October 1999.

http://www.eurescom.de

A scheme for time-dependent resource reservation in QoS-enabled IP networks, International Workshop on QoS in Networks and Distributed Systems, Dagstuhl, Invited Presentation, May 8-10, 2000

Creation and Deployment of End-User Services in Premium IP Networks, International Workshop on Applied IP and Multimedia Services, AIMS 2000, EURESCOM, Invited Presentation, Heidelberg, October 2000.

http://www.eurescom.de

From QoS-enabled nodes to QoS-aware systems: bringing service differentiation in real life infrastructures,

IX IEEE International Workshop on Quality of Service (IWQoS 2001), Panel: How will Media Distribution work in the Internet?, Karlsruhe, Germany, June 6-8, 2001

http://www.uni-karlsruhe.de/~iwqos/

QoS based management and control of Virtual Private Networks in Premium IP Networks,

in cooperation with S.P. Romano

International Workshop on Quality of Future Internet Services, QofIS 2001, Invited Presentation, Coimbra, September, 2001.

http://qofis2001.dei.uc.pt/

Active Networks for Distributed Defence Strategies Against DDoS Attacks,

in cooperation with R. Canonico

International Seminar on Concepts and Applications of Active and Programmable Networking Technologies, Schloss Dagstuhl, Wadern, Germany, February 12-15, 2002.

http://www.dagstuhl.de/DATA/Seminars/02/#02071

Active Networks for QoS-aware Virtual Private Networks,

in cooperation with M. D'Arienzo

International Seminar on Concepts and Applications of Active and Programmable Networking Technologies, Schloss Dagstuhl, Wadern, Germany, February 12-15, 2002.

http://www.dagstuhl.de/DATA/Seminars/02/#02071

System and Service Resilience: a return to good, old values?

in cooperation with D. Hutchison

FP6 IST WP 2005-2006 Consultation Meeting, Brussels, April 1st 2004

Risks and resilience in emerging networks

in cooperation with D. Hutchison

QofIS 2004 - Fifth International Workshop on Quality of Internet Services (QofIS'04) - "Emerging Networking, Experiments and Technologies", Barcelona, Catalunya, Spain, 29-30 September, 2004

QoS, a change of perspective?

Panel "Would Self-Organized or Self-Managed Networks Lead to Improved QoS?" Thirteenth International Workshop on Quality of Service (IWQOS), June 21-23, 2005, University of Passau, Germany

A highly biased, politically incorrect analysis of content-centrism

Panel "From Network Centric Past to Content Centric Future"

1st International Conference on Future Networking Technologies CoNext 2005, October 24-27, 2005, Tolouse, France