

## Personal information

Surname(s) / First name(s)

Address(es)

Email(s)

Nationality(-ies)

Date of birth

**Blanchard, Nikola K.**

Institut de Recherche en Informatique Fondamentale, Université Paris Diderot, 8 place Aurélie Nemours, 75013 Paris. France

Nikola.K.Blanchard@gmail.com ; website : [www.koliaza.com](http://www.koliaza.com)

French

August 1991

## Education

2008–2009

French Scientific Baccalaureate, specialization in Mathematics

2011–2012

Graduated in Mathematics and Computer Science from Paris VII with additional graduate model theory and algorithmic classes

2012–2015

Scolarity at ENS Ulm through the Maths-CpSci Concours (ranked 9th) and MPRI (Parisian Master of Research in Computer Science) with a focus on theoretical CpSci

2014–2015

MPRI Diploma, *summa cum laude*, ranked 2nd/61

2015–2019

Internship and PhD in Computer Science at the IRIF with Prof. Nicolas Schabanel (co-supervised by Ted Selker from late 2017 onward)

## Early Coding and Research Projects

2011–2012

Backend for OpenStreetMaps (Ocaml) ; Internal message service for Unix systems (C)

2012-2013

Developed an algorithm (the PN heuristic) for graph isomorphism detection ; coded a net-list simulator and designed a micro-processor (Ocaml and C) ; research with David Naccache in finding space-filling functions (in cryptography)

## Work and Internships

2009–2011

Freelance web designer and computer technician

2013 Internship

Prof. Eldar Fischer at Technion, Israel. Longest paths in k-connected graphs. Additional work with Prof. Janos Makowsky on graph polynomials

2014 Intership

Prof. Saket Saurabh at IMSC, India, focusing on parameterized complexity

2015-2016 Internship

Prof. Nicolas Schabanel at LIAFA, France, on dynamic facility location

## Academic Groups

2016–2019

PhD student in the Distributed Algorithms and Graphs team at IRIF

2015–20XX

Secretary, Archive of Research in Mathematical Sciences and Philosophy

2016–20XX

Member, Random Sample Voting Project ([rsvoting.org](http://rsvoting.org))

2016–20XX

Founding member, POP Special Exploratory Committee ([popplatform.org](http://popplatform.org))

2018–20XX

Member of Chôros ([choros.place](http://choros.place))

## Research Publications

Published

Johann A. Makowsky, Elena V. Ravve, and Nicolas K. Blanchard. On the location of roots of graph polynomials. *European Journal of Combinatorics*, 41:1–19, 2014

Nicolas K. Blanchard and Nicolas Schabanel. Clustering Dynamique par Rayon. In *ALGOTEL 2016 - 18èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Bayonne, France, 2016

Nicolas K. Blanchard. Vote par sondage uniforme incorruptible. In *ALGOTEL 2016 - 18èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Bayonne, France, 2016

Nicolas K. Blanchard. Building trust for sample voting. In G. Camilleri, G. Cèze, F. Dupin de St-Cyr, and P. Zaraté, editors, *Proceedings of TeSS*, 2017

Nicolas K. Blanchard and Nicolas Schabanel. Dynamic Sum-Radii Clustering. In Sheung-Hung Poon, Md. Saidur Rahman, and Hsu-Chun Yen, editors, *WALCOM: Algorithms and Computation: 11th International Conference and Workshops, WALCOM 2017, Hsinchu, Taiwan, March 29–31, 2017, Proceedings*, pages 30–41. Springer International Publishing, 2017

Nicolas K. Blanchard. Building trust for sample voting. *International Journal of Decision Support System Technology*, 2018

Leila Gabasova, Nikola K. Blanchard, Bernard Schmitt, Will Grundy, and New Horizons COMP team. Progressive metaheuristics for high-dimensional radiative transfer model inversion. *European Planetary Science Congress*, 2018

Nikola K. Blanchard, Clément Malaingre, and Ted Selker. Improving security and usability with guided word choice. *Computer Security Applications Conference, 2018. ACSAC'18. 34th Annual*, 2018

Nicolas Blanchard, Clément Malaingre, and Ted Selker. Mots de passe : le choix humain plus sécurisé que la génération aléatoire. In *ALGOTEL 2018 - 20èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Roscoff, France, May 2018

Nicolas Blanchard, Leila Gabasova, Ted Selker, and Eli Sennesh. Créer de tête de nombreux mots de passe inviolables et inoubliables. In *ALGOTEL 2018 - 20èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Roscoff, France, May 2018

Nicolas Blanchard and Ted Selker. Improving voting technology is hard: the trust-legitimacy-participation loop and related problems. In *2018 Workshop on Socio-Technical Aspects in Security and Trust, STAST*, San Juan, Puerto Rico, 2018

Submitted

Nicolas K. Blanchard. *La Démocratie Hasardeuse* (book). 2017

Nicolas K. Blanchard, Ted Selker, and Leila Gabasova. CVC for Error-Free Code Entry. 2018

Nicolas Blanchard, Leila Gabasova, Ted Selker, and Eli Sennesh. Cue-Pin-Select, a Secure and Usable Offline Password Scheme. working paper or preprint, 4 2018

N. K. Blanchard. Efficient and seamless password typo tolerance. working paper or preprint, 2018

Nicolas K. Blanchard and Olivier Pivot. CIVICS : Changing Incentives for Voters in International Cooperation through Sampling. 2018

In preparation

Nicolas K. Blanchard, Eldar Fischer, and Oded Lachish. Longest paths and cycles in k-connected graphs. 2018

## Public Interventions

- 2016 Multiple talks, member of an expert panel and organizer of the first public RSV vote at the Global Forum on Modern Direct Democracy
- 2017 Invited talk at a conference on new forms of citizen participation at the Lieu d'Europe  
Invited member of an expert panel and in charge of large-scale RSV demo at the World Forum on Democracy
- 2018 Invited talk at the Workshop on Digital Identity, Global Citizenship and the Future of Democracy  
Invited talk at POINT Conference on Political Accountability and New Technologies  
Invited talks at Stanford's EE380 seminar and MIT CSAIL: "Safe passwords made easy to use"  
Invited talk to SFS scholars at UMBC: "Usability and psychology in voting system design"

## Current Research Projects

- Due 2018 Making a typology of biometric authentication systems with Ted Selker  
Creating a psychological cost model for mental algorithms with Ted Selker  
Developing a new voting protocol inspired by RSV with David Chaum  
Studying the temporal evolution of password practices with Jérémie Garrigues
- Due 2019 Large-scale testing of RSV combined with e-Identity technology in Germany, organized with the Humboldt Institute for Internet and Society and Advocate Europe  
Cross-jurisdictional analysis of legality of crowdsourcing semi-public data for analysis with Sunimal Mendis, Ishupal Kang, Arthur Milchior and Épiphanie Gédéon  
Creating algorithms for balanced jury sampling systems with Healthy Democracy  
Using Erdős-Rényi graphs to model multiple levels of geographic interactions with Jacques Lévy and Patrick Poncelet  
Combining meta-heuristics and graph coloring to map the surface composition of Pluto, with Leila Gabasova  
Solving the minimal-cost ball inflation problem in general metric spaces with LexBFS, with Michel Habib  
Comparative analysis of multiple fixed-point methods for bilingual palindrome generation with Aurélie Quevat and Hugo Iyouck Ngue  
Investigating the interactions between gender identity, disability, and dysphoria with Jacques Lévy  
Studying game-theoretic justifications of economic terrorism, with Épiphanie Gédéon  
Checking whether small-world network effects can help model impostor syndrome in academia, with Mark Mirmelstein.

## Advisorship

- Spring-Summer 2017 Academic co-supervisor for Elodie Decerle's M2 internship at THALES
- Spring-Summer 2018 Academic co-supervisor for François Gaudré's M2 internship at the Ministry of the Armed Forces
- Summer 2018 Supervisor for Ines Dardouri and Pierre Midavaine's L2 internships on bilingual palindrome generation
- Summer 2018 Supervisor for Rayann Kaiss' L2 internship on probabilistic games
- Summer 2018 Supervisor for Amira Lakdhar's L1 internship on analyzing human word choice patterns

## Teaching

2014-2015	Organized three intro to research workshops for high schoolers at ENS with ParisMaths (half-day with 30-60 participants)
2014-2015	Four conferences on recent developments in mathematical research to high school students in Paris with Animaths (30-100 participants)
2016-2017	Creation of Animath clubs, teaching to educators, university and high-school students in Kosovo and Moldova
Summer 2017	Inaugural MOOC on graph separators on the Mathmosphere Platform
Spring 2016 and Spring 2017	In charge of Systems and Network Engineering M1 course, Paris Diderot Engineering School
Fall 2017 and Fall 2018	In charge of Foundations of Computer Science M1 course, Paris Diderot Engineering School

## Popularization

- Nicolas K. Blanchard. Le théorème des graphes parfaits. *Bibliothèque Tangente*, 54:62–67, 2015
- Nicolas K. Blanchard. Même le hasard peut créer des certitudes. *Bibliothèque Tangente*, 55:116–118, 2015
- Nicolas K. Blanchard. Non, les problèmes ne sont pas tous de même difficulté! *Bibliothèque Tangente*, 55:108–114, 2015
- Nicolas K. Blanchard. Prouver rapidement qu’une propriété est vérifiée... ou pas. *Bibliothèque Tangente*, 55:132–133, 2015
- Nicolas K. Blanchard. De Poincaré à Perelman : une grande épopée mathématique. *Tangente*, 165:48–50, 2015
- Nicolas K. Blanchard and Leila Gabasova. Des outils mathématiques pour votre GPS. *CIJM yearly journal*, 2016
- Nicolas K. Blanchard and Leila Gabasova. Democratic tools for the future, 2017
- Nicolas K. Blanchard. Des mots de passe...pas très secrets. *Tangente*, 180:18–19, 2018
- Nicolas K. Blanchard. Une course démoniaque. *CIJM yearly journal*, 2018

## Languages

Mother tongue(s)

**French, English**

Oral and reading proficiency in Spanish, basics in Russian

## Scientific Interests

Mathematics and CpSci

Graph Theory, Algorithmics, Game theory. Logic and Model Theory. Voting and Computational Social Choice Theory. Probabilities. Bioinformatics. User interfaces.

Social sciences

Cliometrics. Political philosophy. Ancient Greek History. Gender studies.

## Personal Interests

Fiction Writing

I enjoy developing realistic alternate universes, and write short SFF stories and an interactive fiction with O. Pivot

Photography

Multiple small exhibits (pubs and local places), which are on my website (koliaza.com)

Music

I sing and play the piano and melodica, specializing in blues