

# Alexandre Decan

*Data Scientist – Docteur en Sciences*

Rue Duwez, 15

7904 Pipaix, Belgique

☎ +32(0)473 204550

✉ alexandre.decan@lexpage.net

Né le 29/01/85 à Anderlecht

## Expérience professionnelle

- Depuis 10/2022 **Chercheur qualifié F.R.S.-FNRS, UMONS**, Mons.  
Service de Génie Logiciel  
Université de Mons – UMONS
- De 02/2015 à 09/2022 **Chercheur post-doctorant, UMONS**, Mons.
- Automated Assistance for Developing Software in Ecosystems of the Future – SECO-ASSIST. Excellence of Science F.R.S. FNRS - FWO-Vlaanderen. Service de Génie Logiciel, depuis 08/2018.
  - Socio-Technical Methodology and Analysis of Software Ecosystem Health – SECOHealth. F.R.S. FNRS - FRQ Québec-Wallonie. Service de Génie Logiciel, 10/2017 - 07/2018.
  - Data quality, data provenance and big data – FEDER-IDEES. Fonds Européen de Développement Régional. Service des Systèmes d'Information, 01/2017 - 07/2021.
  - Ecological Studies of Open Source Software Ecosystems – ECOS. Actions de Recherche Concertées (ARC). Services de Génie Logiciel et d'Écologie Numérique des Milieux Aquatiques, 02/2015 - 07/2017.
  - Assistant temporaire en Réseaux et Télécommunications, 2016.
- De 10/2014 à 01/2015 **Analyste fonctionnel, Smals**, Bruxelles.  
Analyste fonctionnel dans le secteur Soins et Santé.
- De 10/2007 à 09/2014 **Assistant de recherche, UMONS**, Mons.
- Data-Intensive Software System Evolution. Collaborateur volontaire F.R.S.-FNRS. Service de Génie Logiciel, 2013-2014.
  - Recherche et développement dans les systèmes d'information. Réalisation d'une thèse sur les problématiques de data quality et de data integrity. Service des Systèmes d'Information, 2007-2013.
  - Enseignement de cours de programmation, d'algorithmique, de bases de données, de datamining et de datawarehouse (cours de jour et horaires décalés) ; direction et encadrement de mémoires étudiants, 2007-2014.
- De 09/2013 à 01/2014 **Formateur-enseignant, Eurometropolitan e-Campus**, Tournai.  
Formateur-enseignant en business intelligence dans le cadre du Certificat d'Université d'Executive Master en e-Entrepreneurship.
- De 09/2006 à 06/2007 **Élève-assistant, UMONS**, Mons.  
Fonction d'élève-assistant pour les cours de programmation et d'algorithmique.
- 07/2006 **Stage en entreprise, S.A. ADLC**, Péruwelz.  
Stage et réalisation d'un outil de suivi de commandes avancé pour l'intranet.

---

## Études

- 2007 à 2013 **Docteur en Sciences**, UMONS, Mons.  
Soutenance d'une thèse intitulée "*Certain Query Answering in First-Order Languages*".
- 2007 à 2009 **Formation doctorale**, UMONS, Mons.
- 2003 à 2007 **Licence en Sciences Informatiques**, UMH, Mons.
  - Projet d'année : "*Synthèse vocale*" – traitement du signal en C/OCaml,
  - Mémoire de fin d'études : "*Distributed Backup System*" – développement réseau/P2P en Java.
- 1997 à 2003 **Secondaire général**, Collège Saint Julien, Ath.  
Diplôme d'Honneur en option mathématiques et langues.

---

## Compétences informatiques

### Fouille de données.

Expert dans l'analyse, le traitement et la fouille de données (data mining, data quality, data cleaning, machine learning). Maîtrise de pandas, scipy, sklearn, matplotlib (stack Jupyter) et des outils de mining RapidMiner, Orange et Weka.

### Base de données.

Maîtrise de SQL, X-path, du XSLT, XML Schema et XQuery. Expérience pratique en PostgreSQL, SQLite, MySQL/MariaDB, Redis, MongoDB.

### Développement.

Expert Python. Expérience de développement en Java, Kotlin, JavaScript, C et PHP ; développement mobile & web. Expérience open source (mainteneur de projets & contributeur).

### Gestion de projets.

Méthodologies agiles (Scrum), modélisation (UML, ER), gestion de versions (Git, SVN), bug tracking, testing (test- and behavior-driven development), virtualisation (Vagrant, Docker). Connaissance approfondie des systèmes Linux et Windows.

---

## Divers

### Langues.

- Français (langue maternelle), anglais (B2 - pratique courante) et néerlandais (A2 - notions)

### Développement.

- Mainteneur et contributeur open-source
- Webmaster d'un site communautaire depuis 1996
- Expert L<sup>A</sup>T<sub>E</sub>X

### Situation.

- Père de famille
- Titulaire du permis B
- Formation incendie *Equipe de Première Intervention* en 2012
- Président de l'assemblée générale des étudiants de la Faculté des Sciences de l'Université de Mons de 2004 à 2006

- 2022 **Recognizing bot activity in collaborative software development.**  
Mehdi Golzadeh, Tom Mens, Alexandre Decan, Eleni Constantinou, Natarajan Chidambaram  
IEEE Software Special Issue : Bots in Software Engineering, 10.1109/MS.2022.3178601, 2022
- 2022 **On the Impact of Security Vulnerabilities in the npm and RubyGems Dependency Networks.**  
Ahmed Zerouali, Tom Mens, Alexandre Decan, Coen De Roover  
Empirical Software Engineering, 10.1007/s10664-022-10154-1, 2022
- 2021 **Back to the Past – Analysing Backporting Practices in Package Dependency Networks.**  
Alexandre Decan, Tom Mens, Ahmed Zerouali, Coen De Roover  
IEEE Transactions on Software Engineering, 10.1109/TSE.2021.3112204, 2021
- 2021 **Lost in Zero Space – An Empirical Comparison of 0.y.z Releases in Software Package Distributions.**  
Alexandre Decan, Tom Mens  
Science of Computer Programming, 10.1016/j.scico.2021.102656, 2021
- 2021 **A ground-truth dataset and classification model for detecting bots in GitHub issue and PR comments.**  
Mehdi Golzadeh, Alexandre Decan, Damien Legay, Tom Mens  
Journal of Systems and Software, 10.1016/j.jss.2021.110911, 2021
- 2021 **A multi-dimensional analysis of technical lag in Debian-based Docker images.**  
Ahmed Zerouali, Tom Mens, Alexandre Decan, Jesus Gonzalez-Barahona and Gregorio Robles  
Empirical Software Engineering, 26,10.1007/s10664-020-09908-6, 2021
- 2020 **Sismic - A Python library for statechart execution and testing.**  
Alexandre Decan, Tom Mens  
SoftwareX, 10.1016/j.softx.2020.100590, 2020
- 2020 **GAP : Forecasting Commit Activity in git Projects.**  
Alexandre Decan, Eleni Constantinou, Tom Mens, Henrique Rocha  
Journal of Systems and Software, 10.1016/j.jss.2020.110573, 2020
- 2019 **What Do Package Dependencies Tell Us about Semantic Versioning ?.**  
Alexandre Decan, Tom Mens  
IEEE Transactions on Software Engineering, 10.1109/TSE.2019.2918315, 2019
- 2019 **A Formal Framework for Measuring Technical Lag in Component Repositories – and its application to npm.**  
Ahmed Zerouali, Tom Mens, Jesus Gonzalez-Barahona, Alexandre Decan, Eleni Constantinou, Gregorio Robles  
Journal of Software : Evolution and Process, 10.1002/smr.2157, 2019
- 2018 **A Method for Testing and Validating Executable Statechart Models.**  
Tom Mens, Alexandre Decan, Nikolaos Spanoudakis  
Software and Systems Modeling, 10.1007/s10270-018-0676-3, 2018
- 2018 **An Empirical Comparison of Dependency Network Evolution in Seven Software Packaging Ecosystems.**  
Alexandre Decan, Tom Mens, Philippe Grosjean  
Empirical Software Engineering, 23, 10.1007/s10664-017-9589-y, 2018
- 2012 **Certain Conjunctive Query Answering in SQL.**  
Alexandre Decan, Fabian Pijcke, Jef Wijsen  
Lecture Notes in Computer Science, 7520, p154-167, 2012
- 2012 **An Aperiodicity Problem for Multiwords.**  
Véronique Bruyère, Olivier Carton, Alexandre Decan, Olivier Gauwin, Jef Wijsen  
RAIRO : Theoretical Informatics and Applications, 46, 1, p33-50, 2012

- 2022 **Patched Clones and Missed Patches among the Divergent Variants of a Software Family.**  
Poedjadevie Ramkisoen, John Businge, Brent van Bladel, Alexandre Decan, Serge Demeyer, Coen De Roover, Foutse Khomh  
ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Singapore, 2022
- 2022 **On the Use of GitHub Actions in Software Development Repositories.**  
Alexandre Decan, Tom Mens, Pooya Rostami Mazrae, Mehdi Golzadeh  
38th IEEE International Conference on Software Maintenance and Evolution (ICSME), Limassol, Cyprus, 2022
- 2022 **On the accuracy of bot detection techniques.**  
Mehdi Golzadeh, Alexandre Decan, Natarajan Chidambaram  
4th Workshop on Bots in Software Engineering (BotSE), IEEE/ACM ICSEW 2022
- 2022 **Leveraging Predictions From Multiple Repositories to Improve Bot Detection.**  
Natarajan Chidambaram, Alexandre Decan, Mehdi Golzadeh  
4th Workshop on Bots in Software Engineering (BotSE), IEEE/ACM ICSEW 2022
- 2022 **On the rise and fall of CI services in GitHub.**  
Mehdi Golzadeh, Alexandre Decan, Tom Mens  
29th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), Honolulu, Hawaii, 2022
- 2022 **Variant Forks – Motivations and Impediments.**  
John Businge, Ahmed Zerouali, Alexandre Decan, Tom Mens, Serge Demeyer, Coen De Roover  
29th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), Honolulu, Hawaii, 2022
- 2021 **Identifying bot activity in GitHub pull request and issue comments.**  
Mehdi Golzadeh, Alexandre Decan, Eleni Constantinou, Tom Mens  
3rd Workshop on Bots in Software Engineering (BotSE), IEEE/ACM ICSEW 2021
- 2021 **A Quantitative Assessment of Package Freshness in Linux Distributions.**  
Damien Legay, Alexandre Decan, Tom Mens  
4th International Workshop on Software Health (SoHeal), IEEE/ACM ICSEW 2021
- 2020 **How Magic is Zero ? An Empirical Analysis of Initial Development Releases in Three Software Package Distributions.**  
Alexandre Decan, Tom Mens  
3rd International Workshop on Software Health (SoHeal), IEEE/ACM ICSEW 2020, Seoul, Republic of Korea, 2020
- 2020 **On Package Freshness in Linux Distributions.**  
Damien Legay, Alexandre Decan, Tom Mens  
36th IEEE International Conference on Software Maintenance and Evolution (ICSME), Adelaide, Australia, 2020
- 2020 **Bot or not ? Detecting bots in GitHub pull request activity based on comment similarity.**  
Mehdi Golzadeh, Damien Legay, Alexandre Decan, Tom Mens  
2nd Workshop on Bots in Software Engineering (BotSE), IEEE/ACM ICSEW 2020, Seoul, Republic of Korea, 2020
- 2019 **Towards an Understanding of the Impact of Badges in GitHub Repositories.**  
Damien Legay, Alexandre Decan, Tom Mens  
18th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Brussels, Belgium, 2019
- 2019 **On the Effect of Discussions on Pull Request Decisions.**  
Mehdi Golzadeh, Alexandre Decan, Tom Mens  
18th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Brussels, Belgium, 2019

- 2018 **On the Evolution of Technical Lag in the npm Package Dependency Network.**  
Alexandre Decan, Tom Mens, Eleni Constantinou  
34th IEEE International Conference on Software Maintenance and Evolution (ICSME), Madrid, Spain, 2018
- 2018 **On the Impact of Security Vulnerabilities in the npm Package Dependency Network.**  
Alexandre Decan, Tom Mens, Eleni Constantinou  
15th International Conference on Mining Software Repositories (MSR), Gothenburg, Sweden, 2018
- 2018 **Breaking the Borders : An Investigation of Cross-Ecosystem Software Packages.**  
Eleni Constantinou, Alexandre Decan, Tom Mens  
17th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Delft, the Netherlands, 2018
- 2018 **On the Impact of Pull Request Decisions on Future Contributions.**  
Damien Legay, Alexandre Decan, Tom Mens  
17th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Delft, the Netherlands, 2018
- 2017 **An Empirical Comparison of Dependency Issues in OSS Packaging Ecosystems.**  
Alexandre Decan, Tom Mens, Maëlick Claes  
24th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER), Klagenfurt, Austria, 2017
- 2017 **On the Interaction of Relational Database Access Technologies in Open Source Java Projects.**  
Alexandre Decan, Mathieu Goeminne, Tom Mens  
Seminar Series on Advanced Techniques & Tools for Software Evolution (SATToSE), 1820, 26-35, Mons, Belgique, 2017
- 2016 **On the Topology of Package Dependency Networks : a comparison of three programming language ecosystems.**  
Alexandre Decan, Tom Mens, Maëlick Claes  
ECSAW'16 : Proceedings of the 10th European Conference on Software Architecture Workshops, Copenhagen, Denmark, 2016
- 2016 **When GitHub meets CRAN : An Analysis of Inter-Repository Package Dependency Problems.**  
Alexandre Decan, Tom Mens, Maëlick Claes, Philippe Grosjean  
23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER), Osaka, Japan, 2016
- 2015 **On the Development and Distribution of R Packages : An Empirical Analysis of the R Ecosystem.**  
Alexandre Decan, Tom Mens, Maëlick Claes, Philippe Grosjean  
International Workshop on Software Ecosystems (IWSECO), 2015
- 2014 **Co-evolving Code-related and Database-related Changes in Data-intensive Software System.**  
Mathieu Goeminne, Alexandre Decan, Tom Mens  
IEEE CSMR-WCRE 2014 Software Evolution Week, 353-357, Antwerpen, Belgique, 2014
- 2010 **A Variant of Pattern Matching for Multiwords.**  
Véronique Bruyère, Olivier Carton, Alexandre Decan, Olivier Gauwin, Jef Wijsen  
Journées Montoises en Informatique Théorique, Amiens, France, 2010
- 2009 **On First-Order Query Rewriting for Incomplete Database Histories.**  
Véronique Bruyère, Alexandre Decan, Jef Wijsen  
16th International Symposium on Temporal Representation and Reasoning, TIME 2009, 54-61, Bressanone, Italie, 2009
- 2008 **On First-Order Query Rewriting for Incomplete Database Histories.**  
Alexandre Decan, Jef Wijsen  
International Workshop on Logic in Databases (LID), 2008

- 2017 **Inter-component Dependency Issues in Software Ecosystems.**  
Maëlick Claes, Alexandre Decan, Tom Mens  
Software Technology : 10 Years of Innovation in IEEE Computer, John Wiley & Sons/IEEE Press, New York, NY, 2017
- 2017 **Analysing the Evolution of Database Usage in Data-Intensive Software Systems.**  
Loup Meurice, Mathieu Goeminne, Tom Mens, Csaba Nagy, Alexandre Decan, Anthony Cleve  
Software Technology : 10 Years of Innovation in IEEE Computer, John Wiley & Sons/IEEE Press, New York, NY, 2017

#### Thèse de doctorat

- 2013 **Certain Query Answering in First-Order Languages.**  
Thèse de doctorat soutenue le 2 juillet 2013

#### Organisation de conférences

- 2022 **BENEVOL**, Mons, 12-13 septembre 2022.  
21st Belgium-Netherlands Software Evolution Workshop
- 2017 **TIME 2017**, Mons, 16-18 octobre 2017.  
24th International Symposium on Temporal Representation and Reasoning
- 2009 **EuroDocInfo 2009**, Mons, 22-23 janvier 2009.
- 2009 **Bases de Données Avancées (BDA) 2009**, Namur, 20-23 octobre 2009.  
25èmes journées de Bases de Données Avancées

#### Distinction

- 2022 **ICSME 2022 Distinguished Paper.**  
38<sup>th</sup> IEEE International Conferences on Software Maintenance & Evolution  
Distinguished Paper Award for “*On the Use of GitHub Actions in Software Development Repositories*”

#### Jury de thèse

- 2021 **Dealing with Inconsistencies in Knowledge Bases.**  
Horacio Tellez Perez, Mons, 23 septembre 2021
- 2019 **A Measurement Framework for Analyzing Technical Lag in Open-Source Software Ecosystems.**  
Ahmed Zerouali, Mons, 4 septembre 2019
- 2017 **Theoretical and Practical Methods for Consistent Query Answering in the Relational Data Model.**  
Fabian Pijcke, Mons, 8 février 2018

#### Lecture & Comité de lecture

- |                            |  |
|----------------------------|--|
| Conférences<br>& workshops | International Conference on Open Source Systems – International Workshop on Software Health in Projects, Ecosystems and Communities – Seminar Series on Advanced Techniques & Tools for Software Evolution – International Workshop on Software Engineering for Systems-of-Systems – European Conference on Software Architecture Workshops – Belgian-Netherlands software evolution symposium – International Symposium on Open Collaboration – ... |
| Journals                   | Journal of Systems and Software – Transactions on Software Engineering – IEEE Software – Empirical Software Engineering – International Journal of Business Intelligence and Data Mining – Natural Sciences and Engineering Research Council of Canada – The VLDB Journal – Information Processing Letters – ...   |