CV

Nicolas Nisse, **Inria** Research Director (DR2)

Engineer Supélec, Ph.D. in Computer Sciences, HDR

Project team COATI,
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Inria Research Director since Sept. 2023, Inria d'Université Côte d'Azur, I3S (CNRS/UniCA)

Education

2014 : Habilitation à Diriger des Recherches (HDR), May 26th, 2014
Algorithmic complexity Between Structure and Knowledge How Pursuit-evasion Games help. Inria, doctoral school of Univ. Nice Sophia Antipolis, France.

Jury : V. Chepoi, *Prof., Univ. Aix-Marseille*, D. Coudert, *CR Inria*, F.V. Fomin, *Prof., Univ. of Bergen, Norway*, P. Fraigniaud, *DR CNRS, LIAFA, Univ. Paris Diderot*, C. Gavoille (referee), *Prof., Univ. Bordeaux*, D.M. Thilikos (referee), *DR CNRS, LIRMM, Univ. Montpellier 2 & Prof., Univ. d'Athènes*, J-C. Régin (president), *Prof., Univ. Nice Sophia Antipolis*, P. Widmayer (referee), *Prof., ETH Zürich, Switzerland.*

2004-2007 : Ph.D. thesis in Computer Sciences, July 2nd, 2007
Graph Searching and related problems. Graph minors, connected search strategies, and distributed approach. LRI, doctoral school of University Paris-Sud (Orsay)

Jury : J-P. Allouche (president), *DR CNRS, LRI*, P. Fraigniaud (supervisor), *DR CNRS, LRI*, D. Kratsch (referee), *Prof., Université de Metz, LITA*, D.M. Thilikos, *Prof., Université d'Athènes*, S. Thomassé (referee), *Prof., Université Montpellier 2, LIRMM*

2003-2004 : Master thesis in Informatics, DEA Informatique Distribuée, mention TB, doctoral school of University Paris-Sud, Orsay, France.

2001-2004 : Supélec Gif-sur-Yvette, Engineer in the field of information and energy sciences.

2001-2002 : Licence of Mathematics, mention Bien Université Paris VI (télé-enseignement)

1998-2001 : Classes préparatoires MPSI and MP*, lycée Thiers, Marseille.

1998 : Baccalauréat S, mention Très Bien, speciality Mathematics.

Professional Experiences (until 2023)

2009-2023 Inria Research Officer since Sept. 2009, Chargé de recherche 1^{st} classe since Sept. 2011, in the team project *COATI*, Inria, I3S (CNRS/UniCA)

2008-2009 : Postdoctoral fellow Inria in the project *MASCOTTE*, Inria, UNS (I3S, CNRS).

2007-2008 : Postdoctoral fellow in the project *Anillo en Redes* (CONICYT), Departamento de Ingeniería Matemática, Universidad de Chile, Santiago, Chile.

2004-2007 (Orsay) Ph.D at LRI, Univ. Paris-Sud under the supervision of Pierre Fraigniaud.

03-08/2004 (Orsay) M2 intern. at LRI, with P. Fraigniaud. Study of connected graph searching in graphs.

06-08/2003 (CEA Cadarache) Engineer (research) internship at IRSN, Study of the behaviour of a thermocouple type K at high temperature.

07/2002 Engineer intern. at Cegelec, Maintenance of electrical installations middle-voltage.

Languages : French (mother tongue). English, Spanish (fluent). German (basic notions).

List of Publications

You can find my publications here :
http ://www-sop.inria.fr/members/Nicolas.Nisse/publications/
In brief : 59 publications in International revues, 49 publications in International Conferences

Supervision of students and young researchers

Ph.D. theses supervision

- Henrique Lovisi Ennes (since oct. 2023). Co-supervision with Clément Maria (CR Inria).
- Thomas Dissaux (oct. 2020-sept 23), *Graph decompositions and treelength.* Defended on Sept. 25th, 2023
- Foivos Fioravantes (2019-22), *Edge-labellings, vertex-colourings and combinatorial games on graphs.* Co-supervision with J. Bensmail (Associated professor UniCA). **First price of Ph.D. theses of Univ. Côte d'Azur in 2022.** Now postdoc at Technical University in Prague.
- Ali Al Zoobi (2018-21), *Practical computation of simple paths with length and diversity constraints in complex and multimodal networks.*Co-supervision with D. Coudert (DR Inria).
- Fionn Mc Inerney (2016-19), *Domination and Identification Games in Graphs.* Now Postdoc at Technische Universität Wien (with R. Ganian).
- Bi Li (2011-14), *Tree Decompositions and Routing Problems.*Now Assistant Professor à l'université de Xidian, Xi'an, Chine, depuis 2015.
  "Chinese government award for outstanding self-financed students abroad" (2014)
- Ronan P. Soares (2010-13), *Pursuit-evasion, decompositions and convexity on graphs.*Associate Professor à l'Université Fédérale de Ceara (UFC), Fortaleza, Brésil, depuis 2015.

Postdoc supervision

- Nicolas Almeida Martins (Nov. 2023-Aug. 24).
- Małgorzata Sulkowska (2020-22). Co-sup. with F. Giroire.
- Fabricio Benevides (Sept. 2019- July 2020) Within the project STIC AmSud GALOP.
- Amine Ait Ouahmed (2018).
- Gianlorenzo D'Angelo (sep. 11 to nov. 12).
- Janna Burman (nov. 10 to oct 11).
- Gianpiero Monaco (nov. 09 to oct 10).

Internship supervision (Bachelor-Master-Ph.D. students) Since 2008, I have supervised over 50 interns (from France, Chile, Brazil, Greece, Ukraine, China and India) from bachelor to master, visiting PhD students (UAI, Chile ; UFC, Brazil) and projects.

Managment/Participation to scientific projects

A) Head of international scientific projects

- Inria associated team (Combinatorial Algorithms for Networking prOblEms, CANOE) with Universidade Federal do Ceara (UFC) Fortaleza, Brésil. (about 11k euros/year) **2023-25**
- Capes-Cofecub project : Graphs, Optimization, Combinatorics and Algorithms (with l'UFC, Fortaleza, and AvignonUniversity). **2023-26**
- Contrat HumanRoads (EP COATI, ZENITH et Inria Tech) with. MillionRoads, **mid-oct. 2019, june 2020** (40k euros).
- PHC DESPROGES (DEcompositionS arborescentes et PROblèmes de GRaphES), **2020** with Xidian Univ., Xi'an, China (5k euros, 2020).

— SticAmSud project GALOP (*Graphs ALgorithms for Optimization Problems*), 2 ans. **2019-20**.
Collaboration with UAI Chile and UFC (Univ. Federal do Ceara), Fortaleza, Brazil. 15k euros (5k euros per partner) per year for 10-15 members (including 1-3 students). The respective visits carried out in 2019 have enabled progress to be made on several issues. The one-year visits of F. Benevides (Prof. UFC) and Jonas Costa (PhD student UFC) to the COATI EP took place in this context. Submission of an Inria EA to continue.

— Inria associated team AlDyNet (*Algorithms for large and Dynamic Networks*) **2013-18**
Bilateral collaboration with the Universidad Adolfo Ibañez and the Universidad de Chile (UAI), Santiago, Chile. 10-15k euros per year for 10-15 members (including 2-5 students).
This EA aims to study the structure of networks in order to design both efficient algorithms (distributed or centralised) and reliable topologies. Initially, we focused on the design of new distributed or even localised techniques for testing the structural properties of networks and calculating their structures. In the second phase (2016-18), we were particularly interested in applying our techniques to the analysis and optimisation of public transport systems in urban networks (Nice, Santiago). This last theme was one of the starting points of the ANR project "MultiMod" (see below).
This EA has led to numerous exchanges of teacher-researchers and students (12 joint publications).

— Project ECOS-Sud-Conicyt *Algorithmes distribués pour le calcul de la structure des réseaux* **2013-2015**
Bilateral collaboration with the University Adolfo Ibáñez (Santiago, Chile). 10k euros per year for 10-15 members (including 2-5 students).

B) French projects to which I am an active participant

— ANR JCJC P-GASE (Jeux positionnels : complexité, algorithmes et stratégies) **2022-25**

— ANR ASMODEE (Analyse et conception de situations de médiation en informatique débranchée) **2022-23**

— ANR DIGRAPHS (Directed graphs) (F. Havet, COATI) **2020-23**
Collaboration : LIRMM (Equipe AlGCo), LIP (Equipe MC2, ENS Lyon), and I3S/Inria (EP COATI)
In particular, developing theoretical tools on directed graphs will enable us to make significant advances for practical applications linked to transport networks (which are intrinsically directed) as part of the ANR MultiMod. In addition, this project is one of the facets of my strong collaboration with the UFC (GALOP, Capes-Cofecub project, EA Inria submitted CANOE).

— ANR MultiMod (Scalable routing in Multi-Modal transportation networks) (D. Coudert, COATI) **2018-23**
Inria Sophia (COATI), Inria Paris (GANG), I3S, Instant-System and BeNomad. This project focuses on the algorithmic challenges associated with the rapid calculation of personalised itineraries in large multimodal transport networks. The thesis by Ali Al Zoobi (co-directed with D. Coudert) was carried out within this framework.

— SNIF (Scientific Networks and IDEX Funding). Collab. with GREDEG and SKEMA. **2018-21**
The problem is to assess the impact of IDEX funding on the formation (and development) of new collaborations between teams from different entities (from different laboratories, different disciplines, etc.). To do this, we are studying the properties of (very large) co-publication graphs (extracted from SCOPUS, HAL...) including in particular those linked to clustering, centrality... Once the data had been consolidated by GREDEG, we were recently able to obtain some preliminary statistics during A. El Merss' M2 internship. We are continuing this study with the PFE and internships of K. Ohulchanskyi and S. Shelest (2020-21). Note that the size of the graphs of collaborations considered requires the development of highly efficient graph algorithms (to evaluate the various interesting measures). In addition, this study has enabled us to propose new theoretical models for the generation of large networks in order to better understand their structures.

Administrative/Scientific Responsabilities

— **Collective Tasks at Inria and/or University Côte d'Azur (UniCA)**
  — Member of the committee of the computer science doctoral school of UniCA since July 2022. (validation of juries of Ph.D./habilitations..., member of the jury to assign Ph.D. grants...)
  — Member of the committee of the computer science doctoral school of Inria since July 2022. (member of the jury to assign inria Ph.D. grants...)
  — Strong investment in Inria's commitment to scientific popularization (20% of my time). Member of the Mastic commission (since June 2016). **Responsible** of the Galejade project since Oct. 2019. **Founding member** of the project Terra Numerica, towards a digital city and member of its **Scientific and Educational Committee**.

- Elected member of the Scientific and Educational Committee of the EUR DS4H since oct. 2020.
- Resp. of the COATI seminar (2018-)
- Elected member of the "Comité de Centre" of Inria d'Université Côte d'Azur (2016-2023).

— **Steering Committees :**
- GRASTA (Workshop on GRAph Searching, Theory and Applications) since 2014. Co-responsible of **special issues** in Theoretical Computer Science for GRASTA'14'17 and'22.
- Co-founder (with D. Ilcinkas and N. Mitton) of IMAGINE (Int. workshop on Mobility, Algorithms and Graph theory In dynamic NEtworks), 3 éditions 2007-09.

— **Programm Committees :**

2023	1 nat. conf., 1 conf int.	AlgoTel'23, LAGOS'23
2022	1 nat. conf., 1 conf int.	AlgoTel'22,SEA'22
2021	1 nat. conf.	AlgoTel'21
2020	2 nat. conf.	AlgoTel'20, CoRes'20
2019	3 int. conf.	CIAC'19, LAGOS'19, WG'19
2018	1 nat. conf., 1 conf int.	CoRes'18, SEA'18
2017	1 int. conf.	FCT'17
2016	2 nat. conf.	AlgoTel'16, CoRes'16
2015	2 int. conf.	LAGOS'15, Ad Hoc Now'15
2014	1 nat. conf.	AlgoTel'14
2013	1 nat. conf.	AlgoTel'13 (**co-chair**)
2011	1 workshop int.	TERA-NET'11
2010	1 workshop int. + 2 nat. conf.	TERA-NET'10 (**co-chair**), JDIR'10, MajeSTIC'10
2007	1 workshop int.	IMAGINE'07 (**co-chair**)

— **Organizing Committees :**

2023	1 int. workshop	GRASTA'23 (**organizing-chair**)	
2022	1 int. workshop	GRASTA'22 (**organizing-chair**)	spéciale issue TCS
2017	1 school	EPIT'17	
2015	1 int. workshop	GRASTA'15 (**co-organizing-chair**)	
2014	1 int. workshop	GRASTA'14 (**organizing-chair**)	
2013	1 int. conf.	OPODIS'13 (**conference chair**)	
2011	1 nat. conf.	AlgoTel'11 (**co-organizing chair**)	
2007-09	3 int. workshops	IMAGINE 2007, 2008 and 2009 (**co-organizing chair**)	

— **Expertizes and Committees :**
- Member of editorial board of Discrete Applied Maths. since June 2022.
- **Other expertizes :** EUTOPIA Science and Innovation (2023), AAP Région (2021), ANR (2013,18 (×2)). ODP (OPUS, Poland) 2018. Millennium Science Initiative (Chili) (2018). ESF (2017,18,19 (×2),20 (×2)). NSERC Discovery Grant proposal (2011,12,17,20), NSA Mathematical Sciences Grant Program (2016).
- **Comités de sélections** : poste MCF 695, Univ. Montpellier 2, section 27 (2011), poste MCF 532, Univ. Méditerranée, section 27 (2011), poste MCF 195, Univ. Méditerranée, section 27 (2014).
- **Reviewer for conferences and revues** : about 10 int. revues per year and 5-10 int. conf. per year.

Teaching and Popularization

Schools

University of Oulu (Finland), Graph Theory and Optimization, September 15-18th, 2015. I have been invited to give a one week course.

ENS Lyon : Linear Programming, with F. Giroire and F. Havet, Jan. 23-27th, 2012.

Inria Sophia : Complex Networks, 3 to 6 hours each year from 2014 to 2018. (`http://www-sop.inria.fr/members/Giovanni.Neglia/complexnetworks/`).

Master 2, Univ. Nice Sophia Antipolis

since Sept. 2019 : course Advanced Graphs. 2019- (24 h per year). (http://www-sop.inria.fr/members/Nicolas.Nisse/LectureGraphAlgo.pdf).

Master 1, Univ. Nice Sophia Antipolis

since Sept. 2015 : course Graphs. 2015-17 (9h per year). 2018- (24 h per year)
Approximation and FPT algorithms : Bin-packing, graph theory...

Master 2 UBINET (Ubiquitous Networking and Computing) Univ. de Nice Sophia Antipolis.

since Sept. 2011 : **in charge** of the course Algorithms for Telecommunications.

2009-10 (6h), 2010-11 (12h), 2011-12 (12h), 2012-13 (9h), 2013-14 (9h), since 2014 (12h per year)
Graph Theory (graph theory, gathering problem, compact routing)
http://www-sop.inria.fr/members/Nicolas.Nisse/lectures/

Classe préparatoire, Lycée International de Valbonne (LIV), Sophia Antipolis.

Sept. 2011-Aug. 2020 : **co-responsable** (with M. De Falco and L. Pottier) of the Computer-Science course in MPSI. Creation of a new class in partnership with Inria. In charge of the course.

2011-12 (40h), 2012-13 (40h), 2013-14 (14h), since 2014 (16h per year)
Introduction to Computer Science : complexity, sorting algorithms, divide and conquer, dynamic programming, trees. http://www-sop.inria.fr/members/Nicolas.Nisse/lectures/prepa

Master 2 MDFI (Discrete Mathematics and Computer Sciences) Univ. de la Méditerranée.

2008-09 (20h), 2009-10 (10h), 2010-11 (10h), 2011-12 (20h), 2012-13 (20h)
Graph Theory (flows, matching, linear programming, graph decompositions)

Supélec (engineer school), dpt Informatics Gif-sur-Yvette. (monitorat)

2006-2007
Computer Systems Architecture, *27h TP*
Data Structures and Algorithms (Java), *18h TP*
Software Engineering and Deployment of Systems *36h TP*
Programming Model *18h TP*

2005-2006
Computer Systems Architecture, *27h TP*
Data Structures and Algorithms (Java), *36h TP*
Software Engineering and Deployment of Systems *36h TP*

2004-2005
Computer Systems Architecture, *63h TP*
Software Engineering and Deployment of Systems *36h TP*

Popularization

Since 2016, I have been heavily involved (about 20% of my time) in scientific popularization activities. I am part of **Mastic** (Médiation et Animation scientifiques Inria Sophia Antipolis - Méditerranée) and am one of the founding members and **responsible** (since Oct. 2019) of the **Galejade** project. https://galejade.inria.fr/. Since Dec. 2019, this project has taken on a major dimension with the unification of the UniCA's popularization forces and the official launch of the Terra Numerica – towards a Digital City of which I am one of the founding members, a member of the Scientific, Pedagogical and Technical Committee (CSPT) and head of the Algorithms Working Group.

This has resulted in the development of resources (physical and digital) for popularization (e.g. posters for scientific publications, articles for the general public, popularization material, e.g. https://pixees.fr/tablette-de-chocolat-empoisonnee/) and in presentations to students, teachers and the general public.