

SELF-ASSESSMENT Prof. PABLO GÓMEZ-ABAJO

Pablo Gómez-Abajo began his Bachelor's in Computer Science at the Universidad Autónoma de Madrid in 2000 in full swing of .com companies and the birth of Google or Amazon. During the summer before the start of his university studies, he performed a stage of a month in Cambridge (United Kingdom), where he completed a course on the English language with native professors, obtaining the highest score, and where he interacted with students from practically all the world's developed countries.

In the summer of 2003, Pablo Gómez-Abajo completed the Road to Santiago, beginning from the Leonese city of Astorga. During this experience, he interacted with young people from all the Spanish regions and the rest of the world.

During the course term 2004–2005, Pablo Gómez-Abajo performed a short studies stage under the Erasmus program of the European Union in the Portuguese capital of Lisbon, where he accomplished a European Portuguese language course, obtaining the highest score.

Pablo Gómez-Abajo earned his Bachelor's in Computer Science studies at the Universidad Autónoma de Madrid in June 2006, obtaining an average score of 7.4 over 10 in the degree. Next, he began his Bachelor's in Philosophy at the Universidad Complutense de Madrid. He has accomplished 68 ECTS credits of 240 of these studies, with an average score of 7.9 over 10.

From 2008 to 2015, Pablo Gómez-Abajo was working as IT manager at Ingeniería y Prevención de Riesgos, S.L. During this time, he acquired high-level skills in the development of software solutions for professionals with different technical backgrounds, such as Civil Engineers, Mechanical Engineers, and so on. This gives him a remarkable ability to understand their needs and build the easiest solution.

During this period, he worked on web-oriented applications (document management systems) and desktop applications (office software). Most of these projects were developed using the Microsoft .Net platform and the MySQL database management system. During this time, he also acquired skills in PHP and Java, and in the Oracle and SQL Server database management systems. These applications are used mainly by the company itself, and they are also provided as a service to some of its clients: Adif, Canal de Isabel II, and Correos y Telégrafos, to mention a few.

To continue progressing as an ICT professional, in March 2015, Pablo Gómez-Abajo joined the *Modelling and Software Engineering research group* of the Universidad Autónoma de Madrid, led by Juan de Lara and Esther Guerra. His research involves designing and implementing domain-independent tools and domain-specific languages.

In June 2016, Pablo Gómez-Abajo defended his Master's Thesis "*A framework for the automated generation of exercises via model mutation*", directed by Esther Guerra and Juan de Lara, with a special mention.

In July 2020, he defended his PhD. Thesis "*A domain-specific language for model mutation*", directed by Esther Guerra and Mercedes García Merayo, with excellent cum laude. Currently, Pablo Gómez-Abajo has been the author of 7 articles in inter-

national journals, a book chapter, and has published in 10 international conferences in the Software Engineering field.

The mutation tool developed during his PhD. is available as open source¹ and has meant 3 international collaborations up to this date: with the research group of the University of Sheffield (United Kingdom) led by Rob Hierons, the research group IMT Atlantique of the University of Nantes (France) and the research group ‘Automated Software language and Software engineering’ of Antonio Cicchetti (Sweden).

Up to this date, Pablo Gómez–Abajo has received two international awards for his research works:

- **“Best new ideas/vision paper award”** for the paper *“New ideas: Automated engineering of metamorphic testing environments for domain-specific languages”*. Pablo C. Cañizares, **Pablo Gómez–Abajo**, Alberto Núñez, Esther Guerra, Juan de Lara. ACM SIGPLAN International Conference on Software Language Engineering, SLE 2021. Chicago. Virtual.
- **“Best tool demo paper award”** for the paper *“Wodel–Edu: An MDE solution for the generation and evaluation of diagram-based exercises”*. **Pablo Gómez–Abajo**, Andrés Rico–Fernández, Esther Guerra, Juan de Lara. International Conference of Model–Driven Engineering Languages and Systems 2021, MoDELS 2021. Tokyo. Virtual.

And a national award:

- **“PhD. Thesis in the Model–driven Software Engineering scope”** *“A domain-specific language for model mutation”*. **Pablo Gómez–Abajo**. ISDM track of the Jornadas de Ingeniería del Software y Bases de Datos, JISBD 2022. Santiago de Compostela.

In September 2019, Pablo Gómez–Abajo won a position as Pre–doctoral Assistant Professor in the Department of Computer Science of the Universidad Autónoma de Madrid, and up to this date, he has been acknowledged with a sexennial of research for the 2016–2021 section. In November 2022, he was positively evaluated for his credentials as Assistant Professor, and in January 2023, his candidacy was elected in a public contest to access a position in such a category within the same department.

During this period, he has taught courses on *“Compilers”* (120h, from which 30h correspond to a group of the bilingual degree taught in the English language), *“Languages and Automata Theory”* (30h), *“Software Analysis and Design”* (60h), *“Operating Systems”* (45h) and he has been a member of the *“Bachelor’s Thesis Evaluation committee”* (45h) of the Bachelor’s in Computer Science; and *“Advanced Networks and the Internet”* (12h) from the MSc. in Computer Science; accomplishing a total of 312 teaching hours.

He has directed six Bachelor’s Thesis, the two first defended in July 2021: *“A framework for the generation of collaborative games using modelling techniques”* and *“Automated generation of exercises for mobile apps”*; the two second defended in June and July 2022, respectively: *“A framework for the generation of document management systems”* and *“Generation and evaluation of diagram-based exercises for Apple iOS”*; and the two last defended in July and September 2023, respectively: *“Decision support system in the scope of clinic bioethics”* and *“Specs for pronunciation mobile app”*, all of them with the final score of a “notable”.

¹<https://gomezabajo.github.io/Wodel/>

For his teaching activity during the courses 2019–2020 and 2020–2021, Pablo Gómez–Abajo has been positively evaluated in the program DOCENTIA–UAM 2022, with a global score of 87.75%.

Pablo Gómez–Abajo speaks fluently Spanish, English and Portuguese, and can interact in French, German, Italian and Arabic.

During his research path, Pablo Gómez–Abajo has participated in the projects Lowcomote–“*Marie Skłodowska Curie grant agreement No. 813884*” of the European Union; Go–Lite, FLEXOR, MASSIVE and FINESSE of the Spanish Ministry of Science; and SICOMORo and FORTE of the Madrid Region.

Currently, Pablo Gómez–Abajo has completed a generic framework to apply metamorphic testing² in collaboration with Pablo Cerro Cañizares and Alberto Núñez Covarrubias, and with the supervision of Esther Guerra and Juan de Lara, and directs two Bachelor’s Theses that will be defended by the end of the second semester of this course 2023–2024.

Academic background:

6. **University MSc. in Clinic Bioethics.** Universidad Internacional Menéndez Pelayo. From 2022. Passed 6/60 ECTS credits. Average score of 8.4 over 10. To be finished.
5. **University MSc. in Research in Artificial Intelligence.** Universidad Internacional Menéndez Pelayo. From 2020. Passed 7.5/60 ECTS credits. Average score of 7.6 over 10. To be finished.
4. **BA. in Philosophy.** Universidad Complutense de Madrid & Universidad Nacional de Educación a Distancia. From 2006. Passed 68/240 ECTS credits. Average score of 7.9 over 10. To be finished.
3. **PhD. in Computer Science and Engineering.** Universidad Autónoma de Madrid. 2020. Excellent cum laude.
2. **MSc. in Research and Innovation in Information and Communication Technologies.** 2016. Average score of 8.19 over 10 and special mention in Master’s Thesis.
1. **BSc. in Computer Science and Engineering.** Universidad Autónoma de Madrid. 2006. Average score of 7.4 over 10.

Publications:

International and national journals in the reviewing process:

1. “*A language-parametric test amplification framework for executable domain-specific languages*”. Faezeh Khorram, Erwan Bousse, Jean–Marie Mottu, Gerson Sunyé, Djamel Eddine Khelladi, **Pablo Gómez–Abajo**, Pablo C. Cañizares, Esther Guerra, Juan de Lara. Software and Systems Modeling. Springer. In 1st revision round. Submitted in May 2023. Q2 in Computer Science / Software Engineering in 2022.

²<https://g0tten.github.io/g0tten/>

International and national journals:

7. “Automated generation and correction of diagram-based exercises for Moodle”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. Wiley Computer Applications in Engineering Education. Vol 31(6). 2023. Q2 in Education & Q3 in Computer Science in 2022.
6. “Wodel–Edu: A tool for the generation and evaluation of diagram-based exercises”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. 2023. Vol 230. Q4 in Computer Science / Software Engineering in 2022.
5. “Automated engineering of domain-specific metamorphic testing environments”. **Pablo Gómez–Abajo**, Pablo C. Cañizares, Alberto Núñez, Esther Guerra, Juan de Lara. Information and Software Technology. 2023. Vol 157. Q2 in Computer Science / Software Engineering in 2022.
4. “Wodel–Test: A model-based framework for language-independent mutation testing”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Software and Systems Modeling. Springer. 2021. Vol 20, pp.:767–793. Q2 in Computer Science / Software Engineering in 2021.
3. “Systematic engineering of mutation operators”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Journal of Object Technology. 2020. Vol 19, pp.:3:1–16. Q4 in Computer Science / Software Engineering in 2020.
2. “A tool for domain-independent model mutation”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Science of Computer Programming. Elsevier. 2018. Vol 163, pp.:85–92. Q3 in Computer Science / Software Engineering in 2018.
1. “A domain-specific language for model mutation and its application to the automated generation of exercises”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. Computer Languages, Systems and Structures. Elsevier. 2017. Vol 49, pp.:152–173. Q2 in Computer Science / Software Engineering in 2017.

International and national conferences:

11. “GOTTEN: A model-driven solution to engineer domain-specific metamorphic testing environments.”. **Pablo Gómez–Abajo**, Pablo C. Cañizares, Alberto Núñez, Esther Guerra, Juan de Lara. ACM/IEEE 26th International Conference on Model-Driven Engineering Languages and Systems, MoDELS 2022. Västerås. Tool demo.
10. “Automatic test amplification for executable models”. Faezeh Khorram, Erwan Bousse, Jean-Marie Mottu, Gerson Sunyé, **Pablo Gómez–Abajo**, Pablo C. Cañizares, Esther Guerra, Juan de Lara. ACM/IEEE 25th International Conference on Model-Driven Engineering Languages and Systems, MoDELS 2022. Montreal.
9. “Analyzing the reliability of simulated distributed systems using metamorphic testing”. Alberto Núñez, Pablo C. Cañizares, **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. 7th International Workshop on Metamorphic Testing, MET 2022. 44th IEEE/ACM International Conference on Software Engineering, ICSE 2022. Pittsburgh. Virtual.
8. “New ideas: Automated engineering of metamorphic testing environments for domain-specific languages”. Pablo C. Cañizares, **Pablo Gómez–Abajo**, Alberto Núñez, Esther Guerra, Juan de Lara. ACM SIGPLAN International Conference on Software Language Engineering, SLE 2021. Chicago. Virtual.

7. “*Wodel-Edu: An MDE solution for the generation and evaluation of diagram-based exercises*”. **Pablo Gómez-Abajo**, Andrés Rico-Fernández, Esther Guerra, Juan de Lara. ACM/IEEE 24th International Conference of Model-Driven Engineering Languages and Systems 2021, MoDELS 2021. Tokyo. Virtual. Tool demo.
6. “*Seed model synthesis for testing model-based mutation operators*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. International Conference on Advanced Information Systems Engineering, CAiSE Forum 2020. Grenoble. Virtual. Lecture Notes in Business Information Processing. Springer. 2020. Vol 386, pp.:64–76. Core A.
5. “*Mutation testing for DSLs (tool demo)*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. ACM SIGPLAN International Workshop on Domain-Specific Modeling, DSM’19. Athens. pp.:60–62.
4. “*Adoption of the visual brainstorming technique in the open-source software development process*”. Lucrecia Llerena, Nancy Rodríguez, **Pablo Gómez-Abajo**, John W. Castro, Silvia T. Acuña. International Conference on Software Engineering, ICSE 2018. Gothenburg. Core A++.
3. “*Towards a model-driven engineering solution for language independent mutation testing*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Jornadas de Ingeniería del Software y Bases de Datos 2018, JISBD 2018. Sevilla.
2. “*A DSL for model mutation and its applications to different domains*”. **Pablo Gómez-Abajo**. Doctoral Symposium at the International Conference of Model-Driven Engineering Languages and Systems 2016, MoDELS 2016. Saint-Malo.
1. “*Wodel: A domain-specific language for model mutation*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara. ACM Symposium on Applied Computing 2016, SAC’16, Pisa. pp.:1968–1973.

Communications:

3. “*Automated engineering of domain-specific metamorphic testing environments*”. **Pablo Gómez-Abajo**, Pablo C. Cañizares, Alberto Núñez, Esther Guerra, Juan de Lara. Jornadas de Ingeniería del Software y Bases de Datos 2023, JISBD 2023. Already published paper. Ciudad Real.
2. “*Wodel-Test: A model-based framework for language-independent mutation testing*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. International Conference of Model-Driven Engineering Languages and Systems 2021, MoDELS 2021. Journal 1st. Tokyo. Virtual.
1. “*Wodel-Test: A model-based framework for language-independent mutation testing*”. **Pablo Gómez-Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Jornadas de Ingeniería del Software y Bases de Datos 2021, JISBD 2021. Already published paper. Málaga. Virtual.

Talks:

3. “*Generación automática de ejercicios para Moodle*”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. VII Semana de la Innovación Docente, 2022. Universidad Autónoma de Madrid.
2. “*Wodel–Test: A language–independent approach for the generation of mutation testing tools*”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara, Mercedes G. Merayo. Workshop on Software Reliability for Madrid Flight on Chip. IMDEA Software Institute. 2019.
1. Poster “*Wodel: A DSL for model mutation; and Wodel–Edu: its application to the automated generation of exercises*”. **Pablo Gómez–Abajo**, Esther Guerra, Juan de Lara. 2016. 7th International Summer School on Domain–Specific Modeling, DSM–TP 2016, Genève.