

Andrea Sottoriva curriculum vitae

Born: 1983-09-29, Schio (VI), Italy
Nationality: Italian
Email: andrea.sottoriva@cancer.org.uk
Homepage: <http://www.compbio.group.cam.ac.uk/People/Andrea/>
Personal homepage: <http://hifi.metalabs.org>
Address: Li Ka Shing Centre, Robinson Way, CB2 0RE,
Cambridge (UK)
Mobile phone: +44 7766057484

Education

- Since 2008-10: University of Cambridge (United Kingdom)
PhD Student in Oncology, Computational Biology Group
Cancer Research UK Cambridge Research Institute
Li Ka Shing Centre, Robinson Way, CB2 0RE Cambridge - United Kingdom
Phone: +44 (0) 1223 404 209
Web: <http://www.compbio.group.cam.ac.uk/>, <http://www.cambridgecancer.org.uk/>
- 2008-08: University of Amsterdam (The Netherlands)
MSc, *Cum Laude* in Grid Computing, Bioinformatics programme
Dissertation: “Modeling tumour growth and invasion using a hybrid cellular automaton”
University of Amsterdam, Faculty of Science, Department of Informatics
Kruislaan 404, 1098 SM Amsterdam - The Netherlands (Phone: +31 20 52 57 678)
Web: <http://www.science.uva.nl>, <http://www.science.uva.nl/grid>
Major: Computational Biology.
- 2007-06 until 2007-08: CERN (European Organisation for Nuclear Research)
CERN openlab summer school on Grid Computing
CERN - European Organisation for Nuclear Research
CH-1211 Geneve 23 - Switzerland (Phone: +41 22 76 761 11)
Web: <http://www.cern.ch>, <http://www.cern.ch/openlab>
- 2006-06: CINECA Supercomputing Centre
6th *Scientific visualisation and interactive computer graphics* summer school
CINECA supercomputing centre
via Magnanelli 6/3, 40033 Casalecchio di Reno - Italy (Phone: +39 051 61 71 411)
Web: <http://www.cineca.it>
- 2006-03: University of Bologna (Italy)
BSc, *Cum Laude* in Computer Science
Dissertation: “Development of a 3D visualisation software for the NEMO neutrino telescope”
University of Bologna, Faculty of Science, Department of Computer Science
Mura Anteo Zamboni 7, 40127 Bologna - Italy (Phone: +39 051 20 94 516)
Web: <http://www.cs.unibo.it>
Major: Computer Science, Simulation and Computer Graphics Programme.

Employment

- 2006-10 until 2008-09: NIKHEF - National Institute for Subatomic Physics
Scientific Programmer (part time) for the ANTARES experiment: data analysis and visualization
NIKHEF (National Institute for Nuclear Physics and High-Energy Physics)
Kruislaan 409, 1098 SJ Amsterdam - The Netherlands (Phone: +31 20 592 2000)
Web: <http://www.nikhef.nl>, <http://antares.in2p3.fr>
- 2006-04 until 2006-07: Department of Physics, University of Bologna
Scientific Programmer (full time) for the NEMO experiment: data analysis and visualization
Department of Physics, University of Bologna
via Bertini Pichat 6/2, 40127 Bologna - Italy (Phone: +39 051 2095255)
Web: <http://www.df.unibo.it>, <http://nemoweb.lns.infn.it>
- 2003-01 until 2005-06: Believe s.r.l. Electronic Components
System Administrator (part time) on GNU/Linux systems
Believe s.r.l. Electronic Components
via Lago Trasimeno 21, 36015 Schio (Vicenza) - Italy
Phone: +39 0445 579035
Web: <http://www.believe.it>

Awards and Scholarships

- 2008-01 until 2008-08: HSP Huygens scholarship for excellent students in the Netherlands
Awarded by the Dutch Ministry for Education, Culture and Science
Outline: 900 Euros per month, tuition fees, international travel costs reimbursement
Contact: Nuffic, PO Box 29777, 2502 LT The Hague, The Netherlands
Phone: +31 (0)70 4260260
Web: <http://www.nuffic.nl/home/redirect/huygens-scholarships-programme>

Publications

- (3) Sottoriva A., Slood P.M., Medema J.P., Vermeulen L., "Exploring cancer stem cell niche directed tumor growth", *Cell Cycle*, 2010, In Press.
- (2) Sottoriva A., Verhoeff J.J., Borovski T., McWeeney S.K., Naumov L., Medema J.P., Slood P.M., Vermeulen L., "Cancer stem cell tumor model reveals invasive morphology and increased phenotypical heterogeneity", *Cancer Research*, 2010, 70: 46-56.
- (1) Portegies Zwart S. *et al.*, A multiphysics and multiscale software environment for modeling astrophysical systems, *New Astronomy*, 2009, 14: 369-378.

Academic papers

(available from my personal homepage)

- (12) *Dust radiative transfer using Monte Carlo methods*, December 2007.
- (11) *Scalability Analysis of Tycoon*, August 2007.
- (10) *Investigating finite difference methods for option pricing*, June 2007.
- (9) *Determining 3'-ended EST fragments*, May 2007.

- (8) *Dynamics analysis of excitable cells models for myocardial tissue and neuronal networks simulation*, January 2007.
- (7) *Development of a simulation software for multiprocessor cache coherence protocols on top of SystemC*, December 2006.
- (6) *Sun(tm) Grid Engine architecture overview*, October 2006.
- (5) *NEVD user manual* (Antares internal note: ANTARES-Soft/2007-003), May 2006.
- (4) *Development of a 3D visualisation software for the NEMO neutrinos telescope*, March 2006.
- (3) *Design of a USB home made peripheral based on Microchip PIC 18F2455/2550/4455/4550: a feasibility study*, February 2006.
- (2) *SCAR: an object-oriented framework for distributed scale-free networks simulation on top of Artís*, December 2005.
- (1) *Steganografia: origine, tecniche e prospettive (Steganography: origins, technics and perspectives)*, February 2005.

Software I developed
(available from my personal homepage or from sourceforge.net)

- (34) *TumorSim*: a hybrid cellular automaton model of tumour growth and invasion (language: C++), August 2008.
- (33) *MPIrad*: dust radiative transfer using Monte Carlo methods distributed over MPI (language: C++), December 2007.
- (32) *Crank*: a software for financial derivatives pricing (European and Digital options) based on the Crank-Nicolson finite difference scheme (language: Java), May 2007.
- (31) *ESTgrep*: a program that finds 3' sequences among the human genome ESTs available from *Genebank* (language: Perl), May 2007.
- (30) *Biocond*: a set of scripts based on Bioconductor for microarray analysis (language: R), May 2007.
- (29) *DLaG*: a Diffusion Limited Aggregation software for simulation of biological fractal objects growth (language: C), March 2007.
- (28) *Diffusore*: parallel/distributed implementation of some 2D diffusion solvers: Jacobi, Gauss-Seidel and SOR over MPI (language: C), March 2003.
- (27) *Viber*: a parallel/distributed 1D wave equation simulator on top of MPI (language: C), February 2007.
- (26) *VecMetaCPU*: a minimal electrostatic fields simulator computing on the GPU (Graphics Processing Unit) using OpenGL shading language (language: C), November 2006.
- (25) *VecMetaGrid*: an electrostatic fields simulator computing on top of the *Globus* grid toolkit (language: Java), November 2006.
- (24) *LGA*: a little fluid-dynamic simulation program based on lattice gas automata (language: Java), October 2006.
- (23) *Visume*: a set of VTK visualisation programs for lattice-Boltzmann simulation datasets (language: Python), October 2006.
- (22) *NEMOplot*: a real time rate plotter for the NEMO neutrino telescope experiment (language: C), July 2006.
- (21) *NEVD*: a 3D visualisation software for NEMO and ANTARES neutrino telescope experiments (language: C++), March 2006.
- (20) *SCAR*: a flexible *Scale-Free* networks simulator (language: C++), December 2005.

- (19) *MultiBrain*: a 3D graphical engine based on OpenGL - <http://multibrain.sourceforge.net> (language: C++), September 2005.
- (18) *Dejff*: a little experiment of reverse engineering on a proprietary format of *jpeg* container with the purpose of extracting singular images (language: C), August 2005.
- (17) *Gilgamesh*: a code generator for Java bytecode refactorings (language: Java), July 2005.
- (16) *MMN*: an M/M/n *Poisson* queue systems simulator (language: C), April 2005.
- (15) *TCP-Woof*: a session layer on top of TCP/IP for high reliable connections (language: C), March 2005.
- (14) *Spartame*: a backdoor for SPARC64 architectures (language: SPARC64 assembly), March 2005.
- (13) *Pseudostego*: a banal steganography program for written text (language: C), February 2005.
- (12) *BubeView*: a in-software 3D polygonal meshes visualizer (language: C), January 2005.
- (11) *dGauss*: a distributed polynomial integration software over PVM (language: C), November 2004.
- (10) *[u]Pulsar*: a project of a digital 0-300KHz oscillator with PIC16F877/16F84 (language: PICmicro assembly), June 2004.
- (9) *MetaInit*: a SystemV-style init system implemented through Makefiles - available on request (language: Makefile-style scripts), June 2004.
- (8) *Tini*: an IDS for integrity checking of the system binaries (language: shell scripting and AWK), March 2004.
- (7) *DogeLibs*: a library of graphical widgets (language: Java), June 2003.
- (6) *VecMetaFrame*: a distributed electrostatic fields simulator - <http://vecmetaframe.sourceforge.net> (language: C), May 2003.
- (5) *FooLife*: an implementation of Conway's Game of Life with periodic boundary conditions (language: Java), March 2003.
- (4) *JVM*: a reduced Java Virtual Machine for MIPS32 architecture (language: MIPS32 assembly), February 2003.
- (3) *MetaCPU*: a 8 bit, 7 instructions CPU design (design software: Retró), February 2003.
- (2) *Sisimizi*: a sisimizi game human-against-AI using *Alpha-Beta pruning AI algorithm* (language: Scheme), January 2003.
- (1) *Master485*: a data acquisition program over RS485 (language: C), April 2002.

Skills

- *Human Languages*: Italian (native), English (112/120 TOEFL iBT), Spanish (beginner).
- *Programming languages*: C, C++, Java, Python, Scheme, Perl, R, Shell Scripting, x86 assembly, MIPS32 assembly, SPARC32/64 assembly, Microchip PICMicro assembly, AWK, SED, Tcl, Lisp.
- *Markup languages*: HTML, CSS, TeX.
- *Database query languages*: SQL.
- *Operating systems*: GNU/Linux, OpenBSD, NetBSD, Solaris, Irix, MacOSX, WindowsXP.
- *Development environments*: Emacs, Eclipse, ROOT (from CERN - European Organisation for Nuclear Research), Visual Studio 2003.
- *Development tools*: gcc, g++, gdb, automake/autotools, cvs, oprofile.

- *Libraries and frameworks:* POSIX calls, X11/Motif, SDL, OpenGL, GLSL, wxWindows, OpenSSL, PVM, MPI, Pthread, LZO, MySQL libs, Linux kernel USB subsystem, VTK, Globus grid toolkit, SystemC, Tycoon, CERN gLite middleware, ROOT (CERN).
- *System administration:* apache, apache-ssl, nfs, nis, ldap, samba, postfix, spamassassin, clamavd, bind9, webmail, iptables.
- *Other:* MySQL, OpenMosix, Mathematica.

Personal interests and hobbies

- Chess.
- Italian cuisine.
- Mathematical logic.
- Modern history.
- Collecting Former Soviet Union's specimens.