Fabrizio Nunnari – Curriculum Vitae

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Profile

Fabrizio Nunnari, 24th January, 1975, Turin, Italy. Nationality: Italian.

Since 2013 I am researcher at the German Research Center for Artificial Intelligence (DFKI - Deutsches Forschungszentrum für Künstliche Intelligenz), where I conduct research in the field of Computer-Human Interaction and virtual character animation. Specifically, I work on virtual interpreters for sign languages and I'm investigating on the use of Natural User Interfaces for authoring character animation.

Between 2005 and 2012 I worked as both Researcher and Developer, sharing my time among academical research and industrial production. I used to collaborate everyday with academics, artists, and creatives to conceive and to deliver original and innovative software and multimedia products, such as Computer Graphics Videos, Interactive 3D Applications, Art & Multimedia Installations. I used to coordinate the development staff to fulfill the requirements of time-constrained production pipelines, often personally contributing to heavy development and last-minute bug-fixing. Meanwhile, as researcher, I participated with academics in literature surveys and in the production and presentation of papers for conferences and journals. My research activities touched the fields of Multimedia Systems, Virtual Storytelling, and Procedural Character Animation.

I received a Ph.D. in Computer Science in 2005. My research activity spanned across the fields of Human-Computer Interaction, Cooperative Work, and real-time 3D Computer Graphics.

I received a Master Degree in Computer Science in 2001. During my academic studies I extensively used and taught real-time 3D technologies for both research and personal interest.

At the high-school I studied Industrial Electronics and telecommunication. At that time I was already extensively using Home Computers for both entertainment and (self-taught) programming. Putting the hands on electrical circuits and boards gave me the impulse to begin my studies in Computer Science. From hardware to software.

My interest and experience with home computers, video games, and 3D technologies started before the high-school. At the age of 12 I started using Commodore 8-bit personal computers, learning Basic. I continued using Commodore Amiga 16-bit systems, on which I started to code in C and Assembler 680x0. I then switched to PCs, mainly focusing on Linux operating systems for networking and system administration. More recently I became an Apple Mac user. I also recently investigated on mobile (Android) platform development.

In short, my education, career and personal interests always orbited around real-time 3D computer graphics and multimedia technologies. In general, I like to considered myself a “360 degrees programmer”. I’ve put my interest in many of the fields that computer science covers: algorithm programming, software architectures, real-time systems, 2D and 3D graphics rendering, virtual reality, databases, networking, system administration, web services, compilers and interpreters, scripting languages, artificial intelligence, ontologies, physical simulation, computer-human interaction, data visualization, procedural character animation, and more. I always worked in integrating many different technologies into complex and rich multimedia frameworks. My desire is to keep on working in research or applied research, in order to keep on working with brilliant minds and innovators, while, at the same time, see a concretization of my ideas.

Major Working Experiences

2013 – present Researcher – German Research Center for Artificial Intelligence (DFKI)

Since 2013 I work as post-doc researcher at the German Research Center for Artificial Intelligence (DFKI - Deutsches Forschungszentrum für Künstliche Intelligenz). I conduct my research activity at the Sign Language Synthesis and Interaction group, for the MMCI (Multimodal Computing and Interaction) cluster of excellence.

2012 Researcher – University of Turin, Italy

In 2012 I worked as researcher at the University of Turin, Italy, CIRMA department (Interdipartimental Center for Research on Media and Audiovideo) [http://www.cirma.unito.it]. The position was financed by the private company Virtual Reality & Multi Media Park SpA.

2005-2011 R&D – Virtual Reality & Multi Media Park S.p.A., Turin, Italy

Programming researcher and lead developer at the ASA-Lab (Art and Science Alliance Laboratory), a lab of Virtual Reality & Multi Media Park S.p.A. [web site closed], a public held company. At the same time I've been teaching real-time 3D technologies at the students of the Computer Graphics courses.

May-Jul 2006 IT Consultant – Ministry for cultural heritage in Piedmont, Turin, Italy

A secondary working activity. I took care of Linux server maintenance and general IT support [http://www.piemonte.beniculturali.it].

Feb-May 2005 Developer – PG Ltd, Turin, Italy

Concept, Design and Development for entertaining multimedia installations [http://experimenta.to.it/2005]. Art & Technology involving Java development, pressure and presence sensors, webcam recording and interactive video playback.

Major Projects

2014-today DeEvA [http://deeva.mmci.uni-saarland.de]

DeEvA (Depot of Evolving Avatars) is a web platform for the generation of virtual characters from personality traits. It uses crowdsourcing approaches (Reverse Correlation and Interactive Genetic Algorithms) to create mapping between personality traits and physical attributes. Concept, research, coordination of three developers, data analysis in R.

2013-today SLSI [http://slsi.dfki.de]

The Sign Language Synthesis and Interaction group is hosted by the Multimodal Computing and Interaction Cluster of Excellence [http://www.mmci.uni-saarland.de/] and is financed by the German Research Center for Artificial Intelligence (DFKI) [http://www.dfki.de]. The goal of the SLSI group is to design animation methods for producing intelligible signs and for validating systematically the output quality using comprehensibility tests in Deaf-friendly environments. The research outcome encompasses Human-Computer Interaction, computer animation, and linguistics. Research, concept, development of Blender addons in Python, integration with Kinect and Leap Motion.

2012 FraMESHift [https://projectframeshift.wordpress.com/]

FraMESHift was a dance performance featuring a real-time interaction between the performers and a virtual robot. "An investigation of the human/technology relationship that reminds us to ask the question of who is actually in control. This interactive, experimental dance theatre work explores the human/machine relationship, introducing two symbolic main characters, human and robot, who must learn to communicate and co-exist in overlapping worlds." Lead developer, network integration.

2012 CADMOS [http://cadmos.di.unito.it/]

Is a research project focusing on taking advantage of semantic web technologies (OWL, RDF) for the automated creation of 3D environments from movie scripts. Research & Development.

2010-2012 VERITAS [http://veritas-project.eu]

The “Virtual and Augmented Environments and Realistic User Interactions To achieve Embedded Accessibility DesignS” is an european research project (7th FP) focusing in integrating the simulation of human disabilities in design tools. Project Management & Development.

2008-2012 MESH [https://vimeo.com/16883471]

The Mise-En-Scène Helper is a pre-visualization tool for cinematographic sets, multimedia events, architectural works, theatrical performances, art/entertainment installations. It is the basic tool that my team uses to produce most of its projects. Lead developer.

2007-2012 Enthusiasm [http://enthusiasm.sourceforge.net]

The Enthusiasm framework is the “King of my projects”: it is where most of my development efforts have been integrated in the last years, and has been used as grounding base for all the project developed at VRMMP. It is a general purpose real-time 3D application framework based on open-source libraries. It integrates in a single platform video rendering, spatialized audio, physical simulation, video playback, IK and procedural character animation, multithreading support, XML I/O, Java bridged API, game peripherals support. Lead development, system integration, cross-platform porting.

2009-2011 ATLAS [http://www.atlas.polito.it]

The “Automated Translation into Sign Language” a project aims to create a high-quality virtual human speaking a sing language (the gesture language used by deaf people). Research & Development.

2009 Animatricks [http://www.cirma.unito.it/pdf/Animatricks_relazione.pdf]

Is a research project focusing on the definition of autonomous virtual humans playing the role of secondary characters in movie productions. Research & Development.

2007 Play the Physics [http://www.360code.it/blog/my-projects/play-the-physics/]

Is an educational video game for teaching physics to children (8-12 years). Development (character procedural animation, camera movement editing and playback).

2005-2006 Dramatour [http://www.dramatour.unito.it]

Was a research project for the development of methodologies to create drama-based intelligent ani- mated virtual guides on portable devices. Lead development.

2005 VEP [http://www.cirma.unito.it/vep/]

The Virtual Electronic Poeme project is a Virtual Reality reconstruction of the 1958 multimedia installation “Poème électronique” of Le Corbusier. Development, system integration.

Education

2005 Ph.D. in Computer Science

Dept. of Computer Science, University of Torino, Italy. Covered fields: Real-time 3D Computer Graphics, Computer-Human Interaction, Computer Supported Cooperative Work. Title of the thesis: “ThreeDness: a framework for the creation of customizable 3D awareness interfaces” [http://www.di.unito.it/~nunnarif/threedness].

2001 Master Degree in Computer Science

Dep. of Computer Science, University of Torino, Italy. Title of the thesis: “ThreeDness: Rappresentazione di informazione di contesto in applicazioni collaborative” (Representation of context information in collaborative applications) [http://www.di.unito.it/~nunnarif/threedness/publications/Nunnari-ThreeDness-Tesi.pdf].

1993 Diploma in Industrial Electronics and Telecommunications

I.T.I.S. “Leonardo da Vinci”, Chivasso (TO), Italy.

OTHER EXPERIENCES

2010 – today **Android Developer**

I'm registered as Android developer and released some applications [https://play.google.com/store/apps/developer?id=Fabrizio+Nunnari].

1-10 Sep 2001 **i3 Interaction Design Summer School**

Just before my Ph.D. studies I attended the 10 days summer school "Designing for communities" at the Interaction Design Institute in Ivrea [http://interactionivrea.org/].

Feb-Jul 1999 **Erasmus Student**

Erasmus student at the Vrije Universiteit Brussel [http://www.vub.ac.be].

ORGANIZATIONAL SKILLS

Experience to work both alone and in teams. Experienced in collaborating with both co-located and sparse teams. Leader of little development teams (3-4 people). Attitude and experience in collaborating with artists and creative teams. Creative attitude to problem solving.

TECHNICAL SKILLS

- I have experience with the most known desktop applications on Windows, MacOS X and Linux.
- Text editing and desktop productivity environments: MS Office, OpenOffice, LaTeX, Lyx.
- Programming Languages: experienced in Java, C/C++, and Python. Also used: R, Perl, Ruby, Javascript, and Assembly 680x0.
- Development Environments: Eclipse, Visual Studio, Processing, Blender scripting, Xcode, Makefiles.
- Known Libraries and Frameworks: AWT/Swing, Ogre3D, ODE (Open Dynamics Engine), OpenAL, Java3D, OpenNI, libVLC, Leap SDK, Blender Edit Mode and Game Engine.
- Parser Generators: JavaCC.
- Language wrappers: SWIG.
- Databases: mySQL usage and administration.
- Other known languages: HTML, CSS, XSLT, XQuery, XML, PHP, SQL, UML.
- Networking: TCP and UDP sockets, Java RMI, OSC protocol.
- Image editing: basic knowledge of GIMP.
- 3D content creation: basic knowledge of Maya and Blender.

OTHER INFORMATION

Driving licenses B (cars) and A (motorbikes).

My hobbies include Argentine Tango (which I also sometimes teach), Contemporary Dancing, and Running.

Known Languages: Italian (Native proficiency), English (Full professional proficiency), Spanish (Limited working proficiency), French (Elementary proficiency), German (Basic proficiency).

SCIENTIFIC PUBLICATIONS

[1] Fabrizio Nunnari and Alexis Heloir. Exploiting reverse correlation for the generation of virtual characters from personality traits. In *Proceedings of the 7th International Conference on Intelligent Technologies for Interactive Entertainment*, INTETAIN 2015. ICST (Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering), 2015.

[2] Fabrizio Nunnari and Alexis Heloir. Evaluation of a facial animation authoring pipeline seamlessly supporting performance capture and manual key-pose editing. *EAI Endorsed Transactions on Creative Technologies*, 15(3), 6 2015.

[3] Alexis Heloir and Fabrizio Nunnari. Towards an intuitive sign language animation authoring system for the deaf. *Journal of Universal Access in the Information Society*, in press.

[4] Alexis Heloir, Fabrizio Nunnari, Sylvain Haudegond, Yoann Lebrun, and Christophe Kolski. Description of a self-adaptive architecture for upper-limb rehabilitation. In *Proceedings of the 8th International Conference on Pervasive Computing Technologies for Healthcare*, PervasiveHealth '14, pages 317-320, ICST, Brussels, Belgium, Belgium, 2014. ICST (Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering).

[5] Alexis Heloir, Fabrizio Nunnari, and Christophe Kolski. Adaptive hand-tracked system for 3d authoring. In *Proceedings of the 26th Conference on L'Interaction Homme-Machine*, IHM '14, pages 101-104, New York, NY, USA, 2014. ACM.

[6] Fabrizio Nunnari and Alexis Heloir. Mapping personality to the appearance of virtual characters using interactive genetic algorithms. In Timothy Bickmore, Stacy Marsella, and Candace Sidner, editors, *Intelligent Virtual Agents*, volume 8637 of *Lecture Notes in Computer Science*, pages 316-319. Springer International Publishing, 2014.

[7] Fabrizio Nunnari and Alexis Heloir. A self adaptive architecture for hand-tracked 3d authoring interface. In *AISB workshop on Machine Learning, Expressive Movement, Interaction Design, and Creative Applications*, April 2014.

[8] Alexis Heloir and Fabrizio Nunnari. Towards an intuitive sign language animation authoring environment. In *Proceedings of the Third International Symposium on Sign Language Translation and Avatar Technology (SLTAT)*, October 2013.

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[10] Rossana Damiano, Cristina Gena, Vincenzo Lombardo, and Fabrizio Nunnari. Leveraging web 3d guidance in cultural heritage fruition. In *Proceedings of the Biannual Conference of the Italian Chapter of SIGCHI*, CHItaly '13, pages 1:1-1:10, New York, NY, USA, 2013. ACM.

[11] Rossana Damiano, Vincenzo Lombardo, Cristina Gena, and Fabrizio Nunnari. Guidance for web 3d in cultural heritage dissemination. In *Proceedings of the 17th International Conference on 3D Web Technology*, Web3D '12, pages 186-186, New York, NY, USA, 2012. ACM.

[12] Rossana Damiano, Cristina Gena, Vincenzo Lombardo, Fabrizio Nunnari, Andrea Crevola, and Alessandra Suppini. 150 digit. integrating 3D visit and social functions into a web 3.0 learning-oriented approach. In*Sixth International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA 2011)*. IEEE Computer Society, October 2011.

[13] Vincenzo Lombardo, Fabrizio Nunnari, Davide Di Giannantonio, Jacopo Landi, Paolo Armao, Flavia Confaloni, and Shanti May. MESH - mise en scÃ¨ne helper. In *Proceedings of the 2011 Joint Virtual Reality Conference*, pages 27-32. VTT, 2011.

[14] Vincenzo Lombardo, Cristina Battaglino, Rossana Damiano, and Fabrizio Nunnari. An avatar-based interface for the italian sign language. In *Proceedings of the 2011 International Conference on Complex, Intelligent, and Software Intensive Systems*, CISIS '11, pages 589-594, Washington, DC, USA, June 2011. IEEE Computer Society.

[15] Vincenzo Lombardo, Fabrizio Nunnari, and Rossana Damiano. The animatricks system. animating intelligent agents from high-level goal declarations. In *Proceedings of The 4th International ICST Conference on Intelligent Technologies for Interactive Entertainment (INTETAIN 2011)*, May 2011.

[16] Stefan Kersten, Vincenzo Lombardo, Fabrizio Nunnari, and Andrea Valle. A binaural simulation of VarÃ¨se's PoÃ¨me Ã©lectronique. In Scott Wilson, David Cottle, and Nick Collins, editors, *The SuperCollider Book*, chapter 19, pages 577-587. MIT Press, Cambridge, Massachusetts, 2011.

[17] Vincenzo Lombardo, Fabrizio Nunnari, and Rossana Damiano. A virtual interpreter for the italian sign language. In *Proceedings of the 10th international conference on Intelligent virtual agents*, IVA'10, pages 201-207, Berlin, Heidelberg, 2010. Springer-Verlag.

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international conference on Multimedia, MM '09, pages 1053-1062, New York, NY, USA, 2009. ACM.

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[20] Rossana Damiano, Cristina Gena, Vincenzo Lombardo, Fabrizio Nunnari, and Antonio Pizzo. A stroll with carletto: adaptation in drama-based tours with virtual characters. *User Modeling and User-Adapted Interaction*, 18(5):417-453, 2008.

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[22] Rossana Damiano, Vincenzo Lombardo, Fabrizio Nunnari, and Antonio Pizzo. Dramatization meets narrative presentations. In *Mobile Guide 06*, October 2006.

[23] Vincenzo Lombardo, Andrea Valle, Fabrizio Nunnari, Francesco Giordana, and Andrea Arghinenti. Archeology of multimedia. In *ACM Multimedia 2006*, pages 269-278. ACM, October 2006.

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[29] Fabrizio Nunnari and Carla Simone. Perceiving awareness information through 3d representations. In *AVI '04: Proceedings of the working conference on Advanced visual interfaces*, pages 443-446, New York, NY, USA, May 2004. ACM Press.

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[31] S. Bandini, S. Manzoni, F. Nunnari, and C. Simone. Supporting the sense of presence in control environments. *International Journal of Cognition, Technology and Work (JCTW)*, 6(1):49-52, 2004.

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