

## Anastasios Giovanidis, Dr.-Ing., HDR

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CONTACT INFORMATION	Scientific Researcher <a href="#">CNRS CR CN</a> Sorbonne Université, Lab <a href="#">LIP6</a> 4 place Jussieu 75252 Paris Cedex 05 FRANCE	Date of birth: 20.08.1982  <a href="mailto:anastasios.giovanidis@lip6.fr">anastasios.giovanidis@lip6.fr</a> <i>WWW:</i> <a href="http://anastasiosgiovanidis.net">anastasiosgiovanidis.net</a>
RESEARCH AREAS (TO DATE)	<b>Networks: Data Analysis, Performance Evaluation and Optimisation</b> applications in: 5G wireless networks, internet, social platforms, recommender systems	
SKILLS	Strong analytical skills (with publications) in: <ul style="list-style-type: none"><li>• Optimisation (mixed-integer, convex, non-convex, decompositions)</li><li>• Probability (large Markov chains, queuing theory, stochastic geometry)</li><li>• Markov Decision Processes and Q-Learning</li><li>• Machine learning (supervised and unsupervised).</li></ul> Programming languages: Python, MATLAB.	
5G-SPECIFIC EXPERTISE WITH PUBLICATIONS	<ul style="list-style-type: none"><li>• Automatic Retransmission reQuest (ARQ) protocols for URLLC</li><li>• Cloud-RAN architectures and cooperative transmission</li><li>• Wireless edge caching</li><li>• Random Access, CSMA, OFDMA resource allocation</li><li>• Device-to-device communications, mobility, MANETs</li><li>• Load balancing algorithms and Handover mechanisms</li><li>• Self-X (Organisation, Control, Healing)</li></ul>	
LANGUAGES	Greek (native), English (fluent), German (fluent), French (fluent).	

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APPOINTMENTS	<ul style="list-style-type: none"><li>• <b>CNRS Chargé de Recherche CR1 (now CN)</b> [10/2017 - today]<ul style="list-style-type: none"><li>- UMR 7606 <a href="#">CNRS-LIP6</a>, Sorbonne UPMC, Paris, France.</li><li>- Department "Networks and Systems", Team NPA.</li></ul></li><li>• <b>CNRS Chargé de Recherche CR2 (now CN)</b> [10/2013 - 09/2017]<ul style="list-style-type: none"><li>- UMR 5141 CNRS-LTCI, Télécom ParisTech, Paris, France.</li></ul></li><li>• <b>Postdoctoral Researcher</b> on stochastic modeling [09/2011 - 08/2013] INRIA/ENS Paris - <a href="#">DYOGENE</a> (ex TREC), Paris, France. (Host: Francois Baccelli)</li><li>• <b>Postdoctoral Researcher</b> on discrete optimisation [04/2010 - 08/2011] <a href="#">Zuse Institute Berlin (ZIB)</a> and TU Berlin, Germany. (Host: Martin Grötschel)</li></ul>
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## EDUCATION

- **Habilitation (HDR)** Sorbonne University [defence date 04/12/2020]  
Title: “Contents through Networks: wireless access, caching, social diffusion”.  
Jury: M. Debbah, J. Kurose, E. Leonardi, F. Baccelli, S. Fdida, E. Jorswieck, L. Muscariello, T. Spyropoulos. Link: [\[HDR research report\]](#)
  - **Dr.-Ing.**, [TU Berlin - CommIT](#), Germany [09/2005 - 04/2010]  
Title: *Modeling and Analysis of Wireless Communications Systems using Automatic Retransmission reQuest (ARQ) Protocols*  
- Advisors: (1) Holger Boche - TU München, (2) Sławomir Stańczak - TU Berlin
  - **Dipl.-Eng.**, [National TU Athens](#), Greece [09/2000 - 07/2005]  
[Electrical and Computer Engineering](#) - Area: Wireless networks, Control theory
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## OTHER PROFESSIONAL EXPERIENCE

- **Research Associate** [09/2005 - 04/2010]  
[Fraunhofer Heinrich Hertz Institute HHI](#), Berlin, Germany  
- Activities: Contributions in R&D projects mostly on cellular networks between academia and the industry with: Samsung, Nokia, Siemens, Alcatel-Lucent)
- **Practical Training** [06/2004 - 09/2004]  
[Fraunhofer FGAN Institute](#), Bonn, Germany  
Activities: Practical Training on Radar Signal Processing

## SCIENTIFIC PUBLICATIONS

- 3 books and bookchapters
- 4 submitted Journal/Conference papers (under review)
- 7 peer-reviewed Journal papers
- 24 peer-reviewed Conference/Workshop papers, w. Proceedings
- 2 Conference papers, w/o. Proceedings (abstract only)
- 1 Patent
- 3 Unpublished Reports

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## Academic Responsibilities

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## STUDENTS

### PhDs: (co-supervision)

- *Effrosyni Papanastasiou* - Sorbonne University, begin Oct. 2020.  
Subject: *Temporal Prediction and Control of User Behaviour in a Social Platform*.
- *Ricardo José Lopez Dawn* - Sorbonne University, begin Feb. 2020.  
Subject: *Modeling dynamic post diffusion in realistic online social platforms*.
- *Theodoros Giannakas* - EURECOM (directed by Th. Spyropoulos, 2017 - 2020).  
Subject: *Joint Optimization of Content Caching and Recommendation for Mobile Edge Systems*.
- *Jonatan Krolkowski* - Université Paris-Saclay (co-supervised by Marco Di Renzo, from CNRS-L2S & Centrale SUPELEC, 2015 - 2018).  
Subject: *Optimal Content Management and Dimensioning in Wireless Networks*.
- *Luis David Alvarez-Corrales* - Télécom ParisTech (co-sup. Philippe Martins from Télécom ParisTech, 2014 - 2017).  
Subject: *Cooperative Communications in Very Large Cellular Networks*.
- *Chedia Jarray* - University of Gabes, Tunisia (Visitor in 2015)  
Subject: *Caching and Association in Device-to-Device (D2D) Networks*.

**Diploma/Master/Bachelor:** 7 students 2009-2019 (Sorbonne, ParisTech, TU Berlin)

## FUNDING

- 2020-2024 ANR Young Researcher (JCJC) project (266 KEuro).  
Topic: "Engineering Fair Online Social Platforms (FairEngine)". - In this project mathematical models and algorithms for social platforms (like Facebook and Twitter) are developed. These incorporate realistic aspects of the platform structure (Walls, Feeds), and realistic user behaviour (Likes, Shares).
- 2018-2019 LIP6 Projets 2019 – Student project (8.3 KEuro).  
Topic: "How can the frequency of Newsfeed posts improve influence in a social network?" Duration: 6 + 6 months.
- 2015-2018 Digiteo-Digicosme – Projet de Thèse (104 KEuro).  
Topic: "Optimal Content Management and Dimensioning in Wireless Networks (CONTAIN)".
- 2015 CNRS JCJC INS2I – Operational Costs (6 KEuro).  
Topic: "Adding Memory and Managing Content in Wireless Networks".
- 2014-2017 Fondation Télécom – Thèses Futur & Ruptures (108 KEuro).  
Topic: "Cooperative Communications in Very Large Cellular Networks".

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## TEACHING COURSES

- *Data Analysis for Networks* ([GitHub link](#))  
- Master 2 on Networks, Sorbonne University (NDA: **2019 - 2021**) Content (28h course, 28h lab): Intro to Probability and Statistics, Bayes, Estimation, Regression, Classification, Regularisation, Tree-based Methods, Clustering, Anomaly Detection, Principal Components Analysis, Time-series.

- *Optimisation (with elements of Numerical Analysis)*  
- Master 1, Telecom ParisTech, responsible Prof. Olivier Hudry, (MDI210: **2016 - 2019**) Content: Intro to Algebra, Eigenvalues, SVD, Solution of linear systems: Gauss, LU, Choleski, Iterative methods for eigenvalues, Linear Programming, Duality, Simplex Algorithm, Non-linear optimisation without constraints, Non-linear optimisation with constraints, Convex Programming, KKT conditions.
- *Queuing and Network Performance*  
- Master 1, Telecom ParisTech, RES711: responsible Thomas Bonald (**2012 - 2015**), and Marceau Coupechoux (**2015 - 2017**) Content: Intro to Probability, Poisson and Exponential processes, Markov Chains discrete and continuous, Queues with one, many, infinite servers, Erlang-B, -C.
- *Wireless Access and Scheduling*  
- Master 2, Telecom ParisTech, (SOCOM207 & RES222: **2013 - 2020**) Content: Random Access Protocols, ALOHA, CSMA/CA, CSMA/CD, Multiple Access OFDMA, Waterfilling.
- *Introduction to Telecommunication Networks*  
- Master 1, UPMC, (UE RTEL (4I002) and UE CELL (5I050): **2016 - 2017**) Content: Basic Principles of Network coding and applications (butterfly network, throughput improvement and TCP error correction, Advanced modelling of cellular networks using Stochastic Geometry)

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### Professional Activity

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PHD THESIS  
COMMITTEE

- Hernan Felipe Arrano Scharager (Paris-Saclay, Jan. 2020), Dalia-Georgiana Popescu (Paris-Saclay, Nov. 2018), Tu Lam Thanh (Paris-Saclay, Jun. 2018), Qi Liao (TU Berlin, Nov. 2016)

EDITOR

- Elsevier Computer Communications (COMCOM), 2020.
- EURASIP Journal on Wireless Communications and Networking, 2017-2019.

REVIEWER /  
TPC MEMBER

- IEEE/ACM Transactions on Networking, ACM TOMPECS, IEEE Transactions on Mobile Computing, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications

#### TPC Member

- INFOCOM'2021, '2020, '2019 [**distinguished reviewer**], '2018, WWW'2019, Valuetools'2019, GLOBECOM'2017, ICC'2017, '2016, WIOPT'2017, '2016, '2015.

PROGRAM  
COMMITTEE

#### Chair

- GAMENETS'19 - Game Theory for Networks, Paris, France (GENERAL Co-chair)
- 15th International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WIOPT), Paris, France (GENERAL Co-chair), 2017

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## Publications

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### BOOKS AND BOOKCHAPTERS

1. “Randomised Geographic Caching and its Applications in Wireless Networks”  
**A. Giovanidis** and B. Blaszczyszyn  
*Chapter in IET book “Edge Caching for Mobile Networks”, Editors: Vincent Poor and Wei Chen, to be published in 2021.*
2. “Contents through Networks: wireless access, caching, social diffusion”  
**A. Giovanidis.**  
*Habilitation to supervise research Thesis [HDR] – defended 04 December 2020.*
3. “Game Theory for Networks”.  
K. Avrachenkov, L. Huang, J.R. Marden, M. Coupechoux, **A. Giovanidis.**  
*Proceedings of the 8<sup>th</sup> International EAI Conference, GameNets 2019, Paris, France, April 25-26, 2019*
4. “ARQ protocols in wireless communications: modeling, analysis and optimization”. **A. Giovanidis.**  
*SVH Verlag, ISBN 978-3-8381-2055-3. (from my Dr.-Ing. Thesis) (2010)*

### PATENTS

1. “Method and apparatus for positioning pilot in an OFDMA mobile communication system”.  
US Patent No: 7,869,341.  
SAMSUNG ELECTRONICS CO., LTD.  
Yeon-Ju Lim, Jae-Chon Yu, Hwan-Joon Kwon, Dong-Hee Kim, Yu-Chul Kim, Jin-Kyu Han, Stefan Schiffermuller, Sezgin Aydin, **Giovanidis Anastasios**

### UNDER REVIEW / IN PREPARATION

1. “Ranking online social users by their influence”  
**A. Giovanidis**, B. Baynat, C. Magnien, and A. Vendeville.  
(submitted 2020) *IEEE/ACM Trans. on Networking*  
HAL Pre-print: [\[under Major Revisions\]](#).
2. “MDP-based network friendly recommendations”  
Th. Giannakas, **A. Giovanidis**, Th. Spyropoulos.  
(submitted 2020) Secure link: [\[under review\]](#).
3. “Fairness in Network-Friendly Recommendations”  
Th. Giannakas, P. Sermpezis, **A. Giovanidis**, Th. Spyropoulos, G. Arvanitakis.  
(submitted 2020, under review)
4. “Hyperbolic K-means for traffic-aware clustering in virtualized RAN”  
H. Djeddal, L. Touzari, **A. Giovanidis**, S. Secci. (submitted 2021)
5. “Budgeted Portfolio Optimization in a Social Influencer Market”  
R.J. Lopez-Dawn and **A. Giovanidis.** (in preparation)
6. “Bayesian Inference of a Twitter Graph with Trace Feasibility Guarantees”  
Ef. Papanastasiou and **A. Giovanidis.** (in preparation)

1. “A Decomposition Framework for Optimal Edge-Cache Leasing”.  
J. Krolikowski, **A. Giovanidis**, M. Di Renzo.  
*IEEE Journal on Selected Areas in Communications*, vol.36, no.6, pp.1345–1359.  
DOI: 10.1109/JSAC.2018.2844986 (2018).
2. “Successful file transmission in mobile D2D networks with caches”.  
Ch. Jarray, **A. Giovanidis**.  
*Elsevier Computer Networks* vol. 147, pp. 162-179,  
DOI: 10.1016/j.comnet.2018.10.009 (2018).
3. “Spatial multi-LRU Caching for Wireless Networks with Coverage Overlaps”.  
**A. Giovanidis** and A. Avranas.  
*ACM SIGMETRICS Performance Evaluation Review*. Vol.44, iss.1, pp.403–405.  
DOI: 10.1145/2964791.2901483 (2016)
4. “A Stochastic Geometry Framework for Analyzing Pairwise-Cooperative Cellular Networks”.  
F. Baccelli and **A. Giovanidis**.  
*IEEE Trans. on Wireless Communications*, vol.14, no.2, pp.794-808.  
DOI: 10.1109/TWC.2014.2360196, Feb. (2015)
5. “Measurement-Adaptive Cellular Random Access Protocols”.  
**A. Giovanidis**, Q. Liao, and S. Stańczak.  
*Springer Wireless Networks*.  
DOI 10.1007/s11276-014-0689-y. Dec. (2013).
6. “Stability and Distributed Power Control in MANETs with per Hop Retransmissions”.  
**A. Giovanidis** and S. Stańczak.  
*IEEE Trans. on Communications*. Vol. 59, Iss: 6, pp. 1632-1643, June (2011).  
DOI: 10.1109/TCOMM.2011.042111.090486
7. “Optimal Control of a Single Queue with Retransmissions: Delay–Dropping Trade-offs”.  
**A. Giovanidis**, G. Wunder, and J. Bühler.  
*IEEE Trans. on Wireless Communications*. Vol. 8, no. 7, pp. 3736-3746.  
DOI: 10.1109/TWC.2009.080959 (July 2009)

1. “SOBA: Session optimal MDP-based network friendly recommendations”  
Th. Giannakas, **A. Giovanidis**, Th. Spyropoulos.  
In: *Proc. of INFOCOM 2021*, virtual conference 2021 [[Arxiv](#)].
2. “Sequential Resource Access: Theory and Algorithm”  
Lin Chen, **A. Giovanidis**, Wei Wang, Shan Lin.  
In: *Proc. of INFOCOM 2021*, virtual conference 2021 [[Arxiv](#)].
3. “Performance Analysis of Online Social Platforms”.  
**A. Giovanidis**, B. Baynat, A. Vendeville.  
In: *Proc. of INFOCOM 2019*, pp 2413-2421, Paris, France, 2019.
4. “Optimal Cache Leasing from a Mobile Network Operator to a Content Provider”.  
J. Krolikowski, **A. Giovanidis**, M. Di Renzo.  
In: *Proc. of INFOCOM 2018*, pp. 2744-2752, Honolulu, USA, 2018.

5. “Wireless Node Cooperation with Resource Availability Constraints” L. D. Alvarez-Corrales, **A. Giovanidis**, P. Martins, and L. Decreusefond  
In: *International Workshop on Spatial Stochastic Models for Wireless Networks (SPASWIN), part of the 15th WIOPT*, Paris, FRANCE, May (2017).
6. “Fair distributed user-traffic association in cache equipped cellular networks” J. Krolikowski, **A. Giovanidis**, and M. Di Renzo  
In: *International Workshop on Content Caching and Delivery in Wireless Networks (CCDWN), part of the 15th WIOPT*, Paris, FRANCE, May (2017).
7. “Coverage Gains from the Static Cooperation of Mutually Nearest Neighbours”.  
L.-D. Alvarez-Corrales, **A. Giovanidis** and P. Martins.  
In: *Proc. of GLOBECOM’16*. (2016)
8. “Performance of spatial Multi-LRU caching under traffic with temporal locality”.  
A. Avranas and **A. Giovanidis**.  
In: *International Symposium on Turbo Codes & Iterative Information Processing (ISTC), 5G Workshop*, Brest, France. (*invited*), Sept. (2016).
9. “Spatial Multi-LRU Caching for Wireless Networks with Coverage Overlaps”.  
**A. Giovanidis** and A. Avranas.  
In: *ACM SIGMETRICS/IFIP Performance*, Antibes, France.  
(Short Paper 3 pp. and arXiv extended version 14 pp.), June (2016).
10. “The Effects of Mobility on the Hit Performance of Cached D2D Networks”.  
C. Jarray and **A. Giovanidis**.  
In: *International Workshop on Spatial Stochastic Models for Wireless Networks (SPASWIN), part of the 14th WIOPT*, Arizona, USA, May (2016).
11. “Analyzing Interference from Static Cellular Cooperation using the Nearest Neighbour Model”.  
**A. Giovanidis**, L. D. Alvarez-Corrales and L. Decreusefond.  
In: *International Workshop on Spatial Stochastic Models for Wireless Networks (SPASWIN), part of the 13th WIOPT*, Mumbai, India. May (2015).
12. “Optimal Geographic Caching in Cellular Networks”.  
B. Błaszczyszyn and **A. Giovanidis**.  
In: *Proc. of the International Conference on Communications (ICC)*, London, UK. June (2015).
13. “Coverage by Base Station Cooperation under Adaptive Geometric Policies”.  
F. Baccelli and **A. Giovanidis**.  
In: *Proc. of the 47th Annual Asilomar Conference on Signals, Systems and Computers*, Monterey, USA. (*invited*). November (2013).
14. “A 0-1 program to form minimum cost clusters in the downlink of cooperating base stations”.  
**A. Giovanidis**, J. Krolikowski and S. Brück.  
In: *Proc. of the 2012 IEEE Wireless Communications and Networking Conference (WCNC)*, Paris, France. April (2012).
15. “A distributed interference-aware load balancing algorithm for LTE multi-cell networks”.  
**A. Giovanidis**, Q. Liao and S. Stańczak.  
In: *Proc. of the 16th International ITG Workshop on Smart Antennas (WSA)*, Dresden, Germany. March (2012).

16. “Conditions for the Stability of Wireless ARQ Protocols and Reliable Communications”.  
**A. Giovanidis** and S. Stańczak.  
 In: *Proc. of the 15th European Wireless Conference*, Aalborg, Denmark. May (2009).
17. “Retransmission Aware Congestion Control and Distributed Power Allocation in MANETs”.  
**A. Giovanidis** and S. Stańczak.  
 In: *5th Int. Workshop on Resource Allocation, Cooperation and Competition in Wireless Networks (RAWNET)*, part of the *7th WIOPT*, Seoul, S. Korea. June (2009).
18. “A Short-Term Throughput Measure for Communications with ARQ Protocols”.  
**A. Giovanidis**, G. Wunder, and H. Boche.  
 In: *Proc. 7th International ITG Conference on Source and Channel Coding (SCC)*, Ulm, Germany. January (2008).
19. “Optimal Control of Transmission Errors with Power Allocation and Stability in ARQ Downlink”.  
**A. Giovanidis**, G. Wunder, H. Boche, and S. Stefanov.  
 In: *Proc. 42nd Annual Conference on Information Sciences and Systems (CISS)*, Princeton, USA. March (2008).
20. “Optimal Power Allocation Policies for the Reliable Transmission of a Single Packet via ARQ Protocols”.  
 M. Wiese, **A. Giovanidis**, and G. Wunder.  
 In: *Proc. of 42nd Annual Asilomar Conf. on Signals, Systems, and Computers*, Monterey, USA. Oct. (2008).
21. “An Optimal Stopping Approach to ARQ Protocols with Variable Success Probabilities per Retransmission”.  
**A. Giovanidis**, G. Wunder, and H. Boche.  
 In: *Proc. of 45th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL USA. September (2007).
22. “Maximization of the Single User Rate in OFDMA Assuming Equal Power on Allocated Subcarriers”.  
**A. Giovanidis**, T. Haustein, E. Jorswieck, and D. Kim.  
 In: *Proc. of the IEEE 65th Vehicular Technology Conference (VTC’07 - Spring)*, Dublin, Ireland. April (2007).
23. “Dynamic User Grouping and Shared Frequency Resource Assignment Strategies for OFDMA”.  
**A. Giovanidis**, A. Sezgin, U. Mönich, and D. Kim.  
 In: *Proc. of the IEEE 65th Vehicular Technology Conference (VTC’07 - Spring)*, Dublin, Ireland. April (2007).
24. “Multiuser Scheduling using Equal Power in Allocated Subcarriers for OFDM Uplink”.  
**A. Giovanidis**, T. Haustein, Y. Hadisusanto, A. Sezgin, and D. Kim.  
 In: *Proc. of the 40th Annual Asilomar Conference on Signals, Systems and Computers*, Monterey, USA. Nov. (2006).



CONFERENCE  
PUBLICATIONS  
WITHOUT  
PROCEEDINGS

1. “Game theoretic model for the downlink in cellular mobile networks: Nash equilibria and algorithmic convergence”.  
J. Krolikowski, **A. Giovanidis**, and T. Harks.  
In: *Proc. of the 21st International Symposium on Mathematical Programming (ISMP)*, Berlin, Germany. (oral presentation, Abstract). August (2012).
2. “Models for network design under varied demand structures”.  
J. Pulaaj and **A. Giovanidis**.  
In: *Proc. of the 21st International Symposium on Mathematical Programming (ISMP)*, Berlin, Germany. (oral presentation, Abstract). August (2012).  
ZIB Report: 11-31 available at [OPUS server](#).

UNPUBLISHED  
MATERIAL/REPORTS

1. “Analysis of Static Cellular Cooperation between Mutually Nearest Neighboring Nodes.”  
L. D. Alvarez-Corrales, **A. Giovanidis**, P. Martins, and L. Decreusefond.  
In: *arXiv:1611.02614* (2016)
2. “Spatial multi-LRU: Distributed Caching for Wireless Networks with Coverage Overlaps”.  
**A. Giovanidis** and Apostolos Avranas.  
In: *arXiv:1612.04363* (2016)
3. “How to group wireless nodes together?”  
**A. Giovanidis**.  
In: *arXiv:1602.03906*, (2016).