

# Sergey Kirgizov

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5/6/1988, Married, with three children

## Languages

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Russian, French and English

## Current IT position

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### Papers<sup>γ</sup> — Discussion board for scientific papers

*Founder*

<https://papers-gamma.link>

**Dijon et Paris, France**

*2015–present*

### Page Up

*R&D engineer*

- Project Citizen Mobile Network, 5th generation wireless systems, in collaboration with Airbus, SAFRAN-SAGEM, Green Communications et l'Université Paris-Sud.
- Online solution for “Elior Group”, large French multinational commercial catering and foodservice company.
- QR-code based payment system for “Famoco”.
- Other projects, one of them is about smart home data analysis: <http://www.20minutes.fr/strasbourg/2140695-20170928-strasbourg-quoi-ressemble-appartement-tour-energie-positive>

**Dijon et Paris, France**

*2017–present*

## Academic CS positions

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### Université Bourgogne Franche-Comté

*Research and Teaching Fellow (ATER),  
Combinatorics & Network science*

**Dijon, France**

*2015–2017*

### Université Bourgogne Franche-Comté

*Postdoc Research Fellow*

**Dijon, France**

*2014–2015*

## Education

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### Université Pierre et Marie Curie

*PhD in Computer Science*

Thesis: “Empirical analysis and modeling of the Internet topology dynamics”

**Paris, France**

*2011–2014*

### Altay State University

*Master degree in Applied Mathematics and Informatics*

Thesis: “Data mining as a service, The workflow model”, <http://scisaas.com>

**Barnaul, Russia**

*2009–2011*

### Université Pierre et Marie Curie

*Master 2 Training*

Thesis: “Software architectures for decision and coordination in autonomic computing”

**Paris, France**

*Apr–Sep 2011*

### Université Pierre et Marie Curie

*Master Training*

Thesis: “Tools for the autonomic management of resources in virtualized data centers”

**Paris, France**

*Jun–Dec 2010*

### Altay State University

*B.S. in Mathematics*

**Barnaul, Russia**

*2005–2009*

### Lyceum of Information Technologies “Kvant”

Thesis: “Search system for Intranet site”

**Barnaul, Russia**

*2003–2005*

## Honors and awards

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### Best Start-Up award

Our start-up "Scientific Saas" <http://scisaas.com> won the competition "IT-Start" 2012

### Best Paper Award

The Seventh International Conference on Autonomic and Autonomous Systems, ICAS 2011

### Prize "For the fastest solution of the most difficult task"

All-Russia Oracle Database Olympiad 2009

### Scholarship for Excellence in Studies

2009–2011

### Gold Medal for Excellence in Studies

2005

### Barnaul City Mayor's Special Scholarship for Excellence in Studies

2004–2005

## Previous Software development positions

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### Start-Up: Scientific Saas

<http://scisaas.com>

Software engineer and architect, Cloud Web-Applications for Data Mining

2010–2013

- Representational principles of scientific workflows for data mining processes
- Algorithm for parallel workflow execution
- Infrastructure works

### Altay State University

Barnaul, Russia

Software engineer and Team Leader

2007–2010

- Electronic staff directory for Altay State University
- Airlines/train tickets management system and related services
- Electronic document processing system (with digital signatures)
- Electronic students directory for Altay State University
- Several educational programs for Sun SPOT.

### Publishing House "Region"

Barnaul, Russia

Web-site administrator

2009

- Database administration
- Online technical support

### Publishing House "Info-Market"

Barnaul, Russia

System and network administrator

2006-2007

- Administration of Linux gateways
- Postfix, Sendmail mail servers

## Computer Skills

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**Programming Languages:** R, Python, C, Scheme, Java (SE, EE, ME), PHP, Perl, Bash, JavaScript, SQL; some knowledge in Awk, Scala, Erlang, Haskell and \*ML

**Markup languages:** YML, HTML, XML, XSL, JSON, AsciiDoc, Markdown

**Typesetting:** \*TeX, TikZ

**Scientific software:** R, SymPy, Maple, Scilab, GNU/Octave, Maxima, Matlab

**OS:** Debian-like, Arch, Gentoo, FreeBSD, OpenBSD, Windows, Mac OS

**RDBMS:** PostgreSQL, SQLite, Redis, Oracle, MySQL

**Version Control Systems:** Git, Mercurial, Subversion, Darcs, GNU arch, Fossil, Bazaar

**Build processes:** Make, Maven, Gradle, Jenkins

**Frameworks:** Flask, Spring Boot, Angular, Vue 2, JHipster

**Server-side software:** Web-servers (e.g., Apache, Lighttpd), Squid, Postfix, Asterisk IP-PBX

**IDE:** Eclipse, Netbeans

**Virtualization systems:** Qemu, VMWare, VirtualBox

**Other:** ImageMagick, Gnuplot, Emacs, Arduino, Sun SPOT and LeJOS, some knowledge in FPGA design and programming

## Publications

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### International Scientific Journals

1. **Descent distribution on Catalan words avoiding a pattern of length at most three**  
Jean-luc Baril, Sergey Kirgizov and Vincent Vajnovszki  
*Discrete Mathematics*, Volume 341, Issue 9, September 2018, Pages 2608-2615
2. **Dyck paths with a first return decomposition constrained by height**  
June 2017, Jean-luc Baril, Sergey Kirgizov and Armen Petrossian  
*Discrete Mathematics*, Volume 341, Issue 6, June 2018, Pages 1620-1628
3. **Forests and pattern avoiding permutations modulo pure descents**  
Jean-luc Baril, Sergey Kirgizov and Armen Petrossian  
*Pure Mathematics and Applications (PUMA)*, March 2018
4. **Patterns in treeshelves**  
Jean-luc Baril, Sergey Kirgizov and Vincent Vajnovszki  
*Discrete Mathematics*, Volume 340, Issue 12, December 2017, Pages 2946-2954
5. **The pure descent statistic on permutations**  
Jean-luc Baril, Sergey Kirgizov *Discrete Mathematics*, Volume 340, Issue 10, October 2017, Pages 2550-2558
6. **Information fusion-based approach for studying influence on twitter using belief theory**  
Lobna Azaza, Sergey Kirgizov, Marinette Savonnet, Éric Leclercq, Nicolas Gastineau, and Rim Faiz  
*Computational Social Networks*, 3 (2016), pp. 1–26
7. **The complexity of deciding whether a graph admits an orientation with fixed weak diameter**  
Julien Bensmail, Romaric Duvignau, Sergey Kirgizov  
*Discrete Mathematics and Theoretical Computer Science (DMTCS)*, 17(3):31-42, 2016.
8. **Suppression Distance Computation for Set Covers and Hierarchies**  
François Queyroi and Sergey Kirgizov  
*Information Processing Letters* 115.9 (2015): 689-693, 2015
9. **Towards realistic modeling of IP-level routing topology dynamics**  
Clémence Magnien, Amélie Medem, Sergey Kirgizov and Fabien Tarissan  
*Networking Science*, December 2013

### French Scientific Journals

1. **Évaluation de l'influence polarisée dans un réseau multi-relational : application à twitter**  
Lobna Azaza, Marinette Savonnet, Eric Leclercq, Sergey Kirgizov, and Rim Faiz  
*Revue Document Numérique*, 2017/1 (Vol. 20)
2. **Un observatoire pour la modélisation et l'analyse des réseaux multirelationnels : une application à l'étude du discours politique sur twitter**  
Ian Basaille, Sergey Kirgizov, Éric Leclercq, Marinette Savonnet, Nadine Cullot, Thierry Grison, and Elisabeth Gavignet  
*Revue Document Numérique*, 2017/1 (Vol. 20)

### Book chapters

1. **Tweets from the Campaign Trail: Researching Candidates' Use of Twitter during the European Parliamentary Elections**, co-auteur du chapitre "*SNFreezer: a Platform for Harvesting and Storing Tweets in a Big Data Context*", éditeurs Alexander Frame, Arnaud Mercier, Gilles Brachotte, and Caja Thimm. Pages 19-33. Peter Lang. 2016
2. **Applications of Complex Networks Analysis to Biological Systems—From Biomolecular Structure to Gene Regulation**, co-auteur du chapitre "*How much Proteins Contact Networks are eccentric? A signaling networks perspective of PCN eccentricity*", unpublished, 2016

## Peer-Reviewed International Conferences

1. **Pattern avoiding permutations modulo pure descents**  
Jean-luc Baril, Sergey Kirgizov and Armen Petrossian  
Poster at *Permutation Patterns Conference*, Reykjavik University, Iceland, 2017
2. **Temporal density of complex networks and ego-community dynamics**  
Sergey Kirgizov, Eric Leclercq  
*Annual Conference on Complex Systems (ECCS or CCS)*, Amsterdam, 2016
3. **Towards a Twitter Observatory: A multi-paradigm framework for collecting, storing and analysing tweets**  
Ian Basaille, Sergey Kirgizov, Éric Leclercq, Marinette Savonnet, et Nadine Cullot  
RCIS 2016, IEEE Tenth International Conference on Research Challenges in Information Science, 1-3 June 2016, Grenoble, France
4. **A web application for event detection and exploratory data analysis for Twitter data** Sergey Kirgizov, Eric Leclercq, Marinette Savonnet, Alexander Frame, Ian Basaille-Gahite  
Twitter at the European Elections 2014: International Perspectives on a Political Communication Tool, Dijon, 2015
5. **Influence Assessment in Twitter Multi-Relational Network** Lobna Azaza, Sergey Kirgizov, Marinette Savonnet, Éric Leclercq, Rim Faiz  
Eleventh International IEEE Conference on Signal Image Technologies and Internet-Based System (SITIS), Bangkok, Thailand: 436-443, 2015
6. **On the complexity of turning a graph into the analogue of a clique**  
Julien Bensmail, Romaric Duvignau, Sergey Kirgizov  
*9th International colloquium on graph theory and combinatorics (ICGT)*, 2014
7. **Using Reinforcement Learning for Autonomic Resource Allocation in Clouds: towards a fully automated workflow**  
Xavier Dutreilh, Sergey Kirgizov, Olga Melekhova, Jacques Malenfant, Nicolas Rivierre, and Isis Truck  
In The 7th International Conference on Autonomic and Autonomous Systems (ICAS'2011), best paper award, 2011

## Peer-Reviewed French National Conferences

1. **Packing coloring and subsets preserving path distance**  
Nicolas Gastineau, Benjamin Gras, Sergey Kirgizov, Mahmoud Omidvar  
*Journées Graphes et Algorithmes (JGA)*, Paris, 2016
2. **(Re)constituer la temporalité d'un événement médiatique sur Twitter : une étude contrastive**  
Tatiana Kondrashova, Alexander Frame, and Sergey Kirgizov  
XXe congrès de la SFSIC : Temps, temporalités et information-communication, 8-10 juin 2016 Metz (France)
3. **Évaluation de l'influence dans un réseau multi-relational : le cas de Twitter**  
Lobna Azaza, Sergey Kirgizov, Marinette Savonnet, Éric Leclercq, Rim Faiz  
INFORSID'2016, Le congrès INFORSID (INFormatique des ORganisations et Systèmes d'Information et de Décision, du 31 mai au 3 juin, à Grenoble, France
4. **A la recherche des mini-publics : un problème de communautés, de singularités et de sémantique**  
*Données participatives et sociales*  
Eric Leclercq, Sergey Kirgizov, Maximilien Danisch  
16ème conférence francophone sur l'Extraction et la Gestion des Connaissances (EGC 2016): l'atelier Données participatives et sociales, Reims, Janvier 2016
5. **Evaluation de l'influence sur Twitter : Application au projet "Twitter aux Elections Européennes 2014"**

*Sergey Kirgizov, Lobna Azaza, Éric Leclercq, Marinette Savonnet et Alexander Frame*  
Journées d'étude "Etudier le Web politique : Regards croisés", *Lyon, 12-13 Mai 2015*

6. **Internet Topology Dynamics: stochastic process estimation from partial observations**

avec Clémence Magnien

Journée jointe des GDR ISIS et Phénix "Analyse et inférence pour les réseaux", *Paris, 2013*

7. **Distribution multimodale de la taille du sous-graphe des plus courts chemins dans un graphe aléatoire**

Journées Graphes et Algorithmes (*JGA*), *Orsay, 2013*

8. **Dynamique de la topologie de l'internet : impact de la fréquence de mesure sur les observations**

24ème colloque GretsI, *Brest, France, 2013*

9. **Vers une modélisation réaliste de la dynamique de la topologie de routage au niveau IP**

Journées Automnales 2012 ResCom, *Paris, 2012*

## Other talks

1. **Patterns in treeshelves**  
*Séminaire Le2i "Combinatoire, Réseaux et Sciences des Données"*, 14 Février, Dijon 2017
2. **Graph-streaming pour l'étude de la dynamique des sphères médiatiques et politiques**  
*Réunion Projet CNRS PEPS MOMIS*, Paris, 2015
3. **Graph-streaming pour l'étude de la dynamique des sphères médiatiques et politiques**  
*Assemblée générale du Le2i*, Dijon, 2015
4. **Papers<sup>γ</sup>, Discussing board for scientific papers**  
Conference SO Data 3, Paris, 26 Mars 2015
5. **Analyse empirique et modélisation de la dynamique de la topologie de l'Internet**  
seminaire au LE2I, Dijon, 6 November 2014
6. **Internet topology dynamics in ten minutes**  
Masterclass-discussion with Vint Cerf, 2014

## Posters

1. **Internet Topology Dynamics: stochastic process estimation from partial observations** *Journée jointe des GDR ISIS et Phénix "Analyse et inférence pour les réseaux"*, Paris, 2013

## Notes, short articles, essais

1. **The limit of generalised Dempster-Shafer-Smets operator**  
Nicolas Gastineau, Sergey Kirgizov, Lobna Azaza, 2016
2. **Metric space of hierarchies**, 2013
3. **A new graph density**, 2015, <http://sjscience.org/article?id=205>
4. **Stochastic process estimation from partial observations: Poisson case**, Sergey Kirgizov, François Queyroi, 2014

## Communication skills

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7 presentations at international conferences, 7 presentations at national french conferences, 6 other talks (including a presentation at General Assembly of Le2i research laboratory, the final presentation of a CNRS research project, and a masterclass-discussion with Vint Cerf), 1 poster presentation.

## Teaching activities (in french):

Subject		Amount of hours
<b>2016-2017, Research and Teaching Fellow (ATER), Université de Bourgogne</b>		
Master 2 - Machine learning: reinforcement learning	Lectures, Tutorials, Labs	12h
Licence 2 - C/C++	Lab sessions	60h
	Tutorials	8h
Licence 2 - Operating Systems (network, threads, etc)	Lab sessions	40h
For Phd Students - OpenMP	Lectures, Tutorials, Labs	10h
For Phd Students - MPI	Lectures, Tutorials, Labs	10h
Licence 1 - Java, first steps	Tutorials	36h
	Lab sessions	72h
<b>2015-2016, Research and Teaching Fellow (ATER), Université de Bourgogne</b>		
Licence 1 - Java, first steps	Lectures	32h
	Lab sessions	80h
Licence 2 - Operating Systems (network, threads, etc)	Lab sessions	60h
Licence 2 - C et C++	Lab sessions	40h
Licence 1 - Advanced algorithms, OOP	Lab sessions	40h
<b>2015, postdoc, Université de Bourgogne</b>		
Licence 1 - Visual interfaces (Java)	Lab sessions	40h
<b>2012-2014, PhD Teaching fellow, Université Pierre et Marie Curie</b>		
Licence 2 - Compilation and virtual machines (Scheme, C)	Lab sessions	13.5h
Licence 1 - Recursive programming (Scheme)	Tutorial and lab sessions	84h
Licence 2 - Discrete Structures (logic, automata theory)	Lab sessions	10.5h
<b>Total</b>		<b>648h</b>

## Administrative responsibilities and other activities

1. Principal participant of PEPS MoMIS SEISME project — "Graph-Streaming pour l'étude de la dynamique des sphères politiques et médiatiques".
2. Author of Papers<sup>7</sup> — discussing (and publishing) board for scientific papers.
3. Reviewer for ALGOTEL, IEEE Communications Letters, CompleNet, International Journal of Computer Mathematics.
4. Member of the organisation committee of
  - (a) 7th Workshop on Complex Networks, CompleNet 2016;
  - (b) ALGOTEL 2015 conference;
  - (c) MARAMI 2014 conference;
  - (d) Journée thématique "Dynamique des graphes" 2012;
  - (e) Journées Automnales 2012 ResCom à Paris 6.
5. Supervision of research trainee: L3 student of ENS Lyon.
6. Administration of ComplexNetworks team's website during my PhD.

## Hobbies

Bicycle, Art-group "Vashche vsio" <http://art.kirgizov.link>