Andrea Salvadori - Curriculum Vitae

Personal Details

DATE AND PLACE OF BIRTH 12 November 1983, Pisa, Italy
NATIONALITY Italian
E-MAIL andrea.salvadori@sns.it

Current Position

Postdoctoral research fellow
SMART Laboratory
Scuola Normale Superiore, Pisa, Italy

Education

QUALIFICATION Philosophiae Doctor in Chemistry
DATE 11 April 2017
INSTITUTION Scuola Normale Superiore, Pisa, Italy

QUALIFICATION Master's degree in Computer Science
("Laurea Specialistica in Tecnologie Informatiche")
FINAL GRADE 110L / 110
DATE 12 October 2012
INSTITUTION Università di Pisa, Pisa, Italy

QUALIFICATION Bachelor's degree in Computer Science
("Laurea triennale in Informatica")
FINAL GRADE 110L / 110
DATE 5 April 2007
INSTITUTION Università di Pisa, Pisa, Italy

Work Experience

DATE 19 January 2017 - present
EMPLOYER Scuola Normale Superiore, Pisa, Italy
POSITION HELD Research fellow ("Titolare di assegno di ricerca")

DATE 15 May 2013 - 30 September 2013
EMPLOYER Scuola Normale Superiore, Pisa, Italy
POSITION HELD Continuous and Coordinated Collaboration
("Contratto di Collaborazione Coordinata e Continuativa")

Professional Skills and Competences

Solid experience in the design and development of software according to the Object-Oriented programming paradigm.
Experience in the development of interactive computer graphics and virtual reality applications, mainly in C++ with the Qt framework and OpenSceneGraph (see [1] and [2]). Experience in the development of 3D computer graphics applications with XVR[1]. Good knowledge of OpenGL. Some experience in the development of interactive applications with Java and C#.
Experience in the development of Scientific Visualization software, with focus on the visualization of molecular structures and related properties (Molecular Graphics).
Experience in network programming and in the development of ad-hoc application-level network protocols, mainly using Java and C++ (e.g., see [2] and [4]).
Some experience in the development of Web applications, with focus both on the client-side (using HTML 4, CSS, Javascript and JQuery) and on the server side (using Java Servlet/JSP or C# ASP.Net technologies).
Some knowledge of the Python and Fortran 90/95 programming languages.

Research Interests

My primary research interests are related to the application of computer graphics and virtual reality technologies to the field of Molecular Graphics.

[1] www.vrmedia.it/it/xvr.html

Research Projects

Caffeine

I am the main developer of "*Caffeine*", a new molecular viewer specifically designed to exploit modern Immersive Virtual Reality (IVR) technologies, developed at the SMART Laboratory of Scuola Normale Superiore.

It is implemented in C++, using the Qt framework, Open Babel as base cheminformatics library and OpenSceneGraph as 3D graphics engine. Caffeine supports both standard desktop computers as well as IVR systems, such as the CAVE theater installed at Scuola Normale Superiore. It allows to visualize both static and dynamic structures using the most widespread representations (all-atoms and ribbons), iso-surfaces extracted interactively by volume data set, and line charts displaying additional 2D scalar data resulting from further data analysis. In an IVR context, these charts are visualized as part of the 3D scene and kept always in front of the user in an "augmented reality fashion". The features of the program have been presented in a recent work published on the International Journal of Quantum Chemistry [1]. Finally, Caffeine has been successfully used in the VIS (Virtual Immersions in Science, http://vis.sns.it), project which was awarded a prize for science outreach[2].

List of Publications

[1] "Immersive virtual reality in computational chemistry: Applications to the analysis of QM and MM data"
A. Salvadori, G. Del Frate, M. Pagliai, G. Mancini, and V. Barone.
International Journal of Quantum Chemistry, vol. 116, no. 22, pp. 1731–1746, Nov. 2016. DOI: 10.1002/qua.25207

[2] "Moka: Designing a Simple Scene Graph Library for Cluster-Based Virtual Reality Systems"
A. Salvadori, A. Brogni, G. Mancini, and V. Barone.
In International Conference on Augmented and Virtual Reality, 2014, pp. 333–350. DOI: 10.1007/978-3-319-13969-2_25

[2] http://normalenews.sns.it/marcos-valdes-ottiene-con-il-progetto-vis-il-premio-per-la-comunicazione-scientifica-della-societa-italiana-di-fisica/

[3] "Graphical Interfaces and Virtual Reality for Molecular Sciences"
A. Salvadori, D. Licari, G. Mancini, A. Brogni, N. De Mitri, and V. Barone.
In Reference Module in Chemistry, Molecular Sciences and Chemical Engineering, Elsevier, 2014
DOI: 10.1016/B978-0-12-409547-2.11045-5

[4] "Nomad: Virtual Environments on P2P Voronoi Overlays"
L. Ricci and A. Salvadori
In On the Move to Meaningful Internet Systems 2007: OTM 2007 Workshops: OTM Confederated International Workshops and Posters, AWeSOMe, CAMS, OTM Academy Doctoral Consortium, MONET, OnToContent, ORM, PerSys, PPN, RDDS, SSWS, and SWWS 2007, Vilamoura, Portugal, November 25-30, 2007, Proceedings, Part II, R. Meersman, Z. Tari, and P. Herrero, Eds. Berlin, Heidelberg: Springer Berlin Heidelberg, 2007, pp. 911–920.
DOI:10.1007/978-3-540-76890-6_17

Language Skills

MOTHER TONGUE Italian

OTHER LANGUAGES English (Listening: level B2; Reading: level B2; Speaking: level B1; Writing: level B2)

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