

Curriculum Vitæ

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Nuno A. C. Henriques

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1 Academic history

Doctoral Program in Cognitive Science (*Doutoramento em Ciência Cognitiva*) at the University of Lisbon (*Universidade de Lisboa — UL*). Four years degree. Grade (first-year lectures, advanced studies): 16/20. Three year PhD research and thesis, on-going (ULisboa PhD grant since May 2016). Lisbon, Portugal. 2012–.

MSc in Informatics Engineering (*Mestrado em Engenharia Informática*) at the Faculty of Sciences and Technology of the New University of Lisbon (*Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa — FCT/UNL*). Two years degree. Grade (first-year lectures): 17/20. 2002–2003. Second year Master’s Thesis entitled “MovieGene: A multimedia production system using Evolutionary Computation”, supervised by Luís Correia (FC/UL) and Nuno Correia (FCT/UNL). Final grade: “Very Good” (top grade by unanimous decision). Lisbon, Portugal. 2004–2005.

Graduation in Informatics Engineering (*Licenciatura em Engenharia Informática*) at the FCT/UNL. Five years degree. Grade: 14/20. Lisbon, Portugal. 2002.

2 Activity

BioISI — FC/UL

PhD student. FC/UL *campus*, Lisbon, Portugal. January 2015–.

Researching about emotions, reasoning, common sense, cognitive science for an artificial empathetic agent...

Information Systems Unit (*USI*) — Instituto de Medicina Molecular

IT Architect and Software Engineering Consultant. FM/UL *campus*, Lisbon, Portugal. September 2013–March 2015.

LabMAG — FC/UL

Research Engineer. FC/UL *campus*, Lisbon, Portugal. August 2011–December 2014.

Researching about emotions, reasoning, common sense, cognitive science for an artificial empathetic agent...

Software architecture over ROS, navigation, behaviour, and surveillance modules for a new all-terrain robot — INTROBOT.

(see section 4: p. 4, INTROBOT)

Department of Technology (*DT*) — Tourism of Portugal

IT Architect and Software Engineering Manager. TP Headquarters, Lisbon, Portugal. April 2009–March 2011.

Main achievements: reduced the power consumption of the data centre in an order of magnitude, while increased processing power and storage; dematerialized the paper needed for dozens of services including tourism agents (entrepreneurs) which changed to Web services; Tourism rose several GDP percentual points during our watch!

Information Technology Architecture and Software Engineering Management. Governance of development teams and platforms, strategic technology consultant merging ethics and sustainability. Department portfolio of tens of projects, several platforms including Out-Systems Agile, Oracle IAM, WSO2 SOA Platform, Google Gadgets. Engineering and hands on for several core systems with Open technologies for Web service and database.

Rectory Informatics Office (*GIR*) — UNL

Project Manager, Quality Manager, Consultant Engineer. UNL Rectory, Lisbon, Portugal. July 2007–July 2009.

Common Informatics Resources Centre (*CRIC*) — UNL

Project Manager, Quality Manager, Researcher and Engineer. UNL Rectory, Lisbon, Portugal. September 2006–July 2007.

Web coordinator: platform engineering, interfaces and quality assurance. (see section 4: p. 5, *UNL Courses Catalogue*; maintenance and development of the portals hosted in the common platform)

Informatics Centre (*Centro de Informática*) — FCT/UNL

Project Manager, Researcher and Engineer. FCT/UNL *campus*, Caparica, Portugal. June 2005–July 2007.

Web coordinator of the UNL's *nova digital* project: implementation of a common Web content management platform. For the renewal and integration of the UNL's and FCT/UNL's portal site, also the creation of the UNL's Bologna Process portal. (see section 4: p. 5, *UNL Portal*; p. 5, *FCT/UNL Portal*)

Critical Software, SA

Engineer and Project Quality Manager. Aerospace Sector. Lisbon, Portugal. August 2004–February 2005.

Several projects and responsibilities including internal advisement regarding Quality and Systems infrastructure issues. (see section 4: p. 6, HICOD2000; p. 6, SCOS2000)

CA³ — Soft Computing and Autonomous Agents

Research Engineer and Project Manager. UNINOVA, FCT/UNL *campus*, Caparica, Portugal. August 2003–December 2003.

(see section 4: p. 6, EO-KES)

Computing and Informatics Services (*Serviço de Informática*) — FCT/UNL

Collaborator, Researcher and Engineer. FCT/UNL *campus*, Caparica, Portugal. (*pro bono* 1995–1999) 1999–2003.

Several projects and responsibilities including: jury member for computer acquisitions; systems administrator; Web sites administrator; researcher, database and project engineer on the renewal of old and development of new services to the other faculty services and departments including the faculty counsels and the directorate. (see section 4: p. 7, PETISCO/MIAU; p. 7, FCT/UNL; p. 7, Students; p. 7, SPID; p. 8, Search Engine 2; p. 8, Search Engine 1).

ICTIS — Institute of Science, Technology e Innovation (*Instituto de Ciência, Tecnologia e Inovação*)

Instructor, Direction Advisor. FCT/UNL *campus*, Caparica, Portugal. 1998–1999.

Instructor under the WWW (XHTML+CSS and Web concepts) theme to graduation students of the FCT/UNL, evaluated by the students to a grade of “Very Good”. Responsible for the improvement of the institute brand (design, marketing and communication), development and implementation of the survey plan to evaluate instructors, students and the short courses of the institute.

INCALT, L.^{da} — High Technology Consultancy and Research (*Investigação e Consultoria em Altas Tecnologias*)

Consultant, Salesman of Computer Systems. FCT/UNL *campus*, Caparica, Portugal. 1998–1999.

3 Specific courses

Advanced Course in Hierarchical Processing at Champalimaud Centre for the Unknown. Lisbon, Portugal. September 18–20, 2016. <http://courses.research.fchampalimaud.org/hierarchical-processing/>

Machine Learning by Stanford University on Coursera. Andrew Ng. Certificate earned on December 11, 2015. Grade: 100%. Verified certificate.

Course of Informatics and Industrial Automation (*Curso de Informática e Automação Industrial*) by FUNDETEC. Grade: “Very Good” (18/20). Lisbon, Portugal. 1993.

Intensive Course of Introduction to Nuclear and Particles Physics (*Curso Intensivo de Introdução à Física Nuclear e das Partículas*). Portuguese Physics Society (*Sociedade*

Portuguesa de Física) and Faculty of Sciences of the University of Lisbon (*Faculdade de Ciências da Universidade de Lisboa*). Lisbon, Portugal. 1992.

4 Projects

Empathetic agent — An artificial intelligence (AI) companion to humans. Using an Android application to enable interaction between humans and an empathetic artificial agent using mobile devices. The agent resources are Cloud expanded. August 2017–.

Technology: Android; Java; Debian GNU/Linux; PostgreSQL; WSO2 Enterprise Integrator; Apache HTTP server.

INTROBOT A new multipurpose robot with autonomous and human operated navigation and surveillance capabilities. Mixed reality interface and algorithms to trail and track with camera feed and GPS map. Collaboration: LabMag, INTROSYS, UNINOVA. August 2011–September 2012.

Technology: Ubuntu GNU/Linux; ROS; OpenCV; C++; Qt; JavaScript; Google Maps; GPS; Live RT video camera.

Service Bus Tourism of Portugal applications' hub. Critical to the organization to assure proper interoperability between applications' services towards an agile dashboard. July 2010–March 2011.

Technology: Debian GNU/Linux; PostgreSQL; Java; WSO2 ESB; REST; SOAP.

Entitas Tourism of Portugal temporal, limitless and shared database of unique entities (companies and persons). Critical to the organization to assure proper interoperability between applications' entities and associated contacts. September 2009–March 2011.

Technology: DBDesignerFork; Debian GNU/Linux; PostgreSQL; Java; ; Apache HTTP server.

TP IT Governance Open standards orientation for the development team leaders in order to assure proper interoperability between applications. Department portfolio of **tens of projects**, several platforms including OutSystems Agile, Oracle IAM, WSO2 SOA Platform, Google Gadgets. April 2009–March 2011.

Technology: Web Open standards (W3C); Sharing documentation and collaboration (Web 2.0); ...

TP IT Architecture and Engineering Reengineering of the data centre and applications technology architecture to assure proper governance and energy efficiency with less resources usage footprint. April 2009–March 2011.

Technology: Blades; Virtualisation; Central storage; Fault tolerance; Sharing and reorganizing documentation; Debian GNU/Linux; ...

Business Intelligence Statistical data processing to support management decisions. Reports generation, automatically instantly and periodically. September 2008–July 2009.

Technology: Pentaho; Tomcat + HSQLDB; PostgreSQL; Plone/Zope; Apache HTTP server; Java; Python; XML...

MovieCatalog Film (DVD, DivX...) library catalogue IMDb connected. September 2008.

Technology: Python (SQLite; Threading); IMDb; XHTML+CSS.

Groups Linking people with generic groups inside UNL (Authorizations federation). February 2008.

Technology: design and implementation of the database schema (PostgreSQL); development of the user interface using Microsoft Office Access (ODBC) for smooth integration with Microsoft Windows. Case study: restricted UNL forum where the authenticated access was developed and integrated using the Radius server infrastructure from the eduroam project.

Erasmus UNL Erasmus process on the Web. July 2007–June 2008.

Technology: design and implementation of the database schema (PostgreSQL); development of the user interface using Microsoft Office Access (ODBC) for smooth integration with Microsoft Office Word and Excel on contracts, invoices and reports generation; Web platform integration for the publication of scholarship listings.

Portal da ENSP/UNL New technological platform for content, design and layout management. July 2007–May 2008.

UNL Courses Catalogue (*Guia Informativo da UNL*) (in *UNL Portal*) Extract, transform and load (ETL) of the UNL organic units information about courses, disciplines and facilities offer in the Bologna's Process scope. March 2007–July 2009.

Technology: non invasive of the autonomous academic managing systems; XML schema and communication protocol definition; development using Python for Plone integration; *design* implementation using XHTML+CSS.

UNL Portal incl. UNL's Bologna site New technological platform for content, design and layout management. High availability, reliability and performance. Load balance solutions and services priority, and single sign on. Renewal of the Web services, integration with the university information and academic management systems, with a new design and identity. January 2006–July 2009.

FCT/UNL Portal (see *UNL Portal*). June 2005–May 2008.

MovieGene A multimedia production system using Evolutionary Computation. Master thesis prototype implementation to prove the concept. 2004–2005.

Concepts: Do automatic media composition, or video editing. Described videos with low and high level semantics annotations using MPEG-7. Descriptions are individuals genes, thus, able to be evolved towards a goal defined by any user agent.

Technology: Java 1.5 (JMF, Threads, AWT and Swing). ECJ 12 evolutionary library.

HICOD2000 Project Engineer and Quality Manager for the “High-performance CODing, protection and trading of satellite images using JPEG2000” project. Partnership with ADETTI in this international project for the European Space Agency (ESA). September 2004–March 2005

Several tasks of quality assurance and system validation testing which demanded solutions development for formal testing automation implementation.

SCOS2000 Database Engineer for the design and implementation of the sub-project “MISC-Config Variables”. International project for the European Space Agency (ESA). December 2004–January 2005.

Film library Web design, development and implementation of a film (DVD, DivX...) library catalogue IMDb connected. 2004.

Technology: Perl to process database data, connect to IMDB, and produce the catalogue using XHTML+CSS.

contact Web design, development and implementation of an address book information system (database, logics and interface) deployed on the Web with pdfL^AT_EX file generation for paper printing. 2004.

Technology: PostgreSQL, PHP, XHTML+CSS, L^AT_EX.

DCR Web design (co-author), development (author) and implementation of the information system (database, logics and interface) deployed on the Web with public and private (SSL, session and access levels) user interfaces for the Conservation and Restoration Department of the FCT/UNL. <http://www.dcr.fct.unl.pt/>. 2004.

Concepts: information system modelled with concepts mapped to relational tables, about thirty, to solve the specific problem of an academic department with teachers, students and classes. Including autonomous management for each teacher record and each discipline record. About ten low level tables were created to support a content resource management for the documentation available to the public. A news section was also created.

Technology: interfaces with XHTML+CSS, PHP for the middleware connecting to the PostgreSQL database engine and generating the interfaces with and without forms; SQL (ANSI92 / ANSI99 with PostgreSQL PL/SQL) standardized and consistent.

EO-KES information system and Web interface for the knowledge representation, using a developed ontology, over the EO (Earth Observation) satellite (ENVISAT) data from the European Space Agency (ESA). International project with partners from Spain and Italy. September 2003–December 2003.

Project Manager and Research Engineer: Development of an algorithm and the implementation of a functional prototype, using J2SE, connecting it to the Protégé and WordNet API in order to infer the goal of the human agent query in natural language. Prototype demonstrated at a Barcelona meeting with ESA and the partners.

ig **PETISCO/MIAU** huge information system and Web interface to serve all the FCT/UNL *campus* of ten thousand people between students, teachers, functionaries and utilities. Initial ideas and concepts, technology options, people interaction, messages and sharing, including the Graduation in Informatics Engineering final thesis developed over PETISCO/MIAU technology and entitled “Messages” (*Mensagens*). 1999–2003.

PETISCO: development of a new paradigm, based on functional and unification paradigms, using Prolog in order to obtain new languages for the relational database conceptual modelling and queries richer than others like SQL, for the middleware logics and for the Web interfaces generation. This new languages promoted the ability to ask any question to the database simply using pseudo natural language based on sentences but with some ASCII symbols instead of the natural language prepositions, such as `name / student $ number = 7099` translated to “the name of the student whose number is 7099”.

MIAU: the information system specific project for the Faculty developed using PETISCO technology. The main goals were assuring consistent, coherent and instantaneous information in real time processing, managing authentication and authorization interfacing with the user. Several services were deployed for the usual Academic life, such as students enrolment, grades insertion without the need of bureaucratic processes, fees management, schedules management and algorithmic generation...

FCT/UNL Web Design (co-author), development (co-author), implementation and management for the FCT/UNL Web service. <http://www.fct.unl.pt/>. 1999–2003.

Development of more than three hundred Web pages to include all the information from that the Faculty needed to publish. Several parallel small projects were developed, such as a news service, some Faculty Services contact forms and managing forms to publish important documents..

Students Web Design (co-author), development (co-author), implementation and management of the FCT/UNL students Web service. <http://students.fct.unl.pt/>. 1995–2003.

Information for the students including classes schedules, exams, news and “how to” information. This task included direct technical support to students regarding their personal Web pages.

SPID Web Design, development and maintenance of a Web pages search engine, using FCT/UNL *campus* (*.fct.unl.pt and www.unl.pt) Web servers as a test environment for one year. 2002.

Lexical search using two metrics. Developed with an existing *crawler*, *free software*, connecting it with the new developed parsing and metrics generation algorithm module,

conceptual/relational database model and web “smart” interface to be able of doing instantaneous searches (less than one second) among millions of relevant sorted expressions (*n-grams*).

Technology: Java (*multithreaded*), PHP, XHTML+CSS, SQL (ANSI99 with PostgreSQL PL/SQL).

2° CeNPL Web Design (co-author), development (co-author), implementation and management for the 2nd Logic Programming National Contest (*2º Concurso encontro Nacional de Programação em Lógica*). 1999.

Search Engine 2 Adaptation of the indexer (treewalk) and the client (hal) from the “Search Engine 1” connecting the two to a relational database (MySQL) using some middleware (PHP) to perform FCT/UNL Web pages searches. 1999.

Search Engine 1 Web design, development, implementation and management of a Web pages search engine for the Students WWW project. <http://students.fct.unl.pt/>. 1998.

Development of an application with three modules: server, indexer and client. The server was deployed as a concurrent server with *n* concurrent UNIX (Linux) processes based on a shared queue of requests and delivers.

Technology: C (shared memory, concurrent processes and semaphores), CGI, HTML.

F@CTus Web Design, development, implementation of the new Web archive of the FCT/UNL Students Newspaper including paper editions digital scanning and graphical treatment. <http://students.fct.unl.pt/factus/>. 1997–1999.

5 Significant skills

Engineering promotes competence solving problems and obtaining results facing challenges with team work in every branch of knowledge. The importance is within the *concepts and the essence declaration*. **Skills:** process optimization, sustainability, efficiency improvement, thinking outside the box, databases, Web, information architecture, SOA, software engineering, research, problem solving, hybrid cloud. **Tools:**

Applications development: Android, IBM DB2, MySQL, PostgreSQL, Protégé (OWL). Java (JNI, JDBC, Threads, JMF, AWT and Swing), C, C++, Perl, PHP, PL/SQL, Prolog, Python, BASH Script, MSO VBA (Access, Word, Excel), SQL, XHTML+CSS+WAI, Pentaho, Plone/Zope, WordNet, WSO2 Enterprise Integrator.

Documentation and production: Database diagrams with E/R usual standards, UML for object-oriented. L^AT_EX (PostScript and PDF). Gimp, Imagemagick, Photoshop, DIA. Make, Sed, Awk, “office suites”.

Engineering tools, security and quality: BSCW, CVS, DBDesignerFork, Gnuplot, Octave, Subversion. Single sign on (CAS), SSL, LDAP. ECSS, ISO 9001:2000 TickIT, Space software.

Network servers/services management: Linux, MS Windows. Apache HTTP server, JBoss + HSQLDB, PostgreSQL, Pound, Plone/Zope, WSO2 SOA Platform.

6 Publications

An artificial empathetic entity: the interaction impact on humans. Nuno A. C. Henriques. *Advances in Artificial Intelligence. EPIA 2013.* Angra do Heroísmo, September 9–12. Local Proceedings. CMATI, Universidade dos Açores, Portugal, p. 571–578.

ARES-III: A Versatile Multi-Purpose All-Terrain Robot. Magno Guedes, Pedro Santana, Pedro Deusdado, Ricardo Mendonça, Francisco Marques, Nuno Henriques, André Lourenço, Luís Correia, José Barata and Luis Flores. *ETFA 2012 - IEEE International Conference on Emerging Technology and Factory Automation*, Krakow, Poland, 17–21 September, 2012.

Creating Video Art with Evolutionary Algorithms. Teresa Chambel, Luís Correia, Jónatas Manzolli, Gonçalo Dias Miguel, Nuno A. C. Henriques, Nuno Correia. Special issue on *Digital Arts*, Computer & Graphics Journal, v.31, i.6, p. 837–847, Elsevier ISSN: 0097-8493, December, 2007.

Creative Video Editing through Evolutionary Algorithms. Teresa Chambel, Gonçalo Dias Miguel, Luís Correia, Nuno A. C. Henriques, Nuno Correia, Jónatas Manzolli. In proceedings of *Artech 2006 — Third International Conference on Digital and Electronic Art*, Pontevedra, Spain, 17–18 November, 2006.

MovieGene: Evolutionary Video Production based on Genetic Algorithms and Cinematic Properties. Nuno A. C. Henriques, Nuno Correia, Jónatas Manzolli, Luís Correia, Teresa Chambel. *EvoWorkshops: EvoMUSART — 4th European Workshop on Evolutionary Music and Art*, Budapest, Hungary, 10–12 April, 2006, proceedings p. 707–711.

MovieGene: A multimedia production system using Evolutionary Computation. Nuno A. C. Henriques. MSc thesis. <http://nunoachenriques.net/moviegene/moviegene-dissertation.pdf> (Archived by WebCite[®] at <http://www.webcitation.org/68CPVXL3c>). FCT/UNL. Lisbon, Portugal. 2005.

7 Communications

EPIA2013 16th Portuguese Conference on Artificial Intelligence. <http://www.epia2013.uac.pt/>. Angra do Heroísmo, Azores, Portugal. 9–12 September, 2013.

EuroGP, EvoCOP, EvoWorkshops. Budapest, Hungary, 10–12 April, 2006.

1st Seminar of Academic Reflections (*1º Seminário de Reflexão Académica*), invited speaker under the theme “New technologies, New Challenges” (*“Novas Tecnologias, Novos Desafios”*). FCT/UNL *campus*, Caparica, Portugal. 2000.

8 Patents

AUTONOMOUS ALL TERRAIN ROBOTICS VEHICLE. (co-author with) Pedro Santana, Luís Flores, Nuno Flores, Magno Guedes, Pedro Deusdado, Luís Correia. Europe 13752693.5 - 1802. (Pending)

Veículo todo-o-terreno robotizado e autónomo. (co-author with) Pedro Santana, Luís Flores, Nuno Flores, Magno Guedes, Pedro Deusdado, Luís Correia. PCT/PT2013/000041. (Pending)

9 Collaborations

Alphappl. Talk (*pro bono*) to the finalists of the second platoon, invited by Hugo C. Sousa. 5 September, 2014.

GFI Portugal. Consultant (*pro bono*), invited by Hugo C. Sousa. 17 August, 2011.

UTL. Talk (*pro bono*) at a post-graduation class EGT about Innovation using Web2.0 at Tourism, invited by Hugo C. Sousa. ISEG. 27 Abril, 2010.

UTL. Talk (*pro bono*) at an MSc class OEFI about Information Systems at Tourism, Turismo de Portugal case study, invited by Miguel Mira da Silva. Tagus Park. 17 March, 2010.

Worten/SONAE. Consultant (*pro bono*), invited by José V. Almeida. November and December 2005.

GruVA/LabMAg — Artificial Life Group of the Laboratory of Agent Modelling at the FC/UL. Researcher. 2005–2008.

IMG/CITI — Interactive Multimedia Group of the Centre of Informatics and Information Technology at the FCT/UNL. Researcher. 2005–2008.

10 Instructor

Web CMS: Plone/Zope. UNL Rectory. Several ad hoc and scheduled. 2006–2008.

Web pages: HTML + CSS. ICTIS, FCT/UNL *campus*, Caparica, Portugal. 1x24h. 1998.

11 Languages

Castellano *Muy bien hablado e leído.*

English Colloquial and technical (computer science) very well spoken, written and read.

Português (native language) *Perfeitamente falado, escrito e lido.*

The Italian and French languages are fairly understood and read.

12 Honours and awards

PhD support grant by Universidade de Lisboa (BD2015). Lisbon, Portugal. 2016.

6th Prize on the Essay Category at the “IBM Leonardo Da Vinci 95” Contest by IBM (6/200).
Lisbon, Portugal. 1995.