

Curriculum Vitae of Michele Flammini

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1. Biographical notes

Michele Flammini was born in L'Aquila (Italy) on 8th March 1967

Education

- 1990: Laurea cum Laude in Computer Science – University of L'Aquila (18th December 1990)
- 1995: PhD degree in Computer Science – University of Rome "La Sapienza" (24th October 1995)

Appointments

- 1995: Postdoc at Computer and Systems Science Dept. - University of Rome "La Sapienza" (1 year, CNR fellowship)
- 1st Mar 1996 – 31st Oct 2000: Assistant Professor in Computer Science - University of L'Aquila
- 1st Nov 2000 – 28th Feb 2005: Associate Professor in Computer Science - University of L'Aquila
- 1st Mar 2005 – 5th Aug 2016: Full Professor in Computer Science - University of L'Aquila
- 6th Aug 2016 – 30th Sep 2019: Full Professor in Computer Science on leave from the University of L'Aquila – Gran Sasso Science Institute, L'Aquila
- From 1st Oct 2019: Full Professor in Computer Science - Gran Sasso Science Institute, L'Aquila

Academic roles

- 18th Mar 2005 – 12th Feb 2008 and 13th Feb 2013 – 21st Mar 2016: Director of PhD studies in Computer Science - University of L'Aquila
- 1st Nov 2007 – 31st Oct 2012: Director of studies for Computer Science Bachelor and Master Degrees Curricula - University of L'Aquila
- 21st Feb 2011 – 13th Jun 2018: Founder and Director international double degree Master in Computer Science UBIDIS (UBIquitus computing and DIstributed Systems), University of L'Aquila and University of Nice (FR)
- 11th Dec 2012 – 17th May 2018: Chairman of the Research Committee of the Dept. Information Engineering, Computer Science and Mathematics - University of L'Aquila
- 1st Nov 2015 – 5th Aug 2016: Vice-Director of the Dept. Information Engineering, Computer Science and Mathematics - University of L'Aquila

- 6th Aug 2016 – 10th Oct 2018 and from 26th Sep 2019: Member of the Academic Senate of the Gran Sasso Science Institute of L'Aquila
- 1st Jun 2017 – 10th Oct 2018 and from 26th Sep 2019: Director Computer Science Area - Gran Sasso Science Institute of L'Aquila
- 1st Jun 2017 – 28th Feb 2018 and from 1st Mar 2020: Director PhD studies in Computer Science - Gran Sasso Science Institute of L'Aquila
- 1st Mar 2015 – 31st October 2019: Responsible of the University of L'Aquila section of the CINI lab on Big Data
- From 26th Nov 2017: Member national management board of the CINI lab on Big Data

Member of several committees for the recruitment of professors, researchers and technical/administrative staff, for the assignment of doctoral and post-doctoral grants, and of other institutional academic committees.

Visits

- Jan 1993 and Jan 1994 - Jun 1994: Univ. Columbia and IBM T.J.Watson of Yorktown Heights (New York)
- Jan-Mar 1995 and Mar 1996: CNRS / Univ.Nice Sophia Antipolis (FR);
- 1st Sep 1996 – 31st Aug 1997: INRIA/CNRS/Univ.Nice Sophia Antipolis (FR) - postdoc TMR grant of CE
- 1st Oct 2013 – 30th Sep 2014: sabbatical leave at Gran Sasso Science Institute of L'Aquila

2. Research activity

The research activity of Michele Flammini has focused on the analysis and design of efficient algorithms, covering the main aspects of computational complexity: polynomial time algorithms, intractability, approximate algorithms, online algorithms, and distributed algorithms, with special concern to optimization of resources in distributed systems, networks and mobile computing.

More recently the research activity has considered also fundamental topics motivated by the decentralization and presence of autonomous agents in emerging computational models and distributed systems, with emphasis on approaches to distributed algorithms based on game theory, on algorithmic aspects of the internet and of social and complex networks, and more in general on algorithmic game theory.

Even if the main research area concerns algorithms for distributed systems and networks, it has impact in other fields, such as game theory, economics and artificial intelligence.

2.1 Publications

The research activity has been performed also in collaboration with the highest reputed scientists in the corresponding fields and with several prestigious national and international research centers, with which active collaborations are currently maintained. It has globally given rise to more than 160 papers with about 80 different coauthors from many different countries.

We now briefly review the main related results.

Compact routing

Among the specific investigated research areas, a significant role has been played by the study of communication problems in interconnection networks. In this setting, some of the most significant contributions concerned compact routing models. The achieved results are among the most relevant ones in the area and have been obtained also in collaboration with the most reputed researchers in the field, starting from the creators of the fundamental model, the Interval Routing. The most significant results have emphasized the intrinsic limitations of such a model [J2,J3,J5], led to the definition of more powerful models, like Boolean [J4], Multi-dimensional Interval [J6] and Compact-Port Routing [J12], and defined new proof techniques, like the matrix representation of shortest paths [J5], that have been used by many authors for further improvements and have strongly influenced the research directions pursued in the area.

Other results in this setting concerned Interval Routing Schemes preventing deadlock [J9], inducing a low congestion [J11], and representing all shortest paths [J14].

Information dissemination in networks

In this area the goal is the design of efficient primitives for the dissemination of information among the nodes of a networks, like broadcasting (one-to-all) and gossiping (all-to-all). Along this line, innovative proof techniques have been introduced that resort on matrices and eigenvalues and have allowed the determination of the first general lower bounds on the gossiping time of systolic protocols [J21], and subsequently of improved lower bounds for several networks with fixed topology [J19]. By means of probabilistic methods, upper bounds have been determined that match the achieved lower bounds and the classical lower bounds known in the area for broadcasting [J15], whose optimality was the fundamental open question in the field since ten years.

Wireless networks

Another area in which significant results have been obtained is the assignment of transmission ranges in wireless networks for the implementation of broadcasting primitives with minimum power consumption [J27,J29,J33,J53]. Among the various contributions, we recall the best approximation algorithm in the area [J53], that reduces of an exponential factor the approximation ratio of the MST heuristic, that is of the algorithm previously having the best guaranteed (approximation) performances. Nevertheless the efforts of many researchers in the area, its improvement was an open problem since almost ten years.

Other results in the area concerned the determination of virtual path layouts for wireless ATM networks [J22,J37] and cost-sharing mechanisms for the power consumption [J28,J31] as further detailed below.

Optical networks

The research activity has mainly focused on the reduction of the hardware costs in terms of number of used expensive devices, such as ADMs (Add-Drop Multiplexer), OADM (Optical Add-Drop Multiplexer), and regenerators, that can be properly shared by lightpaths [J30,J36,J38,J43,J48]. This especially holds under the grooming feature, that allows the allocation of several concurrent communications on the same wavelength [J34,J35,J50,J56]. Besides the specific results, the merit of this line of research has been that of providing the first clean theoretical frameworks able to detect and isolate the components most responsible of the hardware costs and to formalize the problem of their minimization. Such models have in turn attracted considerable research attention by the corresponding scientific community and stimulated considerable further research.

Other results concerned the problem of minimizing the number of wavelengths using simpler and cheaper routers capable of routing bands or wavelength ranges, instead of single lengths, showing that a substantial decrease in complexity and hardware costs in several cases involves only a small increase in the number of wavelengths [J23].

Finally, other results concerned the determination of nearly matching upper and lower bounds on the communication time of suitable routing protocols [J8], demonstrating that the limitations imposed by all-optical switches do not significantly affect the network performance. The previously known solutions were mostly not optimal or related to particular cases.

Multi-criteria optimization

Several results concerned multi-criteria optimization problems in which a solution must be assessed simultaneously with respect to different cost measures or objectives. Relevant results here concerned the problems of computing spanning trees, shortest paths, steiner trees, and spanning arborescences of minimum cost [I81]. Besides improving previous approximation bounds, the main advantage of the proposed algorithms is their simplicity: they are as simple as classical combinatorial graph algorithms of Dijkstra and Kruskal, or the greedy algorithm for matroids. Previous algorithms in fact, although polynomial, were resulting on linear programming methods, making them impractical.

Other multi-criteria results concerned the on-line setting. Besides universal constructions for extending classical single-criterion algorithms to multiple criteria [J39], on-line algorithms with nice competitive ratios have been proposed for the k-server [J24,J25] and the multi-processor scheduling problems [J20,J26] under different assumptions, that is comparing the performance with the best independent optimal solutions for the different objectives, or with the Pareto optimal solutions.

Up to our knowledge, these have been the first multi-criteria studies in the competitive analysis of online algorithms.

Algorithmic game theory and non-cooperative systems

More recently the research activity focused on the study of non-cooperative systems, resorting on methodologies and tools both algorithmic and coming from game theory and micro-economics, with the objective of modeling, analyzing and evaluating the impact of the autonomic, uncoordinated and non-cooperative users behaviour on the network performance and resources utilization.

The research has focused on frameworks that model the share of the costs in the fruition of network services [J28,J31,J41,J42], the network creation and positioning of facilities [J44,J58,J62], social networks and coalition formation [J63,I77,I78,I79,I82,I84], markets [J61,J64,I86,I87], fair allocation of resources [I88], and so forth. Particular attention has been devoted to social influence in games, that is to the effect on the system performance of the agents' social relationships [J40,J46,J54,J64,I86].

From a methodological point of view, the research has concerned the characterization of equilibria solutions in terms of existence, computability (efficient determination or NP- and PLS-hardness), performance (prices of anarchy and stability) and speed of convergence (length of dynamics and performance after a limited number of steps). Besides Nash, several notions of stability have been considered, such as approximate Nash [I76], Stackelberg [J55], Pareto [I77,I79], Subgame Perfect Equilibria [J58,J59], Walrasian or envy-freeness [J60,J61,J64,I86,I87], and newly defined equilibria notions that represent less myopic forms of selfish behavior with respect to Nash, where agents look at the effect of their choices in the long run [J49]. In addition, truthful mechanisms with optimal or nearly optimal approximation ratios have been proposed in different cases [J28,I82]. Finally, several results relate game dynamics with classical online and distributed algorithms for handling the same frameworks under a non-strategic optimization setting, promoting an approach to the development of such algorithms inspired by game theory [J36,J42,J45,J47,J52,I84].

In the following we are going to describe in more detail a non-exhaustive list of settings in which relevant contributions have been obtained.

Fair cost-sharing mechanisms in networks

Among the obtained contributions in this setting we recall the investigation of the social performances achieved at (Nash) equilibrium by network broadcasting primitives under the classical Shapley cost sharing method. In particular, in [J57,I71] it was provided the first constant upper bound on the price of stability, that is on the ratio between the performance of the best Nash equilibrium and the one of the social optimal solution, which was one of the most important open problems in the area since about ten years. In addition, besides the further study of approximate Nash equilibria and of other fundamental cost sharing methods, other results concerned the investigation of fair cost sharing methods for the

power consumption in wireless networks [J31], and the determination of truthful mechanisms with nice approximation ratios under a mechanism design point of view [J28].

Social influence in non-cooperative networks

Further research directions in the non-cooperative setting have established a bridge between non-cooperative systems and social networks, thanks to the investigation of the performances arising from a partial social knowledge among the agents, modeled by means of social networks. The arising results on the so-called graphical congestion games [J40,J46] have determined the impact of social influence on the system performances and have stimulated further research by other authors also in wireless networks, where social relationships corresponds to physical proximity of transmitting agents. Further results along this line concerned related classes of games, like social context games [J54], and other settings mentioned below.

Social influence in markets and fair allocation of resources

Suitable relaxations of envy-freeness arising from the social knowledge of the buyers have been considered and investigated also in pricing problems in multi-unit markets, where buyers are assigned bundles at given prices in such a way that none of them envies the bundles assigned to her neighbors in the social graph [J64]. Optimal or nearly optimal hardness and approximation results have been provided both for social welfare and seller's revenue maximization.

Sociality in multi-unit markets has been considered also for the purpose of providing suitable models for fair price discrimination, that is to define ways that buyer can perceive as fair for assigning different prices to different buyers for the same goods [I86]. Namely, each buyer cannot be asked a price which is higher than the one proposed to her neighbors in the social graph. This allows to represent in a modified framework most of the price discrimination scenarios typically occurring in markets. Optimal or nearly optimal hardness and approximation results have been provided both for social welfare and seller's revenue maximization also in this case.

All the above results have provided a significant contribution to the state-of-art of the hot topic of social influence in markets.

Other results on markets concerned the problem of preselecting buyers to be admitted in the market so as to maximize the induced seller's revenue [J61,I87].

Another related line of research has concerned the fair allocation of indivisible goods. In this respect, we solved important open questions concerning the existence and efficient determination of solutions that satisfy suitable relaxations of the fairness criteria, like envy-freeness up to one good, when items are arranged along a line and only bundles consisting in segments can be assigned [I88].

Spontaneous coalition formation

Finally, recent attention has been paid to coalition forming games, in which players are individuals of a social network and split spontaneously in groups or coalitions according to utility measures depending on their centrality or closeness of opinions. Several interesting results have been determined concerning the determination of equilibria solutions and their global performance, both with respect to relevant classes of games, like Hedonic, Fractional Hedonic and Social Distance games, and to different stability notions, such as Nash and Pareto optimality [J63,I77,I78,I79,I84]. Moreover, truthful mechanisms with optimal or nearly optimal approximation ratios have been proposed for the setting in which groups or coalitions must be determined according to the agents' declarations about their preferences [I82]. All these results have significantly contributed to the current knowledge on these games under a non-cooperative setting. In fact, previous works mainly concentrated on more cooperative equilibria notions, like the core, traditionally investigated in artificial intelligence.

Miscellaneous

Other contributions that we like to remember concerned social networks under the classical Small World model of Kleinberg, and in particular the problem of determining constructions with an asymptotically

optimal diameter. In particular, the first general lower bound was provided holding for any monotone distance distribution [J32], that is induced by a monotone generating function of the distance, and then corresponding asymptotically optimal deterministic constructions, that is with a logarithmic diameter, for paths, trees and Cartesian products of graphs, including multi-dimensional grids.

Other results not mentioned above concerned the determination of optimal virtual path layouts in ATM networks [J7,J13], deadlock-free routing [J18], IP routing [J51], other network games like coloring games [I80], wavelengths minimization in non-cooperative optical networks [I35], envy-free scheduling [J60], information retrieval [I65,I66], machine learning [J1,I1] and other optimization problems [J10,J16].

2.2 Training of PhD students

Besides being the Director of the PhD studies in Computer Science for about 7 years, from 2002 to 2014 Michele Flammini has been member of the Faculty Board (Collegio dei Docenti) of the PhD in Computer Science of the University of L'Aquila, and since 2014 of the one of GSSI. Along the years, he has been the supervisor of 15 PhD students in Computer Science (1 at Univ. "La Sapienza", 11 at Univ. L'Aquila, 3 at GSSI), some of which received prestigious awards by the European Association for Theoretical Computer Science (EATCS) for their thesis and early research work. All the ones who already completed their PhD program are having succesful or leading positions in public institutions or private companies. Among the former students that opted for an academic or research career we recall:

- Luca Moscardelli:
 - EATCS Award best Italian PhD thesis on theoretical computer science years 2007-2008-2009
 - EATCS Award best Italian young researcher in theoretical computer science in 2013
 - Associate Professor at the University of Pescara (Italy)

- Vittorio Bilò:
 - EATCS Award best Italian PhD thesis on theoretical computer science years 2004-2005
 - Associate Professor University of Salento (Lecce, Italy)

- Alfredo Navarra:
 - Associate Professor University of Perugia (Italy)
 - National abilitation for full professorship scientific sectors "01/B1 – Informatica" and "09/H1 - Sistemi di elaborazione delle informazioni"

- Angelo Fanelli: researcher at the Centre National de la Recherche Scientifique (France)

- Gianpiero Monaco:
 - Assistant professor University of L'Aquila (Italy)
 - National abilitation for associate professorship scientific sectors "01/B1 – Informatica" and "09/H1 - Sistemi di elaborazione delle informazioni"

- Giovanni Stilo: Assistant Professor (tenure-track, RTD-B) at the University of L'Aquila (Italy)

- Marco Bianchi: Researcher at the Fondazione Ugo Bordoni (Rome, Italy)

2.3 Projects coordination

- National Coordinator PRIN 2008 "Computational and Game-theoretic aspects of uncoordinated NeTworks" (144763E, 43556E – unit Univ.AQ)
- Local Coordinator PRIN 2010-2011 "Algorithmics for Social Technological Networks" (106789E - unit Univ.AQ)
- Management Committee UE COST project “GRAphs and ALgorithms in communication networks” (GRAAL), 2004-2008
- Scientific Responsible Vinci 2011 Program for the international double degree UBIDIS Master in Computer Science, University of L'Aquila and Nice-Sophia Antipolis (FR), unique scientific degree awarded by the Italian-French University in the funding program Vinci 2011 (30000E)

2.4 Services for conferences and journals

- Editor journal GAMES, Multidisciplinary Digital Publishing Institute (MPDI), Switzerland
- Guest editor Journal of Discrete Algorithms 1(2), Special Issue SIROCCO 2000, Elsevier, 2003
- Guest editor journal Theory of Computing Systems 63(7), Special Issue SAGT 2017, Springer, 2019
- Guest editor journal Theoretical Computer Science, Special Issue SIROCCO 2019, Elsevier, to appear
- Co-chair SIROCCO 2000 (7th International Colloquium on Structural Information and Communication Complexity, L'Aquila, Italy, June 2000)
- Co-chair SAGT 2017 (10th International Symposium on Algorithmic Game Theory, L'Aquila, Italy, September 2017)
- Co-chair SIROCCO 2019 (26th International Colloquium on Structural Information and Communication Complexity, L'Aquila, Italy, July 2019)
- Vice-chair EUROPAR 2002 (8th International Euro-Par Conference, Paderborn, Germany, August 2002), Topic "Routing and Communication in Interconnection Networks"
- Senior Program Committee member of: AAI 2020, AAMAS 2020, ECAI 2020.
- Program committees: SIROCCO 1999, FUN 2001, SIROCCO 2004, WINE 2005, ADHOC-NOW 2007, ISPA 2007, IPDPS 2009. ICALP 2009, SAGT 2009, WINE 2009, ICALP 2010, STACS 2011, SEA 2012, SAGT 2012, ICALP 2013, ICTCS 2014, IPDPS 2015, ICTCS 2016, IPDPS 2017, EC 2017, FUN 2018, EC 2018, IJCAI 2018, SAGT 2018, ICTCS 2018, AAI 2019, AAMAS 2019, SOFSEM 2019, SAGT 2019, IJCAI 2019, IJCAI 2020, ICTCS 2020
- Regular review activity for international journals and conferences

3. Teaching activity

Phd degree

Gran Sasso Science Institute of L'Aquila:

- from 2013-2014 to 2019-2020: “Algorithm Design” (about 16 hours per year)
- from 2013-2014 to 2019-2020: “Algorithmic Game Theory” (about 14 hours per year)

Bachelor and Master degrees

University of Rome "La Sapienza":

- 1995-1996: temporary professor of “Fondamenti di Informatica” – Diploma Degree in Eng. Environment and Resources, Univ. “La Sapienza”

University of L'Aquila:

- from 1999-2000 to 2012-2013, and 2014-2015: "Algoritmi e Strutture Dati 2" (Master in Computer Science)
- from 2005-2006 to 2012-2013, and 2014-2015: "Architetture degli Elaboratori" (Bachelor in Computer Science)
- 2015-2016: “Web Algorithms” (Master in Computer Science)
- 2015-2016: “Teoria della Calcolabilità e Complessità” (Bachelor in Computer Science)
- from 2005-2006 to 2010-2011: "Web Mining" (Master in Web Technology)
- from 2008-2009 to 2010-2011, and 2012-2013: "Search Engine Optimization" (Master in Web Technology)
- 2000-2001 and 2001-2002: "Informatica Generale" and "Lab.Informatica" (Degree in Mathematics)
- from 2001-2002 to 2004-2005: "Laboratorio Calcolatori 1" (Degree in Physics).

He has supervised 116 bachelor and master degree thesis.

4. Other roles, funds and collaborations

25th Oct 2013 - 31st Dec 2016 and from 1st Jul 2018: research associate of INFN (National Institute for Nuclear Physics), with current active research collaboration under the DARKSIDE experiment concerning the universe dark matter.

Member of the advisory board “Cabina di Regia per L’Aquila Smart City” of the Municipality of L’Aquila for smart city initiatives and services, nominated by the Major of L’Aquila on 1st March 2018.

Co-founder on 10th June 2016 of the innovative startup company Gunpowder S.r.L., focusing on innovative solutions in cloud computing, big data, data analysis e iot. The company has been recognized as academic spin-off of the University of L'Aquila on 25th October 2017 and as spin-off of the Gran sasso Science Institute in May 2020. It has signed a contract with the University of L’Aquila of 50000E for funding applied research and research grants, and is currently employing more than 50 people. Most of them are students or former students of the University of L’Aquila, to whom the company has offered permanent positions. The spin-off is also offering to students, former students and other collaborators stages, grants and temporary contracts.

Scientific responsible of the following contracts or agreements jointly signed by the University of L’Aquila:

- NETA S.p.A. company for research collaboration (15000E plus lab of 11 PCs, 2002-2005 and 2005-2008)
- COMIFAR SERVICE S.p.A. company for research collaboration (6000E, 2006-2008)
- “Commissario delegato alla Ricostruzione – Presidente Regione Abruzzo” of Abruzzo Region and Azienda Mobilità Aquilana S.p.A, for the definition of the local public transportation service of L’Aquila after the 2009 earthquake (19500E, 2011)
- Azienda Mobilità Aquilana S.p.A., for the design of web and mobile applications for the urban public transports of L'Aquila (10890E, 2012)

- project RIDITT BUSONAIR - Program of the Ministry of Economic Development, for the design of innovative infrastructures for public transport services (10000E, 2012)
- project BUSONAIR “Fondazione Cassa Risparmio” of L’Aquila for the design of innovative smart city services for infomobility and public transportation (5000E, 2014)
- Abruzzo Region, agreement under the European project “EA SEA WAY” of the IPA Adriatic transboundary cooperation program, for the design of an innovative web and mobile platform for tourism (39000E, 2015)
- Regional Agency for Informatics of Abruzzo Region, for research collaboration (ARIT) (2015)

Scientific responsible of the following contracts or agreements at the Gran Sasso Science Institute:

- Municipality of L’Aquila for the design of an integrated web and mobile platform for smart city services (95000E, 2018)

Michele Flammini maintains active collaborations with several local public organizations and companies. A non exhaustive list includes Municipality of L’Aquila, Abruzzo Region, Protezione Civile, Abruzzo’s national parks, Istituto Zooprofilattico Sperimentale of Teramo, Thales Alenia Space, LFoundry, ...

5. Awards and Honors

In 2020 he has been awarded as one of the best senior program committee members of AAI-20 and of AAMAS-20, two of the most relevant international conferences in Artificial Intelligence.

Two of his former PhD students, V.Bilò e L.Moscardelli, have presented thesis on algorithmic game theoretical issues in non cooperative communication networks, that have been awarded by the European Association for Theoretical Computer Science (EATCS) as the best Italian PhD thesis on theoretical computer science discussed in the years 2004-2005 and 2007-2008-2009, respectively. L.Moscardelli has also been awarded by EATCS as the best Italian young researcher in theoretical computer science in 2013.

The International Master in Computer Science UBIDIS at the University of L’Aquila, of which he is founder and director, has been the unique scientific degree awarded by the Italian-French University in the funding program Vinci 2011.

6. Key strengths

Strong scientific profile:

- High number of publications (more than 160 papers) in the most prestigious international journals and conferences, and on a broad spectrum of covered topics, from communication networks to Algorithmic Game Theory
- Considerable involvement in the scientific community, as witnessed by the high number of coauthors (about 80), the consolidated collaborations with the most prestigious research centers and scientists, the chairing of top-level conferences and the membership of their program committees (14 only in the last 2 years)

Significative experience in PhD programs:

- Direction of PhD programs for about 7 years and member of Faculty Boards for about 17 years
- Supervision in three different PhD programs of a high number of students who received prestigious awards for their early research work and/or are having successful academic, research and professional careers
- High number of papers co-authored only with students and former students
- Regular teaching activity of PhD courses every academic year since 2013-2014

Established experience in academic roles and duties:

- Direction of bachelor and master degree programs for 5 years
- Direction of PhD programs for about 7 years
- Founder and Director an international double degree master for more than 7 years
- Director of scientific area and Vice-Director of university department
- Academic Senate member
- Participation to many recruiting committees
- Participation to many committees and duties for institutional academic purposes

Strong connection with public and private organizations in Abruzzo:

- Scientific responsible of several local collaboration agreements and contracts
- Member of the advisory board (Cabina di Regia) of the Municipality of L'Aquila for smart city initiatives

Strong attitude also to technological transfer and applied research:

- Founder of a spin-off hiring several students and former students and financing research and grants to the University of L'Aquila
- Principal investigator of several projects and non-academic agreements related to innovation and technology transfer

7. Publications

International Journals

[J1] M.Flammini: "On the Learnability of monotone km-DNF Formulae under Product Distributions", *Information Processing Letters*, 52(3):167-173, DOI 10.1016/0020-0190(94)00138-3, Elsevier, Amsterdam, The Netherlands, 1994.

[J2] M.Flammini, G.Gambosi, S.Salomone: "Interval Routing Schemes", *Algorithmica*, 16(6):549-568, DOI 10.1007/BF01944351, Springer-Verlag, New York, USA, New York, USA, 1996.

[J3] M.Flammini: "On the Hardness of Devising Interval Routing Schemes", *Parallel Processing Letters*, 7(1):39-47, DOI 10.1142/S0129626497000061, World Scientific, River Edge, New Jersey, USA, 1997.

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- [J12] S.Cicerone, G.Di Stefano, M.Flammini: "Compact-Port Routing Models and Applications to Distance-Hereditary Graphs", *Journal of Parallel and Distributed Computing*, 61(10):1472-1488, DOI 10.1006/jpdc.2001.1728, Elsevier, Amsterdam, The Netherlands, 2001.
- [J13] M.Flammini, E.Nardelli, G.Proietti: "ATM Layouts with Bounded Hop Count and Congestion", *Distributed Computing*, 14(2):65-73, DOI 10.1007/PL00008929, Springer-Verlag, New York, USA, 2001.
- [J14] M.Flammini, G.Gambosi, U.Nanni, R.B.Tan: "Characterization Results of All Shortest Paths Interval Routing Schemes", *Networks*, 37(4):225-232, DOI 10.1002/net.1017, Wiley, New York, USA, 2001.
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