

Alexandre Decan

Data Scientist – Docteur en Sciences

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Né le 29/01/85 à Anderlecht

Expérience professionnelle

- Depuis **Chercheur qualifié F.R.S.-FNRS, UMONS, Mons**
10/2022 Service de Génie Logiciel
Université de Mons – UMONS
- De 02/2015 **Chercheur post-doctorant, UMONS, Mons**
à 09/2022 • 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, 08/2018 - 10/2022.
- 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 **Analyste fonctionnel, Smals, Bruxelles**
à 01/2015 Analyste fonctionnel dans le secteur Soins et Santé.
- De 10/2007 **Assistant de recherche, UMONS, Mons**
à 09/2014 • 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'algorithme, 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 **Formateur-enseignant, Eurometropolitan e-Campus, Tournai**
à 01/2014 Formateur-enseignant en business intelligence dans le cadre du Certificat d'Université d'Executive Master en e-Entrepreneurship.
- De 09/2006 **Élève-assistant, UMONS, Mons**
à 06/2007 Fonction d'élève-assistant pour les cours de programmation et d'algorithme.
- 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). Maitrise de pandas, scipy, sklearn, matplotlib, seaborn, Jupyter.

Base de données

Maitrise 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^AT_EX

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

Dossier scientifique

Journal avec peer-review

- 2026 **An Empirical Study of the Evolution of GitHub Actions Workflows**
Pooya Rostami Mazrae, Alexandre Decan, Tom Mens, Mairieli Wessel
Journal of Systems and Software, 10.1016/j.jss.2026.112824, 2026
- 2025 **A Bot Identification Model and Tool Based on GitHub Activity Sequences**
Natarajan Chidambaram, Alexandre Decan, Tom Mens
Journal of Systems and Software, 10.1016/j.jss.2024.112287, 2025
- 2023 **On the Outdatedness of Workflows in the GitHub Actions Ecosystem**
Alexandre Decan, Tom Mens, Hassan Onsori Delicheh
Journal of Systems and Software, 10.1016/j.jss.2023.111827, 2023
- 2023 **On the usage, co-usage and migration of CI/CD tools : a qualitative analysis**
Pooya Rostami Mazrae, Tom Mens, Mehdi Golzadeh, Alexandre Decan
Empirical Software Engineering 28, 52, 10.1007/s10664-022-10285-5, 2023
- 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
- [Article dans les actes avec comité de lecture](#)
- 2025 **A Dataset of Contributor Activities in the NumFocus Open-Source Community**
 Youness Hourri, Alexandre Decan, Tom Mens
 22nd International Conference on Mining Software Repositories (MSR), Ottawa, Canada, 2025
- 2024 **An Overview and Catalogue of Dependency Challenges in Open Source Software Package Registries**
 Tom Mens, Alexandre Decan
 23rd Belgium-Netherlands Software Evolution Workshop (BENEVOL), Namur, Belgium, 2024
- 2024 **Quantifying Security Issues in Reusable JavaScript Actions in GitHub Workflows**
 Hassan Onsori Delicheh, Alexandre Decan, Tom Mens
 21st International Conference on Mining Software Repositories (MSR), Lisbon, Portugal, 2024
- 2024 **gawd : A Differencing Tool for GitHub Actions Workflows**
 Pooya Rostami Mazrae, Alexandre Decan, Tom Mens
 21st International Conference on Mining Software Repositories (MSR), Lisbon, Portugal, 2024
- 2024 **RABBIT : A tool for identifying bot accounts based on their recent GitHub event history**
 Natarajan Chidambaran, Tom Mens, Alexandre Decan
 21st International Conference on Mining Software Repositories (MSR), Lisbon, Portugal, 2024
- 2024 **A dataset of GitHub Actions workflow histories**
 Guillaume Cardoen, Tom Mens, Alexandre Decan
 21st International Conference on Mining Software Repositories (MSR), Lisbon, Portugal, 2024
- 2023 **A Preliminary Study of GitHub Actions Workflow Changes**
 Pooya Rostami Mazrae, Alexandre Decan, Tom Mens, Mairieli Wessel
 Seminar Series on Advanced Techniques & Tools for Software Evolution (SATToSE), Salerno, Italie, 2023
- 2023 **Distinguishing Bots from Human Developers Based on their GitHub Activity Types**
 Natarajan Chidambaran, Alexandre Decan, Tom Mens
 Seminar Series on Advanced Techniques & Tools for Software Evolution (SATToSE), Salerno, Italie, 2023
- 2023 **A Preliminary Study of GitHub Actions Dependencies**
 Hassan Onsori Delicheh, Alexandre Decan, Tom Mens
 Seminar Series on Advanced Techniques & Tools for Software Evolution (SATToSE), Salerno, Italie, 2023
- 2022 **A Dataset of Bot and Human Activities in GitHub**
 Natarajan Chidambaran, Alexandre Decan, Tom Mens
 20th International Conference on Mining Software Repositories (MSR), Melbourne, Australia, 2023

- 2022 **Patched Clones and Missed Patches among the Divergent Variants of a Software Family**
Poedjadie 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 Chidamaram
4th Workshop on Bots in Software Engineering (BotSE), IEEE/ACM ICSEW 2022
- 2022 **Leveraging Predictions From Multiple Repositories to Improve Bot Detection**
Natarajan Chidambaran, 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
- 2020 **An Empirical Investigation of Forks as Variants in the npm Package Distribution**
John Businge, Alexandre Decan, Ahmed Zerouali, Tom Mens, Serge Demeyer
19th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Luxembourg, Luxembourg, 2020
- 2020 **Evaluating a Bot Detection Model on Git Commit Messages**
Mehdi Golzadeh, Alexandre Decan, Tom Mens
19th Belgium-Netherlands Software Evolution Workshop (BENEVOL), Luxembourg, Luxembourg, 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

Chapitre de livre

- 2023 **The GitHub Development Workflow Automation Ecosystems**

Mairieli Wessel, Tom Mens, Alexandre Decan, Pooya Rostami Mazrae
Software Ecosystems : Tooling and Analytics, Springer International Publishing, 2023

- 2017 **Inter-component Dependency Issues in Software Ecosystems**

Maëlick Claes, Alexandre Decan, Tom Mens
Software Technology : 10 Years of Innovation, 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, 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

- 2025 **MSR 2025 Distinguished Paper**

22nd International Conference on Mining Software Repositories
Distinguished Paper Award for “*A Dataset of Contributor Activities in the NumFocus Open-Source Community*”

- 2022 **ICSME 2022 Distinguished Paper**

38th IEEE International Conferences on Software Maintenance & Evolution
Distinguished Paper Award for “*On the Use of GitHub Actions in Software Development Repositories*”

Financement

- 2023 **Mandat d’Impulsion Scientifique**, F.R.S.-FNRS, 2023 à 2025

On the impact of workflow automation solutions on continuous collaborative open source software engineering (F.4515.23, 428.991€)

- 2022 **Chercheur Qualifié**, F.R.S.-FNRS, 2022

Analysing and improving workflow automation in continuous collaborative open source software engineering (1.C.024.23F, 20.000€)

Promoteur de thèse

- 2024 **Aref Talebzadeh**, Université de Mons, 2024 (en cours)

On the impact of workflow automation on continuous collaborative open source software engineering

- 2023 **Youness Hourri**, Université de Mons, 2023 (en cours)

On the impact of workflow automation on continuous collaborative open source software engineering

- 2023 **Guillaume Cardoen**, Université de Mons, 2023 (en cours)
On workflow automation in open source software repositories
- 2022 **Hassan Onsori Delicheh**, Université de Mons, 2022 (en cours)
Empirical analysis, recommendations and improvements for software development workflow automation ecosystems

Jury de thèse

- 2025 **Improving Bot Identification in Collaborative Software Development on GitHub**
Natarajan Chidambararam, University of Mons, 22 mai 2025
- 2023 **Identifying Development Bots in Social Coding Platforms**
Mehdi Golzadeh, University of Mons, 22 juin 2023
- 2021 **Dealing with Inconsistencies in Knowledge Bases**
Horacio Tellez Perez, University of Mons, 23 septembre 2021
- 2019 **A Measurement Framework for Analyzing Technical Lag in Open-Source Software Ecosystems**
Ahmed Zerouali, University of Mons, 4 septembre 2019
- 2017 **Theoretical and Practical Methods for Consistent Query Answering in the Relational Data Model**
Fabian Pijcke, University of Mons, 8 février 2018

Lecture & Comité de lecture

- Conférences & workshops International Conference on Open Source Systems – International Conference on Mining Software Repositories – 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 – ...