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CURRICULUM VITÆ

Departamento de Informática  
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Universidade NOVA de Lisboa

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# 1 Summary

I started my teaching activities at Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa in 1992, just after my graduation, and I have finished my PhD in 2007. I have an extensive experience in teaching in the context of PhD, MSc and BSc courses and I also collaborated, under pre-established protocols, in teaching activities tailored for industry needs or at joint post graduation programs with other schools.

I started my research activities as a research assistant in several European projects in the early 90's where I used my skills in the field of computer graphics [P9, P10]. Later I focused my research on the use of particle systems as a modelling tool. I developed a general environment where visualization and simulation algorithms could be developed on top of extensible and programmable particle systems [21, 22, 9, 36]. From there I applied particle systems to cloth models and later handled dynamic level of detail [34, 20, 32] in the simulations. With the emergence of GPUs I explored their power in speeding up several aspects of this computationally intensive tasks [33, 19, 31].

The acquired experience with GPUs led me to explore High Performance Computing architectures with a mix of CPUs and GPUs to tackle computationally demanding problems. This HPC environment was the hardware testbed for the TomoGPU project [P7], where a problem solving environment for scientists in material sciences was developed [29, 7, 6]. I also explored video game development, mainly in the procedural content generation using artificial intelligence techniques [16, 28, 15, 14, 12, 13].

In recent years I have been performing a bridge between the areas of computer graphics and data visualization, especially geospatial data with a temporal component [3, 10, 11]. I have joined the Spatio Temporal Analytics Research (staresearch.net) interest group and since last year, in collaboration with two more colleagues, we have informally launched a research thread on Intelligent Systems for the Monitorization of Natural Resources. Our joint efforts allowed us to gather a very large number of MSc students in just one year. This research thread combines Machine Learning, Artificial Intelligence, Visual Data Analytics, Augmented, Virtual and Mixed Reality to solve existing and demanding problems [P3, P4]. I also participate in projects with the industry [P1, P2, P5].

I successfully supervised a PhD student, that concluded its defense in 2016. I have successfully advised 24 MSc students and currently 16 MSc students are being supervised or co-supervised by me.

From 2009 onwards I have been a regular member of the Scientific Committee of both the Integrated Master in Computer Science and the former Master in Computer Science. This has given me the opportunity to contribute to further improvements on the efficiency of teaching activities at our department. One such example is the setup of a framework to allow more students performing their dissertation work outside the university, helping tighten relations with the industry and feeding synergies for future collaborations.

I am also the Departmental Erasmus coordinator since 2009 and I handle the establishment of new bilateral agreements, advise outgoing students and help them elaborate their learning agreements, assist them while abroad and, finally, determine their final grades and equivalent local course units to be credited. I also assist incoming students. To this date, the department has 37 bilateral agreements in effect.

I actively participate in activities promoted by the department and the school. An example is the preparation of activities for ExpoFCT, visiting high schools in the region or welcoming

their students. These activities, that I have co-developed, teach computer science principles by executing carefully planned activities in a lab, such as video game development.

I am a core member of the Codingfest team that created the platform that has been used, with such a great success, during the *week of code* in the 2016, 2017 and 2018. I am the lead programmer of the puzzle game that is used in the event. This same activity is regularly shown at the European Researchers' Night, where I have also served in 2017 and helped modifying the puzzle game so that, not only the character on screen moved, but also tangible actions were performed by a real robot on a physical board.

I setup and participated in several Summer Courses for the *Ciência Viva* program where, once again, videogames are used to capture the interest of students in computer science. For a whole week they develop a well known videogame, from scratch, using software tools that provide high level abstractions. This activity has been the reason why some of our top performer students have chosen our school.

Finally, in the last 3 years (2017—2019) I also had the privilege to be a member of the working group of the FCTNOVA Challenge. This event projects the name of the school in every corner of the country and has been a tremendous success with around 60-70 research and scientific projects submitted every year.

## 2 Personal Information

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Google scholar:	<a href="https://scholar.google.pt/citations?user=5esH_MsAAAAJ&amp;hl=en">https://scholar.google.pt/citations?user=5esH_MsAAAAJ&amp;hl=en</a>
Scopus Author ID:	24512124500

### 3 Academic Degrees

- PhD**      **Universidade NOVA de Lisboa**  
Informatics (Informática), 2007  
*Técnicas Eficientes de Simulação de Tecidos com Realismo Acrescido*  
Supervisor: Manuel Próspero dos Santos
- MSc**      **Universidade NOVA de Lisboa**  
Informatics Engineering (Mestrado em Engenharia Informática), 1998  
*Sistema de Partículas para Visualização e Simulação*  
Supervisor: Manuel Próspero dos Santos
- Licentiate**      **Universidade NOVA de Lisboa**  
Informatics Engineering (Engenharia Informática), 1992

### 4 Professional Activities

#### 4.1 In Academe

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Dec. 2007 — today	Assistant Professor at the Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa.
Apr. 1998 — Dec. 2007	Senior Teaching Assistant at the Departamento de Engenharia Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa.
Nov. 1992 — Apr. 1998	Junior Teaching Assistant at the Departamento de Engenharia Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa.

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#### 4.2 In Scientific Organizations

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Jan. 2017 — today	Researcher at the NOVA Laboratory for Computer Science and Engineering (NOVA-LINCS). Member of the Multimodal Systems Research Stream
Jan. 2015 — Dec. 2016	Associate Researcher at the NOVA Laboratory for Computer Science and Engineering (NOVA-LINCS). Member of the Multimodal Systems Research Stream
Dec. 2007 — Dec. 2015	Associate Researcher at Centre for Informatics and Information Technologies (CITI). Member of the Multimodal Systems Research Stream

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## 5 Scientific Activities

### 5.1 Publications

Table 1 presents an overview of the publications according to the ranking used by the Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa. From the 7 Journal publications, 1 was in a top ranked journal (*Q1*) and 1 more in a journal ranked as *Q2*.

Six publications in International Conferences and Workshops [12, 13, 14, 16, 17, 18] were in a conference ranked as *B* until 2015 but classified as *A* thereafter by my department. However, all those six publications were before 2016.

Section 5.1.2 presents the list of all publications in reverse chronological order, split into (i) Dissertations; (ii) International Journals; (iii) International Conferences and Workshops; (iv) National Conferences and, finally, (v) Technical Reports.

Type	Number of Publications	Rank	Reference	Citations
Journals	1	A	[3]	—
	1	B	[4]	22
	5	Other	[5]–[9]	11
International Conferences	9	B	[10], [12]–[14], [16]–[18], [20, 21]	54
	2	C	[11, 15]	6
	2	other	[19, 22]	5
National Conferences	13	—	[23]–[37]	4
Google Scholar Total (including my PhD Dissertation)				106

Table 1: Overview of publications by venue type

#### 5.1.1 Impact Indicators

Table 2 shows the list of publications contributing to the *h-index*. All these publications are related to PhD work, either from a student that I directly supervised or from collaborations with other researchers and their PhD supervised students.

#### 5.1.2 Full List of Publications

##### Dissertations

- [1] Fernando Pedro Birra. “Técnicas Eficientes de Simulação de Tecidos com Realismo Acrescido”. PhD dissertation. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2007.

Title	Reference	Citations
Automatic level generation for platform videogames using genetic algorithms	[13]	32
Cultural Heritage 3D Modelling and visualisation within an Augmented Reality Environment, based on Geographic Information Technologies and mobile platforms	[4]	22
Difficulty in action based challenges: success prediction, players' strategies and profiling	[12]	7
Object identification in binary tomographic images using GPGPUs	[6]	7
Building mobile context-aware applications for leisure and entertainment	[17]	6

Table 2: Publications contributing to *h-index* value of 5

- [2] Fernando Pedro Birra. “Sistema de Partículas para Visualização e Simulação”. MSc dissertation. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 1997.

### International Journals

- [3] Ricardo Almeida Silva et al. “Visual analytics for spatiotemporal events”. In: *Multimedia Tools and Applications* 78.23 (2019), pp. 32805–32847. DOI: 10.1007/s11042-019-08012-2.
- [4] Luís Filipe Marques et al. “Cultural Heritage 3D Modelling and visualisation within an Augmented Reality Environment, based on Geographic Information Technologies and mobile platforms”. In: *ACE - Architecture, City and Environment* 33 (Feb. 2017), pp. 117–136. ISSN: 1886-4805. DOI: 10.5821/ace.11.33.4686.
- [5] Fausto Mourato, Fernando Pedro Birra, and Manuel Próspero dos Santos. “Using Graph-Based Analysis to Enhance Automatic Level Generation for Platform Videogames”. In: *IJCICG* 4.1 (2013), pp. 49–70. DOI: 10.4018/ijcicg.2013010104.
- [6] Bruno Preto et al. “Object Identification in Binary Tomographic Images Using GPGPUs”. In: *IJCICG* 4.2 (2013), pp. 40–56. DOI: 10.4018/ijcicg.2013070103.
- [7] A. Velhinho et al. “A Problem-Solving Environment for reinforcement distribution characterization in composites using tomographic images”. In: *Ciencia e Tecnologia dos Materiais* 24.3-4 (2012), pp. 149–152.
- [8] Fernando Pedro Birra and Manuel Próspero Santos. “Dynamic Mesh Resolution and Stable Cloth Simulation”. In: *Advances in Computer Graphics in Portugal (Virtual)* (2004). Online Journal.
- [9] F.P. Birra and M.J. Próspero. “SiPaViS — A Toolkit for Scientific Visualization and Simulation”. In: *Journal for Geometry and Graphics* 3.1 (1999), pp. 47–55. URL: [http://www.heldermann-verlag.de/jgg/jgg01\\_05/jgg0304.pdf](http://www.heldermann-verlag.de/jgg/jgg01_05/jgg0304.pdf).

### International Conferences and Workshops

- [10] Ricardo Almeida Silva et al. “Visualising Hidden Spatiotemporal Patterns at Multiple Levels of Detail”. In: *22nd International Conference Information Visualisation, IV 2018, Fisciano, Italy, July 10-13, 2018*. Ed. by Ebad Banissi et al. IEEE Computer Society, 2018, pp. 294–302. ISBN: 978-1-5386-7202-0. DOI: 10.1109/iv.2018.00057.



- [11] Diogo Cardoso et al. “Gisplay- Extensible Web API for Thematic Maps with WebGL”. In: *Computational Science and Its Applications - ICCSA 2017 - 17th International Conference, Trieste, Italy, July 3-6, 2017, Proceedings, Part VI*. Ed. by Osvaldo Gervasi et al. Vol. 10409. Lecture Notes in Computer Science. Springer, 2017, pp. 674–689. ISBN: 978-3-319-62406-8. DOI: 10.1007/978-3-319-62407-5\_49.
- [12] Fausto Mourato, Fernando Pedro Birra, and Manuel Próspero dos Santos. “Difficulty in action based challenges: success prediction, players’ strategies and profiling”. In: *Proceedings of the 11th Conference on Advances in Computer Entertainment Technology, ACE ’14, Funchal, Madeira, Portugal, November 11-14, 2014*. Ed. by Yoram Chisik, Christian Geiger, and Shoichi Hasegawa. ACM, 2014, 9:1–9:10. ISBN: 978-1-4503-2945-3. DOI: 10.1145/2663806.2663832.
- [13] Fausto Mourato, Fernando Pedro Birra, and Manuel Próspero dos Santos. “The Challenge of Automatic Level Generation for Platform Videogames Based on Stories and Quests”. In: *Advances in Computer Entertainment - 10th International Conference, ACE 2013, Boekelo, The Netherlands, November 12-15, 2013. Proceedings*. Ed. by Dennis Reidsma, Haruhiro Katayose, and Anton Nijholt. Vol. 8253. Lecture Notes in Computer Science. Springer, 2013, pp. 332–343. ISBN: 978-3-319-03160-6. DOI: 10.1007/978-3-319-03161-3\_24.
- [14] Fausto Mourato, Fernando Pedro Birra, and Manuel Próspero dos Santos. “Enhancing Level Difficulty and Additional Content in Platform Videogames through Graph Analysis”. In: *Advances in Computer Entertainment - 9th International Conference, ACE 2012, Kathmandu, Nepal, November 3-5, 2012. Proceedings*. Ed. by Anton Nijholt, Teresa Romão, and Dennis Reidsma. Vol. 7624. Lecture Notes in Computer Science. Springer, 2012, pp. 70–84. ISBN: 978-3-642-34291-2. DOI: 10.1007/978-3-642-34292-9\_6.
- [15] Fausto Mourato, Manuel Próspero dos Santos, and Fernando Pedro Birra. “Integrated System for Automatic Platform Game Level Creation with Difficulty and Content Adaptation”. In: *Entertainment Computing - ICEC 2012 - 11th International Conference, ICEC 2012, Bremen, Germany, September 26-29, 2012. Proceedings*. Ed. by Marc Herrlich, Rainer Malaka, and Maic Masuch. Vol. 7522. Lecture Notes in Computer Science. Springer, 2012, pp. 409–412. ISBN: 978-3-642-33541-9. DOI: 10.1007/978-3-642-33542-6\_40.
- [16] Fausto Mourato, Manuel Próspero dos Santos, and Fernando Pedro Birra. “Automatic level generation for platform videogames using genetic algorithms”. In: *Proceedings of the 8th International Conference on Advances in Computer Entertainment Technology, ACE 2011, Lisbon, Portugal, November 8-11, 2011*. Ed. by Teresa Romão et al. ACM, 2011, p. 8. ISBN: 978-1-4503-0827-4. DOI: 10.1145/2071423.2071433.
- [17] Valentim Realinho et al. “Building mobile context-aware applications for leisure and entertainment”. In: *Proceedings of the 8th International Conference on Advances in Computer Entertainment Technology, ACE 2011, Lisbon, Portugal, November 8-11, 2011*. Ed. by Teresa Romão et al. ACM, 2011, p. 29. ISBN: 978-1-4503-0827-4. DOI: 10.1145/2071423.2071459.
- [18] Valentim Realinho et al. “Rapid development of mobile context-aware applications with IVO”. In: *Proceedings of the 8th International Conference on Advances in Computer Entertainment Technology, ACE 2011, Lisbon, Portugal, November 8-11, 2011*. Ed. by Teresa Romão et al. ACM, 2011, p. 91. ISBN: 978-1-4503-0827-4. DOI: 10.1145/2071423.2071532. Poster.
- [19] Fernando Pedro Birra and Manuel Santos. “Towards Efficiency in Cloth Simulation”. In: *Articulated Motion and Deformable Objects, 5th International Conference, AMDO 2008, Port d’Andratx, Mallorca, Spain, July 9-11, 2008, Proceedings*. Ed. by Francisco J. Perales López and Robert B. Fisher. Vol. 5098. Lecture Notes in Computer Science. Springer, 2008, pp. 144–155. ISBN: 978-3-540-70516-1. DOI: 10.1007/978-3-540-70517-8\_15.

- [20] Fernando Pedro Birra and Manuel Próspero dos Santos. “Stable Cloth Animation with Adaptive Level of Detail”. In: *The 12-th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision'2004, WSCG 2004, University of West Bohemia, Campus Bory, Plzen-Bory, Czech Republic, February 2-6, 2004*. 2004, pp. 31–38.
- [21] Fernando Pedro Birra and Manuel Próspero dos Santos. “A Framework for Data Visualization Based on Particle Systems”. In: *WSCG'98 Conference Proceedings*. Ed. by V. Skala. Plzen, Czech Republic: UNION Agency - Science Press, Feb. 1998, pp. 41–48. URL: <http://visinfo.zib.de/EVlib/Show?EVL-1998-511>.
- [22] Fernando Pedro Birra and Manuel Próspero dos Santos. “SiPaViS – A toolkit for Scientific Visualization and Simulation”. In: *Proceedings of the 8th ICECGDG*. ISGG. Austin TX, USA, 1998, pp. 480–484.

### National Conferences

- [23] Daniela Henriques et al. “Fusão e Recuperação de Imagem Satélite”. In: *INForum 2019 - 11º Simpósio de Informática*. Guimarães, Sept. 2019, pp. 437–448. URL: <http://inforum.org.pt/INForum2019/docs/atas-do-inforum2019>.
- [24] André Neves et al. “Detecção de estruturas permanentes a partir de dados de séries temporais Sentinel 1 e 2”. In: *INForum 2019 - 11º Simpósio de Informática*. Guimarães, Sept. 2019, pp. 449–460. URL: <http://inforum.org.pt/INForum2019/docs/atas-do-inforum2019>.
- [25] Antero Pires et al. “Combinando mapas de papel e smartphones na exploração do património cultural”. In: *INForum 2016 - 8º Simpósio de Informática*. Instituto Superior Técnico, Lisboa, Portugal, Sept. 2016, pp. 156–159. URL: <http://inforum.org.pt/INForum2016/docs/atas-do-inforum-2016>.
- [26] André Alves, Fernando P. Birra, and João M. Lourenço. “Como separar o trigo do joio?” In: *INForum 2015 - 7º Simpósio de Informática*. Covilhã, Sept. 2015.
- [27] Bruno et al. “A GPU-enabled algorithm for 3D image labelling”. In: *1º Encontro Nacional dos Utilizadores da Radiação de Sincrotrão*. CENIMAT-FCT/UNL, Portugal, Jan. 2012, pp. 1–2. Poster.
- [28] Fausto Mourato, Fernando Birra, and Manuel Próspero dos Santos. “Sistema Integrado de Geração Automática de Conteúdo para Videojogos de Plataformas”. In: *Actas do 20º Encontro Português de Computação Gráfica*. Grupo Português de Computação Gráfica – Eurographics, Oct. 2012, pp. 19–26. URL: <http://gpcg.pt/docs/20-ActasEPCG.pdf>.
- [29] Bruno Preto, Fernando Birra, and Pedro Medeiros. “Identificação de Objetos em Imagens Tomográficas através de GPGPUs”. In: *Actas do 20º Encontro Português de Computação Gráfica*. Grupo Português de Computação Gráfica – Eurographics, Oct. 2012, pp. 27–34. URL: <http://gpcg.pt/docs/20-ActasEPCG.pdf>.
- [30] Alexandre Velhinho et al. “A Problem-Solving Environment for reinforcement distribution characterization in composites using tomographic images”. In: *1º Encontro Nacional dos Utilizadores da Radiação de Sincrotrão*. CENIMAT-FCT/UNL, Portugal, Jan. 2012, pp. 1–2. Poster.
- [31] Fernando Birra and Jorge Lagarto. “Construção Adaptativa de árvores de Volumes Envolventes em GPU”. In: *INForum 2011 - 3º Simpósio de Informática*. Coimbra, Sept. 2011.
- [32] Maria Moutela and Fernando Birra. “Malhas Poligonais Baseadas em Regiões de Afinidade para Simulação de Tecidos”. In: *Actas do 17º Encontro Português de Computação Gráfica*. Grupo Português de Computação Gráfica/Eurographics, Oct. 2009, pp. 73–81.

- [33] Fernando Pedro Birra and Manuel Próspero dos Santos. “Algoritmo de Subdivisão de Superfícies para Execução no GPU”. In: *Actas do 13<sup>o</sup> EPCG - Encontro Português de Computação Gráfica*. Vila Real, Oct. 2005, pp. 19–27. URL: <http://gpcg.pt/docs/13-ActasEPCG.pdf>.
- [34] Fernando Pedro Birra and Manuel Próspero dos Santos. “Variação Dinâmica do Nível de Detalhe na Simulação Estável de Tecidos”. In: *Actas do 12<sup>o</sup> EPCG - Encontro Português de Computação Gráfica*. Porto, Oct. 2003, pp. 53–62. URL: <http://gpcg.pt/docs/12-ActasEPCG.pdf>.
- [35] Fernando Pedro Birra and Manuel Próspero dos Santos. “Especificação e Avaliação da Dinâmica de Modelos Físicos para Visualização de Superfícies Deformáveis”. In: *10<sup>o</sup> EPCG - Encontro Português de Computação Gráfica (Comunicações Curtas)*. ISCTE–Lisboa, 2001, pp. 1–4.
- [36] Manuel Próspero dos Santos, Fernando Pedro Birra, and Renata Piotrowska. “Integração do Suporte à Visualização num Modelo de Sistemas de Partículas”. In: *9<sup>o</sup> EPCG - Encontro Português de Computação Gráfica*. Marinha Grande, 2000, pp. 11–17.
- [37] José Eduardo Marreiros, Manuel João Próspero, and Fernando Pedro Birra. “Espaços e Relações na Arquitetura dum Modelo de Animação”. In: *5<sup>o</sup> EPCG - Encontro Português de Computação Gráfica*. Aveiro, 1993, pp. 103–117.

## Technical Reports

- [38] T. Romão et al. *Developing Environmental Awareness with Persuasive Systems (DEAP) - Final report*. PTDC/AAC-AMB/104834/2008. Mar. 2013.
- [39] T. Romão et al. *Developing Environmental Awareness with Persuasive Systems (DEAP) - Progress report - year two*. PTDC/AAC-AMB/104834/2008. 2012.
- [40] T. Romão et al. *Developing Environmental Awareness with Persuasive Systems (DEAP) - Progress report - year one*. PTDC/AAC-AMB/104834/2008. 2011.
- [41] M.P. Santos and F.P. Birra. *Visualização de Dados com base em Sistemas de Partículas - Relatório de Progresso - 1<sup>o</sup> ano*. PRAXIS/P/EEI/10089/1998. 2000.
- [42] M.J.P. Santos and F. Birra. *The GUI Specifications, ScheduleZ Final Technical Report*. BRITE/EURAM Project, BREU-CT92-0567. Oct. 1995. URL: <https://cordis.europa.eu/project/id/BREU0567/reporting>.

## 5.2 Research Projects

- [P1] AudaCidade: plataforma de utilização e gestão integrada de fornecimento de energia, água e serviços urbanos numa smart city, com aposta diferenciadora na utilização de cloud e blockchain privadas (2020-2021)  
Ref: 34/SI/2018.  
Role/Participation: Research Consultant, Researcher
- [P2] 4T4CTT: Four tracks for CTT (2020)  
Ref: *Contract yet to be signed*  
Role/Participation: Research Consultant, Researcher  
Ongoing MSc Dissertations: [S33]
- [P3] Monitoração remota de áreas florestadas (2019)  
Ref: *NOVALINCS internal competitive call*  
Role/Participation: Promoter, Researcher  
MSc Dissertations: [S3]  
Publications: [23, 24]
- [P4] Real world case studies for Virtual Reality and Augmented Reality (2019)  
Ref: *NOVALINCS internal competitive call*  
Role/Participation: Promoter, Researcher  
Ongoing MSc Dissertations: [S34, S32, S30, S26, S2]
- [P5] 3DPrint: Desenvolvimento da inovadora gama de produtos assentes em tecnologias avançadas 3D direcionados aos setores das indústrias culturais e criativas, da publicidade e do turismo cultural (2016-2018)  
Ref: LISBOA-02-0853-FEDER-015209  
Role/Participation: Research Consultant, Researcher  
MSc Dissertations: [S7, S8]
- [P6] DEAP: Desenvolvimento da consciência ambiental através de sistemas persuasivos (2010-2012)  
Ref: PTDC/AACAMB/104834/2008  
Role/Participation: Researcher and Task Leader  
Publications: [17, 18]
- [P7] TomoGPU: Problem Solving Environment for Materials Structural Characterization via Tomography (2008-2010)  
Ref: PTDC/EIA-EIA/102579/2008  
Role/Participation: Promoter, Researcher and Task Leader  
Publications: [6, 7, 29, 30, 27]
- [P8] Data Visualization on top of Particle Systems (1998-1999)  
Ref: PRAXIS/P/EEI/10089/1998  
Role/Participation: Promoter and Junior Researcher  
Publications: [2, 9, 21, 22]
- [P9] SceduleZ: Dynamic Scheduling Toolbox (1992-1995)  
Ref: BRITE/EURAM Project Number 4140  
Role/Participation: Junior Researcher
- [P10] I.T. Skills: Transnational I.T. Skills for SMEs (1992-1993)  
Ref: COMETT II 3357/Cb ENG  
Role/Participation: Junior Researcher

### 5.3 Supervision Activities

Table 3 summarizes supervision activities by type. The high number of ongoing MSc students when compared to the number of completed MSc supervisions is explained by two different aspects. The first reason is that in later years, it became common practice inside the department to co-supervise students with all its benefits in terms of complementary skills brought by each supervisor. Recently, more and more, MSc themes cross cut several areas of expertise and the best way to tackle the associated problems is by teaming up with colleagues. The other reason is in fact related to an increase in my own supervision productivity, due to a more long-term focused research direction.

Status	Type	Number of students	Reference
Concluded	PhD	1	[S1]
	MSc	20	[S3] — [S22]
	MSc PPSM	4	[S38] — [S41]
	Research Internship	2	[S42] — [S43]
	Industrial Internship	16	[S44] — [S59]
Ongoing	MSc	16	[S22] — [S36]

Table 3: Overview of supervision activities since obtaining PhD

#### 5.3.1 Supervision of PhD Thesis

- [S1] Fausto José da Silva Valentim Mourato. “Enhancing automatic level generation for platform videogames”. PhD thesis. Universidade Nova de Lisboa, 2015. URL: <http://hdl.handle.net/10362/18497>. Supervised by Fernando Birra and Manuel Próspero dos Santos  
Publications: [5, 12, 13, 14, 15, 16].

#### 5.3.2 Supervision of MSc Thesis

- [S2] Daniel Murteira. “Colaboração em Realidade Aumentada”. MSc dissertation. Universidade Nova de Lisboa, 2020. Supervised by Nuno Correia and Fernando Birra.
- [S3] João Celorico Moreira Albuquerque. “Detecção semi-automática de áreas verdes permanentes”. MSc dissertation. Universidade Nova de Lisboa, 2019. Supervised by Fernando Birra and Carlos Damásio.
- [S4] Mara Filipa Alexandre Felismino. “Conceção e Desenvolvimento de uma Aplicação Android para Eliminação Assistida de Fotografias Repetidas”. MSc dissertation. Universidade Nova de Lisboa, 2019. URL: <http://hdl.handle.net/10362/83516>. Supervised by João Lourenço and Fernando Birra.
- [S5] Fábio Miguel Martins Mano. “A Computing and Storage Server Infrastructure for a Mobile Application”. MSc dissertation. Universidade Nova de Lisboa, 2019. Supervised by João Lourenço and Fernando Birra.
- [S6] Igor Alexandre Patrício Ruivo. “Detecção Remota de Parcelas Agrícolas”. MSc dissertation. Universidade Nova de Lisboa, 2019. Supervised by Carlos Damásio, Fernando Birra and João Moura Pires.
- [S7] Diogo Mil-Homens Silva. “Ferramentas Interativas para Modelos 3D”. MSc dissertation. Universidade Nova de Lisboa, 2018. Supervised by Fernando Birra and Nuno Correia.

- [S8] Ana Mafalda Couchinho Cardoso Ventura. “Ferramentas Interativas para Personalização de Modelos 3D”. MSc dissertation. Universidade Nova de Lisboa, 2018. Supervised by Fernando Birra and Nuno Correia.
- [S9] Rui Rodrigo Garcia Alves. “Temporal Gisplay”. Co-supervised by João Moura Pires. MSc dissertation. Universidade Nova de Lisboa, 2017. URL: <http://hdl.handle.net/10362/29837>. Supervised by João Moura Pires and Fernando Birra. Publications: [11].
- [S10] Carlos Manuel Teixeira Machado. “Suporte Aplicacional de um Workflow para Selecção Assistida de Fotografias”. MSc dissertation. Universidade Nova de Lisboa, 2017. Supervised by João Lourenço and Fernando Birra.
- [S11] Tiago Magalhães Fernandes. “Exploração Visual 3D das estrelas da Via Láctea na WEB”. MSc dissertation. Universidade Nova de Lisboa, 2016. URL: <http://hdl.handle.net/10362/27751>. Supervised by João Moura Pires and Fernando Birra.
- [S12] Antero Augusto Magalhães Pires. “Combining paper maps and smartphones in the exploration of cultural heritage”. MSc dissertation. Universidade Nova de Lisboa, 2016. URL: <http://hdl.handle.net/10362/19962>. Supervised by Teresa Romão and Fernando Birra. Publications: [4, 25].
- [S13] André Pires Alves. “Best Photo Selection”. MSc dissertation. Universidade Nova de Lisboa, Dec. 2015. URL: <http://hdl.handle.net/10362/29840>. Supervised by Fernando Birra and João Lourenço. Publications: [26].
- [S14] João Carlos Santágueda dos Santos Claro. “Tool for spatial and dynamic representation of artistic performances”. MSc dissertation. Universidade Nova de Lisboa, Jan. 2015. URL: <http://hdl.handle.net/10362/14699>. Supervised by Fernando Birra and Nuno Correia.
- [S15] Paulo Jorge Gregório Granja. “Suporte para bilhética numa plataforma web para organização de eventos”. MSc dissertation. Universidade Nova de Lisboa, Jan. 2015. URL: <http://hdl.handle.net/10362/14700>.
- [S16] Paulo Jorge Silva Póvoa. “Extração automática de elementos em fotografia aérea por fotogrametria”. MSc dissertation. Universidade Nova de Lisboa, Jan. 2015. URL: <http://hdl.handle.net/10362/14851>.
- [S17] João Miguel Nunes Lobão Dias Afonso. “Filtragem de nuvens de pontos para geração de modelos digitais do terreno”. MSc dissertation. Universidade Nova de Lisboa, Dec. 2014. URL: <http://hdl.handle.net/10362/14324>.
- [S18] Jorge Miguel Raposeira Lagarto. “Acceleration of physics simulation engine through OpenCL”. MSc dissertation. Universidade Nova de Lisboa, May 2011. URL: <http://hdl.handle.net/10362/6044>. Publications: [31].
- [S19] Luis Carlos Vitorino Maçarico. “Maya Simulator for Dynamic Level of Detail Cloth”. MSc dissertation. Universidade Nova de Lisboa, Dec. 2011.
- [S20] João Pedro Martins Rogeiro. “Geometry based visualization with OpenCL”. MSc dissertation. Universidade Nova de Lisboa, Dec. 2011. URL: <http://hdl.handle.net/10362/7951>.
- [S21] Maria João Moutela. “Malhas de polígonos para simulação de tecidos baseadas em regiões afins”. MSc dissertation. Universidade Nova de Lisboa, 2009. URL: <http://hdl.handle.net/10362/1959>. Publications: [32].
- [S22] João Miguel Lopes de Almeida Rocha. “Aceleração GPU da Animação de Superfícies Deformáveis”. MSc dissertation. Universidade Nova de Lisboa, 2008. URL: <http://hdl.handle.net/10362/1880>.

## Ongoing Supervision of MSc Thesis

- [S22] Ana Sofia Lopes Afonso. *Otimização das rotas de rebalanceamento das bicicletas partilhadas em Lisboa*. Universidade Nova de Lisboa, 2020. Supervised by João Moura Pires and Fernando Birra.
- [S23] Gonçalo António de Almeida Feliciano. *Aplicação iOS para eliminação assistida de duplicados na biblioteca de fotografias*. Universidade Nova de Lisboa, 2020. Supervised by João Lourenço and Fernando Birra.
- [S24] Mafalda Filipa Caldeira Camilo. *Análise de padrões dos pedidos de intervenção do RSB (Regimento de Sapadores Bombeiros)*. Universidade Nova de Lisboa, 2020. Supervised by João Moura Pires and Fernando Birra.
- [S25] João Lucas de Campos Dias. *Existem padrões de utilização das bicicletas partilhadas em Lisboa?* Universidade Nova de Lisboa, 2020. Supervised by João Moura Pires and Fernando Birra.
- [S26] Marta Barroso Batista Carlos. *Data for VR Simulation - Visualização e Interação com informação temporal geoespacial em mundos virtuais*. Universidade Nova de Lisboa, 2020. Supervised by Fernando Birra and João Moura Pires.
- [S27] Afonso Mak Gramocha da Costa Silva. *Energy optimization of OpenCV algorithms for Android*. Universidade Nova de Lisboa, 2020. Supervised by João Lourenço and Fernando Birra.
- [S28] Daniel Alexandre Pedras Flamino. *Realidade Aumentada em Monitorização Florestal*. Universidade Nova de Lisboa, 2020. Supervised by Fernando Birra and João Moura Pires.
- [S29] Hugo Miguel Simões Lino. *Global Illumination Techniques on current GPUs*. Universidade Nova de Lisboa, 2020.
- [S30] Pedro Nave Silva Ferreira Lopes. *Building VR - Geração automática de estruturas permanentes em VR a partir de dados de acesso livre*. Universidade Nova de Lisboa, 2020. Supervised by Fernando Birra and João Moura Pires.
- [S31] Maria Sofia Nascimento. *Plataforma de mapas temáticos para dados espacio-temporais*. Universidade Nova de Lisboa, 2020. Supervised by João Moura Pires and Fernando Birra.
- [S32] Raquel Monteiro Negrão. *Green VR - Geração automática da vegetação a partir de informação em SIG*. Universidade Nova de Lisboa, 2020. Supervised by Fernando Birra and João Moura Pires.
- [S33] Li Zixiang. *Smart CTT Geocoding*. Universidade Nova de Lisboa, 2020. Supervised by João Moura Pires and Fernando Birra.
- [S34] Daniel Casadinho. *Visita Virtual (e realista) em terrenos florestais*. Universidade Nova de Lisboa, 2019. Supervised by Fernando Birra and João Moura Pires.
- [S35] Patrícia Monteiro Negrão. *Automated play testing in Video games*. Universidade Nova de Lisboa, 2019.
- [S36] Sofia Cristina Fraga Pereira. *Ferramenta de visualização de séries temporais multi-variadas*. Universidade Nova de Lisboa, 2019.

## Other MSc Supervisions

Supervision of MSc Dissertations under the programme *Para ser Mestre*<sup>1</sup>

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<sup>1</sup>programme available to licenciates with a 5 year degree for equivalence with a MSc degree

- [S38] Henrique Manuel Serrano Andrade de Melo. “Relatório nos Termos do Despacho 20/2010 para Obtenção do Grau de Mestre por Licenciados Pré-Bologna”. MSc dissertation for pre-Bologna students. Universidade Nova de Lisboa, Apr. 2012.
- [S39] Jorge Boto Viegas Branco. “Relatório de Atividade Profissional”. MSc dissertation for pre-Bologna students. Universidade Nova de Lisboa, Oct. 2011.
- [S40] Jorge Miguel Grave Loupa. “Relatório de Atividade Profissional”. MSc dissertation for pre-Bologna students. Universidade Nova de Lisboa, Oct. 2011.
- [S41] João Nuno Simões Crespo Nunes da Mata. “Relatório de Atividade Profissional”. MSc dissertation for pre-Bologna students. Universidade Nova de Lisboa, Oct. 2011.

### 5.3.3 Supervision of Internships

#### Research

- [S42] Marta Carlos. *Realidade Virtual em cenários de Incêndios Florestais*. Research Internship at FCT/UNL. 2018.
- [S43] Eduardo Fernandes. *Experiências na deteção de incêndios com o Google Earth Engine*. Research Internship at FCT/UNL. 2018.

#### Industry

- [S44] Ânia da Ponte Morgadinho. *Kiosks interactivos Raspberry PI*. Internship at Innovagency, S.A. 2019.
- [S45] Bruno Penilo de Almeida Ramos. *Soluções de IT baseadas em modelos de distribuição e gestão automatizadas para modernização do user workplace*. Internship at Unipartner IT Services SA. 2018.
- [S46] João Gil Alves Pereira. *Implementação de soluções de IT baseadas em serviços de modernização do posto de trabalho*, Internship at Unipartner IT Services SA. 2018.
- [S47] José Miguel Neto Cotrim de Leão Cardoso. *Application development with Yii*. Internship at Javali - Administração e Desenvolvimento de Sistemas Informáticos, Lda. 2017.
- [S48] Marcelo Filipe Cantinho Ramos. *Mobile Apps with Advertising and Mobile Payments*. Internship at Elifoot. 2017.
- [S49] Patrícia Soraia Veríssimo Monteiro. *Algoritmo de estatística com vista a responder às exigências da norma de acreditação ISO15189 para laboratórios de diagnóstico*. Internship at STAB VIDA, Lda. 2016.
- [S50] Tiago Filipe Sobrinho Do Espírito Santo. *Aplicação Web Mobile de Gestão de Assistências, integrada com o sistema ERP Primavera*. Internship at Sulsites Aplicações Informáticas, ecommerce e Multimédia Publicitária, Lda. 2016.
- [S51] Miguel Filipe Dias Cabrita. *Demonstrador posicionamento aumentado para dispositivos Android*. Internship at Bluecover Technologies. 2015.
- [S52] Fábio Miguel Rodrigues Lopes. *A Story Creator (Unity 3D)*. Internship at Skills Workflow. 2015.
- [S53] Frederico Bruno Nascimento Alves. *Business Card Swap*. Internship at Novabase-Nbo. 2014.
- [S54] Tiago Filipe Arreigoso Pereira. *Interface 'Light' de video para Digital Signage*. Internship at ViaTecla - Soluções Informáticas e Comunicações S.A. 2014.



- [S55] Sara Alexandra dos Reis Vilar. *Mobile Applications / Realidade Aumentada*. Internship at Worldit, Sistemas de Informação. 2014.
- [S56] Gonçalo Nuno Silva Duque. *Proposta de Estágio Gonçalo Duque*. Internship at PRIMEIT Consulting S.A. 2013.
- [S57] Paulo Francisco de Jesus Sequeira. *Aplicação Multiscreen/Multiplataforma de Conteúdos Multimédia*. Internship at PT - Sistemas de Informação. 2013.
- [S58] Pedro Miguel Fonseca de Brito. *4digitalpen - Android*. Internship at 4ITFUTURE Software Developers Unipessoal Lda. 2012.
- [S59] Filipe Daniel Cunha Firmo. *Estágio na área de Segurança de Informação*. Internship at UNISYS. 2009.

## 5.4 Services to the Scientific Community

### 5.4.1 Organization of Conferences and Workshops

#### Event Organization

- IV 2016, Member of the Local Steering Committee of the 20th International Conference Information Visualisation, Aug 2016, Lisboa, Portugal.
- ACE 2012, Workshops Chair of the 9th International Conference on Advances in Computer Entertainment Technology, Nov 2011, Katmandu, Nepal.
- ACE 2011, Creative Showcase and Interactive Art Chair of the 8th International Conference on Advances in Computer Entertainment Technology, Nov 2011, Lisboa, Portugal.

#### Program Committees

- GRAPP 2020, 2019, 2018, 2017, 2016 - International Conference on Computer Graphics Theory and Applications
- ACE 2017, 2016, 2015 - Advances in Computer Entertainment Technology
- IV 2019, 2018, 2017, 2016 - International Conference Information Visualization
- INFORUM 2019 (SI-MRN track co-chair)
- ICGI 2019, 2018 - International Conference on Graphics and Interaction
- TIE 2019 - 3rd International Conference on Technology, Innovation, Entrepreneurship and Education
- INFORUM 2013, 2010 (Computer Graphics track)
- EPCGI 2017 - Portuguese Meeting on Computer Graphics & Interaction
- EPCG 2014, 2012, 2009 - Portuguese Encounter on Computer Graphics
- ARTECH 2017 - 8th International Conference on Digital Arts
- INTERACT 2013 - Human-Computer Interaction
- Iteração 2008 - 3rd Portuguese Conference in Human-Machine Interaction
- IE'12 - International Conference on Intelligent Environments, Guanajuato, Mexico, June 26-29, 2012

## Review of Scientific Publications

### Journals

- IJART, International Journal of Arts and Technology (IJART) - Special Issue on Interactive Experiences in Multimedia and Augmented Reality, Vol 4, Issue 4, Inderscience, 2011.
- PARCO, Parallel Computing, Elsevier, 2012.

### Conferences

- Eurographics 2017, 2016, 2008 (Regular papers) - Annual Conference of the European Association for Computer Graphics.
- Eurographics 2013 (Posters) - Annual Conference of the European Association for Computer Graphics, Girona, Spain.
- MobileHCI 2010, 12th International Conference on Human Computer Interaction with Mobile Devices and Services, Lisbon, Portugal.
- WSCG 2019, 2016, 2015, 2014, 2013 - International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision, Plzen, Czech Republic.
- EuroPar 2014 - Parallel Processing, Porto, Portugal.
- IFIP - ICEC2015, International Conference on Entertainment Computing, Trondheim, Norway, Sep. 2015.
- IFIP - Interact 2015, International Conference on Human-Computer Interaction, Bamberg, Germany, Sep. 2015.
- TVX 2015 - ACM International Conference on Interactive Experiences for Television and Online Video, Brussels, Belgium, June 2015.
- GRAPP 2013, 8th International Conference on Computer Graphics Theory and Applications, Feb 2013, Barcelona, Spain.
- IUI2 012, 2012 International Conference on Intelligent User Interfaces, Feb 2012, Lisbon, Portugal.
- SIACG 2011, V Simpósio Ibero-Americano de Computação Gráfica, Jun 2011, Universidade do Algarve, Portugal.
- INTERACT 2011, 13th IFIP TC13 Conference on Human-Computer Interaction, 2011, Lisbon, Portugal.
- PVM/MPI UG, Recent Advances in Parallel Virtual Machine and Message Passing Interfaces - 8th European PVM/MPI User's Group Meeting, Santorini/Thera, Greece, 2001.
- SIBGRAPI'99, XII Brazilian Symposium on Computer Graphics and Image Processing, Brazil, 1999.

### Session Chair

- INFORUM 2019 (SI-MRN Track), September 2019, Guimarães, Portugal.

## 5.4.2 Participation in Academic Examinations

### PhD Examinations

#### As main examiner

- [E1] João Miguel de Carvalho Mesquita. “MultiModMundo: Desenho de zonas e objectos audiovisuais em videojogos do género MMOG através de técnicas de visualização de dados em tempo real”. Doutoramento em Artes Visuais. PhD thesis. Universidade de Évora, Oct. 2014. URL: <http://dspace.uevora.pt/rdpc/handle/10174/18208>.
- [E2] Nguyen Trong Quyen. “Macro-mechanical modelling and simulation of textile fabric and clothing with S-FEM”. Programa Doutoral em Engenharia Têxtil. PhD thesis. Universidade do Minho, Mar. 2014. URL: <http://hdl.handle.net/1822/34453>.

#### As secondary examiner

- [E3] Bruno Miguel de Lemos Ribeiro Pinto Cardoso. “Two Steps Towards Kairos-Awareness”. Doutoramento em Informática. PhD thesis. Universidade Nova de Lisboa, Dec. 2016.

### PhD Steering Committees

- [E4] Bruno Miguel de Lemos Ribeiro Pinto Cardoso. *Towards Kairos-Aware Applications*. PhD thesis proposal discussion. Nov. 2015.
- [E5] Bruno Miguel de Lemos Ribeiro Pinto Cardoso. *A Framework for Kairos Awareness*. PhD thesis plan discussion. Dec. 2014.
- [E6] Fausto Mourato. *Enhancing automated generation of procedural levels for platform videogames*. PhD thesis proposal discussion. As supervisor. Universidade Nova de Lisboa, Dec. 2014.
- [E7] Fausto Mourato. *Enhancing Automatic Level Generation for Platform Based Videogames*. PhD thesis plan discussion. As supervisor. Universidade Nova de Lisboa, Nov. 2011.
- [E8] Nuno Oliveira. *A Heterogeneous Runtime Environment for Scientific Desktop Computing*. PhD thesis plan discussion. Universidade Nova de Lisboa, June 2011.

### MSc Examinations

#### As main examiner

- [E9] Gonçalo Filipe Dias Soares. “Interactive Physics-Based Rendering with AI-Accelerated Denoiser”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, Oct. 2020.
- [E10] Rafael Barbosa Benjamim. “Real-Time Global Illumination on Mobile Devices using Reflective Shadow Maps”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, Nov. 2019.
- [E11] Tiago Manuel Videira Almeida. “Low Power Antialiasing on Mobile Devices”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, May 2018.

- [E12] Pedro Daniel Guedes Figueira. “Relatório nos Termos do Despacho 20/2010 para Obtenção do Grau de Mestre por Licenciados Pré-Bolonha”. Supervised by Sérgio Duarte. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2018.
- [E13] Nuno Guilherme de Sousa Lobato da Graça. “Ray Tracing Acceleration Structures on Mobile Environments”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, June 2018.
- [E14] Marco da Silva Domingues. “Parallel GPU Boolean Evaluation for CSG Ray-Tracing”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, Nov. 2017.
- [E15] André Filipe Domingos Silvestre. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade Técnica de Lisboa, June 2017.
- [E16] Andre Jose Faria Bico. “OptiX versus Embree using Vertex Connection and Merging”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade Técnica de Lisboa, June 2016.
- [E17] Ricardo António Alves Gregório. “Relatório de atividade profissional 2007 a 2016”. Supervised by Ludwig Krippahl. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Nov. 2016.
- [E18] Pedro Filipe Vitorino Castro Lousada. “Bandwidth and Memory Efficiency in Real-Time Ray Tracing”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade de Lisboa, Oct. 2016.
- [E19] José Luis Pina Rolo. “A 3D Web Interface for Plastic Surgery Simulation”. Supervised by Salvador Pinto Abreu. MSc defense. Universidade de Évora, Oct. 2015.
- [E20] Rui Marcelo Duque Barreto. “Actividade profissional de engenharia em Angola”. Supervised by Paulo Lopes. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Mar. 2014.
- [E21] Robin Charles Rosa Burgess. “Extended perspective system visualizer”. Supervised by Teresa Chambel and Ana Paula Cláudio. MSc defense. Universidade de Lisboa, Oct. 2014.
- [E22] Ricardo Jorge de Jesus Rodrigues Pesqueira. “Ambiente 3D Web para visualização de modelos”. Supervised by João Madeiras Pereira. MSc defense. Universidade da Beira Interior, Oct. 2012.
- [E23] Leonel Joaquim Curto Murraceira. “Um percurso profissional em Business Process Management e Enterprise”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Apr. 2012.
- [E24] Helder Alexandre Roque Rodrigues. “Relatório nos Termos do Despacho 20/2010 para Obtenção do Grau de Mestre por Licenciados Pré-Bolonha”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Apr. 2012.
- [E25] David Sena. “Physics-based Water Interaction and Shading: The SiViFlow Algorithm”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade Técnica de Lisboa, Nov. 2012.
- [E26] Rafael Kuffner dos Anjos. “Image Based Collision Detection”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade Técnica de Lisboa, Nov. 2011.
- [E27] Pedro Maria de Freitas Dias Coelho. “Relatório de Actividade Profissional”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2011.
- [E28] Natália Maria de Oliveira Rodrigues. “Relatório de Actividade Profissional”. Supervised by Francisco Azevedo. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Oct. 2011.
- [E29] Luis Miguel da Silva Santos Boletto. “Relatório de Actividade Profissional”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Oct. 2011.

- [E30] Calos Alberto Pedro Mendes de Sousa Saraiva. “Visualização Interactiva de Grandes Volumes de Dados”. Supervised by João Madeiras Pereira. MSc defense. Instituto Superior Técnico, Universidade Técnica de Lisboa, Nov. 2009.

#### **As secondary examiner**

- [E30] David António Freire Moura. “Exploratory Analysis of Individual Metrics in Team Sports Using Inertial Sensors”. Supervised by Carmen Morgado. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, July 2020.
- [E31] Guilherme Belo Alves. “Automatic Document Classification to leverage Funds and Grants’s information retrieval systems”. Engineering Project. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2019.
- [E32] Ângelo Henrique Ferreira Borges. “Um pouco sobre Planeamento Estratégico de Sistemas de Informação”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2019.
- [E33] Francisco Miguel Antunes Fernandes. “Progressive Web App: Uma Experiência Cross-Platform para Gestão de Consumos Energéticos”. Engineering Project. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2019.
- [E34] António Pedro Abraços Matias. “Editor de Forms para o Genio Web”. Engineering Project. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2019.
- [E35] Ivo Filipe Pinho dos Anjos. “Serious mobile game with sibilant consonant exercises for speech therapy”. Supervised by Sofia Cavaco. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Nov. 2017.
- [E36] Gonçalo Filipe Maló Miguéis. “Linguagem para Modelação de Requisitos Emocionais na Indústria de Videojogos”. Supervised by João Araújo Júnior. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, May 2017.
- [E37] Gonçalo Filipe Trocado Mordido. “Automated Organisation and Quality Analysis of User-Generated Audio Content”. Supervised by Sofia Cavaco. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Sept. 2017.
- [E38] Catarina Raquel Raposo Albino. “Mapas de Atenuação e Acumulação”. Supervised by João Moura Pires. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, June 2016.
- [E39] Diogo Alexandre Mateus Cardoso. “A high-level client-side API to interactive thematic maps using WebGL”. Supervised by João Moura Pires. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2016.
- [E40] Ana Sofia Bernardo Gonçalves. “Monitorização de Sistemas Distribuídos em Redes WIFI”. Supervised by Vitor Duarte. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, June 2015.
- [E41] Renil Lacmane. “Extensão da Plataforma Epik (Edutainment by Playing and Interacting with Knowledge)”. Supervised by Carmen Morgado. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2015.
- [E42] António Miguel Carneirinho Guimar. “T-Stratus - Confiabilidade e Provacidade com Nuvens de Armazenamento de Dados”. Supervised by Henrique João Domingos. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, May 2013.
- [E43] Paulo Agostinho Rodrigues Pires. “Framework para a construção de portais de negócio para gestão de solicitações de consumidores IaaS na HP Cloud”. Supervised by Paulo Lopes. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Oct. 2013.

- [E44] Tiago Filipe da Silva Araújo. “Simulação e Estudo Experimental de Protocolos de Encaminhamento Seguro Tolerante a Intrusões em Redes de Sensores Sem Fios de Grande Escala”. Supervised by Henrique João Domingos. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Mar. 2011.
- [E45] Maria Margarida Lameira da Cunha Piriquito. “Type System for the ComponentJ Programming Language”. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Apr. 2009.
- [E46] Nuno Lopes Luis. “A Transactional File System Over FUSE”. Supervised by João Lourenço. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2009.
- [E47] João André Branquinho Barata Martins. “SmART: An Application Reconfiguration Framework”. Supervised by João Lourenço and Hervé Paulino. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2009.
- [E48] Fábio Neves. “Suporte à Cooperação Móvel e Ubíqua”. Supervised by Sérgio Duarte. MSc defense. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Dec. 2009.

### 5.4.3 Software Prototypes

- **Temporal Gisplay** - *A thematic maps API for temporal geospatial data*  
Temporal Gisplay is a JavaScript API with a high level of abstraction and easily extensible to create online interactive thematic maps using WebGL. It is not only able to deal with millions of points, but is also enables the use of multiple visual variables and is able to use the temporal component in different modalities. In order to visualize different scenarios, a set of thematic maps can be used. This prototype was developed in the context of an academic thesis by MsC student Rui Alves [S9].  
<https://bitbucket.org/temporalgisplay/temporalgisplay/src/master/>
- **Gisplay** - *A thematic maps API for geospatial data using WebGL*  
Gisplay is a javascript API to facilitate the creation of online thematic maps for geospatial datasets. It offers user interaction tools and uses WebGL to speedup rendering. This prototype was finished in the context of an academic thesis by MsC student Rui Alves [S9].  
[https://bitbucket.org/Gisplay\\_Team/gisplay\\_1\\_1/src/master/](https://bitbucket.org/Gisplay_Team/gisplay_1_1/src/master/)
- **Aqueduct AR**  
Aqueduct AR explores new ways of interacting with traditional touristic paper maps, through mobile AR technology, that reveal contextual information associated with cultural and historical sites. Combining a paper map with a smartphone, the user can see virtual representations of cultural elements, manipulate them in 3D, overlap historical cartography on the map, view relevant multimedia information, among others. This prototype was developed in the context of an academic thesis by MsC student Antero Pires [S12].  
<http://nova-lincs.di.fct.unl.pt/prototype/223>
- **FiatLux** - *À boleia dos fotões*  
An interactive online progressive path tracer demonstrating one of the most powerful rendering algorithms. The software runs inside the browser, exploring the availability of WebGL shaders to accelerate the computation. Scene geometry, light placement and material specification are user contrrollable. The novelty of this work consists in the combination of rasterization and ray-tracing as it illustrates the paths followed by rays when drawing z-buffered lines inside a ray-traced scene.  
<http://ctp.di.fct.unl.pt/~fpb/FiatLux/>
- **Tomo-GPU V2** - *Environment for processing tomographics images of composite materials*  
This prototype is an evolution of the 2011 prototype produced in the context of the FCT-funded project Tomo-GPU. When compared with the 2011 version, v2 includes: (i) many

changes in the modules already present in the v1 version, coming from materials science specialists feedback; (ii) more efficient implementations (targeting GPUs) of some of the image processing algorithms; (iii) new modules targeted to the processing of tomographic images of composite materials where the density of the base material and of the reinforcements is small; in this case, the algorithms in version 1 did not allow a reliable identification of the reinforcements; (iv) facilities for visualization of reinforcement characteristics.

<http://nova-lincs.di.fct.unl.pt/prototype/192>

- **Tomo-GPU V1** - *An environment dedicated to reinforcement characterization in composite materials*

In the scope of Tomo-GPU FCT/MCTES-funded project, we developed the first version of a problem solving environment (PSE) dedicated to the characterization of reinforcement population in composite materials. The PSE is based on the SCIRun framework and includes, besides visualization facilities, several modules that perform highly-demanding computations related with the processing of 3D tomographic images, namely: image cleaning, segmentation, hysteresis, percolation and image labeling. The high-demanding computational processing in the above modules uses GPGPUs. The software developed is based on OpenCL.

<http://nova-lincs.di.fct.unl.pt/prototype/129>

- **Maya simulator for dynamic level of detail cloth**

A cloth simulator plugin for Autodesk Maya capable of using dynamic level of detail meshes. The prototype includes the tools to convert any polygonal mesh built using the rich set features of Maya to a DLOD mesh, a physical simulator that is based on an enhanced version of Baraff and Witkin's cloth model. The simulator also handles restrictions that can be specified by the user through Maya's interface. This prototype was developed in the context of an academic thesis by MsC student Luis Maçarico [S19].

<http://nova-lincs.di.fct.unl.pt/prototype/133>

- **Geometry based visualization through OpenCL**

3D Object Visualization using a Marching Cubes algorithm with object filtering possibility. The algorithm handles 3D scalar field data as well as a 3D data set resulting from segmentation and posterior object identification. This allows for selective visualization of objects. The algorithm uses OpenCL to perform computations. This prototype was developed in the context of an academic thesis by MsC student João Rogeiro [S20].

<http://nova-lincs.di.fct.unl.pt/prototype/134>

- **Mobile context-aware tourist guide**

The mobile context-aware tourist guide application runs on Android smartphones and guides the users through several points of interest in the surrounding area. It was created with the IVO platform, which enables end-users to quickly build and deploy context-aware applications without the need to write any programming code, and using smartphones as the ubiquitous interaction device. Developed in the scope of Valentim Realinho PhD work.

<http://nova-lincs.di.fct.unl.pt/prototype/142>

## 6 Pedagogical Activities

This section exclusively reports my pedagogical activities after finishing my PhD. Back in 1992, during my last year as a licenciante student, I was hired to assist in the labs of the *Computer Graphics* course. After my graduation I was hired as a Junior Teaching Assistant (1992-1998). From 1998 onwards, after the conclusion of my MSc degree, I was promoted to Teaching Assistant and my pedagogical activities were almost entirely devoted to assisting lab sessions of several

courses. All those different courses aren't relevant in this context and are left out of this report. A list of highlighted pedagogical contributions follows:

- Collaborated in the reformulation of the course *Introduction to Programming A* for freshman students. Classes were previously split between lectures and labs. From the 2007/2008 edition onwards, lectures and labs were merged in a combined theory and practice environment (4.5 hrs/week). Additional lab sessions, mainly for support and catchup were held by teaching assistants. Each topic was presented and immediately followed by practical activities to consolidate recently acquired knowledge. I was trusted the topic on vectors and their operations. To the best of my knowledge the set of slides I created are still in use today.
- Collaborated in the proposal of a new PhD course, with one more author, entitled *Computer Graphics Modelling*, offered during 4 consecutive editions. The course covered advanced topics in modelling objects in Computer Graphics. I created a set of slides on the topics of deformable and physically based simulated objects. In the followup of this course I had the opportunity to supervise Fausto Mourato as my first PhD student.
- I reformulated the *Computer Graphics and Interfaces* course over the several years that I have been lecturing it. It is an introductory course on Computer Graphics offered, not only to Computer Science and Informatics students (mandatory), but also to all the other degrees (elective). The changes introduced totally replaced a fixed pipeline approach with a modern shader based approach to rendering graphics on modern hardware. It had the consequence of also changing the used API (from OpenGL to WebGL) used in the lectures, in illustrative examples as well as in the labs and assignments. I also replaced the topic on 3D Curves to give room for a more in depth study of light, its interaction with objects and illumination models for 3D rendering. Although the course is based on rasterization techniques, global illumination algorithms such as recursive ray tracing and some of its variants are also discussed.
- Collaborated (75%) in the proposal of a new MSc elective course, entitled *Games and Simulation*. The course addresses advanced rasterization techniques and ray tracing implementation, not covered in the introductory course on Computer Graphics. The labs resort to the usage of a Game Engine to allow the students to quickly apply the learned techniques in a context of 3D game development. The remaining 25% of the course is dedicated to the topic of 3D sound synthesis and using the same lab setup.
- Proposed and created a new MSc elective course on advanced rendering, called *Image Synthesis*. This course was the predecessor of *Games and Simulation* and focused solely on the study and implementation of advanced rendering techniques, such as environment, reflection and bump mapping, baked illumination, shadow maps, shadow volumes and soft shadows. For global illumination effects and photorealistic rendering I created a base Ray Tracer in C++ that was used by the students to further implement new primitives and more advanced rendering effects.

Section 6.1.1 presents an alphabetically ordered list of all the courses taught at FCT NOVA after the conclusion of my PhD (12/2007). I have also been involved in courses taught at other higher education institutions, in the same period that will be briefly discussed in section 6.1.2. Pedagogical activities in the context of knowledge transfer to the community/industry will be addressed in section 7.2



## 6.1 Teaching Activities

### 6.1.1 At FCT NOVA

The following list summarizes activity at FCT NOVA and includes 1 PhD course from the Doctoral Program in Computer Science (PDinf), 4 courses from the Integrated Master in Computer Science and Engineering (MIEI), 1 from the former Masters in Computer Science and Engineering (MEI), 2 from the former Bachelor in Computer Science and Engineering (LEI) and 2 courses offered to other engineering degrees (AED and IPB).

1. Algorithms and Data Structures (**AED**) - labs (2 editions)
2. Computer Graphics and Interfaces (**CGI**) - lectures (7 editions) and labs (10 editions)
3. Computer Graphics Modelling (**CGM**) - lectures (4 editions)
4. Games and Simulation (**JS**) - lectures and labs (2 editions)
5. Image Synthesis (**SIM**) - lectures and labs (2 editions)
6. Integrative Project (**PI**) - labs (4 editions)
7. Introduction to Programming A (**IPB**) - combined lectures and labs (1 edition)
8. Introduction to Programming B (**IPB**) - labs (1 edition)
9. Practical Curricula Development Activity (**APDC**) - labs (2 editions)
10. Programming Languages and Environments (**LAP**) - labs (4 editions)
11. Web Application Development (**DAWeb**) - labs (2 editions)

Table 4 shows all the courses taught at FCT after obtaining my PhD, in reverse chronological order. The table also shows two columns referring to number of students. The column under the *Lecture* heading refers to the total number of students enrolled in the course. If I play a role as lecturer in that same course, the column immediately on the right shows the total number of hours per week devoted to lectures, otherwise, the column will be left empty signaling that I took no part in lectures. Companion Table 5 groups the courses according to the type of degree.

### 6.1.2 Outside FCT NOVA

In the academic year 2017/2018, FCT, FCSH and IMS jointly offered a post-graduation course in Information Visualization. I co-lectured the following courses:

- Techniques and Tools for Information Visualization
- Data Visualization with Python

I have also been involved in teaching at the School of Military and Aeronautics Technologies, under a protocol between FCT NOVA and that institution. There I have taught the following courses:

1. Programming Languages I - lectures (1 edition) and labs (2 editions)
2. Programming - labs (2 editions)

Year	Term	Course	Lectures		Labs		Leader
			#Students	Hours	#Students	Hours	
2019/20	Fall	CGI	249	3	116	8	✓
2018/19	Spring	Sabatical Leave					
	Fall	CGI	232	3	38	4	✓
2017/18	Spring	Sabatical Leave					
	Fall	CGI	263	3	40	4	✓
2016/17	Spring	APDC	131	–	24	3	✓*
		JS	39	2	36	4	
	Fall	CGI	265	3	59	4	✓
2015/16	Spring	JS	28	2	27	2	✓*
		LAP	241	–	56	4	
	Fall	CGI	211	3	55	4	✓
2014/15	Spring	SIM	10	2	10	2	✓
		LAP	217	–	52	4	
	Fall	CGI	194	3	60	4	✓
2013/14	Spring	SIM	14	2	14	2	✓
		APDC	39	–	10	3	
	Fall	CGI	212	6	60	4	✓
2012/13	Spring	PI	73	–	30	6	
	Fall	CGI	253	–	90	6	
		DAWeb	93	–	60	4	
2011/12	Spring	LAP	233	–	96	8	✓*
		CGM	2	1	–	–	
	Fall	Sabatical Leave					
2010/11	Spring	CGM	3	1	–	–	✓*
		LAP	209	–	78	6	
		PI	68	–	21	2	
	Fall	DAWeb	61	–	61	4	
		IPB	274	–	30	3	
2009/10	Spring	CGM	3	1	–	–	✓*
		PI	60	–	15	2	
	Fall	CGI	236	–	100	8	
2008/09	Spring	AED	500	–	72	6	✓*
		CGM	2	1	–	–	
		PI	68	–	21	3	
	Fall	CGI	226	–	100	8	
2007/08	Spring	AED	462	–	108	9	
	Fall	IPA	26	4.5	26	–	✓*

✓\* - co-leadership.

Table 4: Overview of teaching activities (since obtaining PhD).

## 6.2 Pedagogical Material

The following is a list of pedagogical material that I have produced at FCT NOVA sorted by course and in chronological order. It consists of lecture slides and exercise sets with their respective solutions. When slides are co-authored, the count refers only to my contribution, reason for which

Course	Course Name	Degree Type
CGM	Computer Graphics Modelling	PhD
JS	Games and Simulation	MSc
SIM	Image Synthesis	MSc
CGI	Computer Graphics and Interfaces	BSc
LAP	Programming Languages and Environments	BSc
APDC	Practical Curricula Development Activity	BSc
PI	Integrative Project	BSc
DAWeb	Web Application Development	BSc
IPA	Introduction to Programming	BSc
IPB	Introduction to Programming	(other degrees)
AED	Algorithms and Data Structures	(other degrees)

Table 5: Legend for the courses of table 4

I omitted other authors' names.

- *Computer Graphics and Interfaces: Lecture slides* (83 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2013/14.
- *Computer Graphics and Interfaces: Lecture slides* (32 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2014/15.
- *Computer Graphics and Interfaces: Lecture slides* (365 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2015/16.
- *Computer Graphics and Interfaces: Exercises set for lab classes*. Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2016/17.
- *Computer Graphics and Interfaces: Lecture slides* (64 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2018/19.
- *Computer Graphics Modelling: Lecture slides* (232 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2008/09.
- *Games and Simulation: Lecture slides* (503 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2015/16.
- *Games and Simulation: Lecture slides* (164 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2016/17.
- *Image Syntesis: Lecture slides* (293 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2013/14.
- *Image Syntesis: Lecture slides* (139 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2014/15.
- *Introduction to Programming A: Lecture slides* (232 slides). Departamento de Informática, Faculdade de Ciências e Tecnologia da Universidade NOVA de Lisboa, Academic year 2013/14.

### 6.3 Student Evaluation of Teaching

As part of its quality control processes, FCT NOVA regularly performs inquiries to students about the courses they enrolled. Table 6 shows the mean classification of the students' answers to the question: "How do you grade the Lecturer's performance?". The scale used consists of 6 levels: 1 (very bad); 2 (bad); 3 (insufficient); 4 (good); 5(very good); 6 (excellent).

Academic Year	Course	Lectures		Labs		#Answers	Average
		#Students	Hours	#Students	Hours		
2018/19	CGI	232	3	38	4	165	4.3
2017/18	CGI	263	3	40	4	167	3.8
2016/17	JS	39	2	36	4	41	4.4
2016/17	CGI	265	3	59	4	260	4.4
2015/16	JS	28	2	27	2	26	4.4
2015/16	LAP	241	—	56	4	35	4.3
2015/16	CGI	211	3	55	4	138	4.2
2014/15	LAP	217	—	52	4	45	4.5
2014/15	CGI	194	3	60	4	147	4.6
2013/14	SIM	14	2	14	2	19	5.2
2013/14	CGI	212	6	60	4	159	4.6
2012/13	CGI	253	—	90	6	18	4.6
2012/13	DAWeb	93	—	60	4	19	4.1
2010/11	DAWeb	61	—	61	4	20	3.9
						<i>Mean:</i>	4.38

Table 6: Overview of students' assessment of teacher performance

## 7 Management and Extension Activities

This section is divided in two parts. The first one (section 7.1) describes my role in institutional management activities and the second part (section 7.2) the participation in activities that link with the society.

For more than a decade I have been the Erasmus Coordinator of the department, managing all incoming and outgoing student learning agreements, for 37 bilateral agreements. During the same period I have been a member of Scientific Committees for the former MSc and the current Integrated Master in Computer Science and Engineering.

I have served the institution in several strategic events: (i) as a member of the FCTNOVA Challenge working group; (ii) as a member of the core team of the Codingfest event and platform; (iii) in the setup and participation of several Ciência Viva summer courses; (iv) in the setup and participation of the "Vem Ver" programme and in knowledge transfer activities such as the Altran Big Data Analytics Academy.

## 7.1 Management Activities

### 7.1.1 Positions by Appointment or Invitation

- 2020 — 2009. Erasmus Coordinator for the BSc, MSc and Integrated MSc in Computer Science and Engineering, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal (by invitation of the Coordinator, Prof. Pedro Medeiros).

As Erasmus Coordinator, I had an active role at advising the outgoing and incoming students on the courses they should enroll and establishing their learning agreements, as well as on the administrative tasks associated with the exchange program. I was responsible for 34 bilateral agreements with partner universities.

- 2020 — 2014. *Member of the Scientific Committee of the Integrated MSc in Computer Science and Engineering*, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal (by invitation of the Coordinator, Prof. Pedro Medeiros).

In 2019, the committee conducted a complete reformulation to comply with DL 65/2018 which forces the Integrated Master to be split into a 3+2 model (Bologna). The new degrees will now be subjected to approval by A3ES. The committee also handled the certification of the Degree by EUR-ACE in 2016 and 2017. Previously, a minor reformulation took place in 2015/16.

- 2014 — 2009. *Member of the Scientific Committee of the MSc in Computer Science and Engineering*, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal (by invitation of the Coordinator, Prof. Pedro Medeiros).

During this period, the committee worked in conjunction with the scientific committee of the BSc Degree to create the new Integrated Master in Computer Science and Engineering, which started in 2013/14.

### 7.1.2 Positions by election

- 2008 — 2005. *Delegate of the Teaching and Research Assistants at the Main Assembly of FCT-UNL*, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.

### 7.1.3 Positions by default

- 2009 — 2007. *Member of the CS Department Council*, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.
- 2009 — 2007. *Member of the Scientific Council*, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.

## 7.2 Outreach and Extension activities

- 2019, 2018, 2017. *FCTNOVA CHALLENGE*, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal (by invitation of the Deans Prof. Fernando Santana and Prof. Virgílio Machado)

Nation wide contest targeting high school students interested in research and scientific activities. The event has the participation of teams from schools from all over the country that develop original scientific work. The work is submitted to reviewing process and a group of finalists is proposed. My

participation, as a member of the FCT NOVACHALLENGE working group, includes the overseeing of the development of the web platform that supports the contest, the assignment of projects to the reviewers and the final selection of finalists. This initiative has helped the school to attract students that would have opted for other schools. URL: <https://www.novachallenge.fct.unl.pt>

- 2019. *Games for Good contest final*, IADE, Faculdade de Design, Tecnologia e Comunicação da Universidade Europeia, Portugal  
Member of the juri at the final of the 3rd edition *Games for Good* contest, a game jam dedicated to social responsibility. The event is promoted by Bee Engineering, Associação Nacional de Professores de Informática (ANPRI) and Ludoteca, in April 7, 2019.
- 2018, 2017, 2016. *Codingfest.org platform*, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal (by invitation of the Head of the Department Prof. Luis Caires)  
The Computer Science Department hosts a global national event that reaches the vast majority of the pre-university student population. During the *week of code*, computer science concepts and skills are experienced by students from all regions of the country. The event is promoted by *Ciência Viva* and the National Research Agency (FCT). I have been a core member of the team that develops and continuously improves the codingfest.org platform since its first edition. My main task is the programming of the puzzle game that is at the heart of the activities. URL: <https://codingfest.org>. During the *week of code*, several media cover the event and the DI FCT NOVA name is systematically referred in news reports and through interviews that are broadcasted by major TV stations.
- 2018. *Minister of Science Visits NOVA LINCS*, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal  
Member of the team that prepared the visit at the end of another week of *Ciência Viva no Laboratório*, hosted by NOVA LINCS and the Computer Science Department.
- 2018, 2017, 2016. *Big Data Analytics Academy @ Altran*, Altran, Portugal.  
This initiative, a partnership between NOVA LINCS, the Computer Science Department at FCT NOVA and Altran Portugal directed towards recently graduated students in several engineering areas, has the goal of providing or enhancing them with competences in the area of Big Data. I participated in all 3 editions as a lecturer of the modules *Programming in Python* and *Data Visualization*.
- 2017. *European Researchers' Night (NEI)*, Museu Nacional de História Natural, Lisboa, Portugal (by invitation of the Head of the Department Prof. Luis Caires)  
The Computer Science Department's booth at the European Researchers' Night included an activity for kids that allowed them to solve a puzzle on a touch screen, using the Codingfest platform, and watch a small robot (Ozobot) perform the same actions on a physical board. My participation, besides coaching kids at the event, included the coding of the puzzle game and the translation of the generated instructions that are sent to the robot. The huge success of the activity is behind its systematic inclusion on the venue programmes of 2018 and 2019. URL: <https://www.di.fct.unl.pt/noticias/2017/10/informatica-da-nova-anima-noite-europeia-dos-investigadores>
- 2019. *PAPTICe*, Auditório Municipal Augusta Cabrita, Barreiro, Portugal  
Member of the juri at the final of the national contest PAPTICe, promoted by ANRPI. URL: <http://www.anpri.pt/pap1718/>
- 2017, 2016, 2015. *Ciência Viva Summer Courses @ DI-FCT*, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
Conception, Development and Implementation of one-week courses for highschool students. During one week, in the summer holidays, dozens of students have the opportunity to experience and learn computer science through the development of video games. I am a member of the team that setup this summer courses and developed the software tools and scripts for the activities. Several games have been used to learn how to program, such as Pacman or Asteroids.

- 2017 — 2016. *CS Department TV Platform*. Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
Conception, development and implementation of a platform to host and deliver the multimedia content throughout the TV sets at the department. During one year, I supervised the graduation project of João Costa, a graduate student that developed the platform. The platform consists of a web server where the multimedia content can be uploaded, the layout of the TVs specified and the respective playlists that will make up the TV programme for a certain period. The platform supports multiple independent broadcasts with different programmes. It has been in use since then and is also used at major events such as ExpoFCT.
- 2017 — 2016. *Vem Ver Programme*. Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
Participation in several visits of high school students visiting the Computer Science department to discover and to know what is involved at the heart of computer programming. The activities include video game programming with Python and visual programming with Blockly, using the Codingfest platform, two activities that I actively helped to develop.
- 2015. *BEST/NOVA Course - Build your summer addiction!*, Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
Co-organization of a video game development course for students from 16 different nationalities (20-24 July 2015). The course was promoted by BEST Almada sponsored by Accenture and lectured by me and my colleague João Seco. URL: <https://www.di.fct.unl.pt/noticias/2015/07/bestnova-build-your-summer-addiction>
- 2015. *FiatLux - ExpoFCT @DI-FCT*. Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
CS Activity for ExpoFCT in commemoration of the International Year of Light. An online interactive path tracer demoing the application of light physics in the development of an algorithm to create synthetic photorealistic images. URL: <http://ctp.di.fct.unl.pt/~fpb/FiatLux>
- 2013. *CS Unplugged - ExpoFCT @ DI-FCT*. Departamento de Informática, Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.  
CS Activities for ExpoFCT (Unplugged versions). Inspired by the CSUnplugged, I co-worked with Teresa Romão in the creation of a set of activities for the ExpoFCT event. The common aspect of all these activities is that they are used to convey concepts and even algorithms in the computer science field, but using our tangible world and not requiring any computer at all. Examples include graph algorithms, error correction, deadlock prevention and sorting networks. URL: <https://classic.csunplugged.org>