
Claudio Vittorio Russo

UK Address:	Nationality:	German/Italian/US
3F1 12 Dryden Street	Date of Birth:	30 March 1970
Edinburgh, EH7 4PN	E-mail:	cvr@dcs.ed.ac.uk
Scotland, UK	WWW:	http://www.dcs.ed.ac.uk/~cvr/
Tel: (0131) 650 5163 (work)		
Tel: (0131) 554-4848 (home)		
Fax: (0131) 667 7209		

Profile

- Independent academic researcher and team-based commercial software developer
- Expert knowledge of language design, compiler technology, CORBA and formal methods
- Experience in assimilating, implementing and verifying conformance to standards
- Excellent written and oral communication skills
- Self-motivating, highly adaptive and disciplined

Skills

Programming Languages: CORBA & Java IDL (expert); Dylan & Standard ML (expert); Java & C (highly proficient); SQL, Pascal, Prolog, Lisp (proficient).

Operating Systems: Windows 95/NT, Linux, Unix, Mac OS.

Other: GUI programming (proficient); MS Access & ODBC (proficient); $\text{T}_{\text{E}}\text{X}$ (highly proficient); theorem provers HOL, Lego & Coq (expert).

Languages: Bi-lingual English/German. Good conversational French.

Work Experience

99 Postdoctoral Research Fellow, (6 months)

Dept. of Computer Science, University of Edinburgh

Employed to **apply** the results of my PhD thesis by (1) **formalising** a revised Definition of Standard ML, (2) **implementing** the definition on top of an existing byte-code compiler, Moscow ML, and (3) **publishing** papers based on the thesis.

99 Software Developer, (4 months)

An-Teallach Ltd., Edinburgh

Contracted to design and implement a module system for An-Teallach's domain-specific simulation language; library and GUI development.

98 Software Developer, (9 months, full-time)

Harlequin Ltd., Edinburgh

Part of a three person **interoperability** team developing a **CORBA** IDL specification & compiler, Object Request Broker and Object Adapter for Harlequin's **dynamic, object-oriented** programming language, Dylan. Assimilated the CORBA standard, designed and documented a Dylan-CORBA tutorial (a 3-tier MS Access/Business Logic/GUI client-server application), verified conformance of our implementation to the OMG standard, and implemented a **Java** test suite for interoperability testing against another vendor's product, OrbixWeb. Participated at COMDEX Enterprise '98, demonstrating various Harlequin software tools (in German and English).

96 **Research Assistant (5 months, part-time)**

Dept. of Computer Science, University of Edinburgh

Researched the development of safety-critical digital systems aboard Boeing's first fly-by-wire commercial airplane, the Boeing 777. **Conducted interviews** with engineering staff at Boeing, GEC Marconi Avionics and Honeywell. Covered, respectively, the flight control system as a whole, the fly-by-wire flight computer, and SAFEbus (the critical, space- and time-partitioned backplane bus shared by all avionics units).

95-96 **Researcher, "Social Processes in the Development and Evaluation of High Integrity Computer Systems"**

Depts. of Sociology & Computer Science, University of Edinburgh

Investigated the historical development and integration of British Rail's "Solid-State Interlocking", one of the first safety-critical applications of micro-processor technology to railway signalling. I extensively **interviewed** the developers and assessors of the system, **assimilated** the technology and existing literature, and produced a detailed **case study**.

94-95 **Researcher, "Social Processes in the Development and Evaluation of High Integrity Computer Systems"**

Depts. of Sociology & Computer Science, University of Edinburgh

Conducted interviews with developers of safety- and security-critical software in a variety of sectors (nuclear, rail, financial, defence). These formed the basis for a cross-sectoral comparison of the technical, managerial and regulatory issues raised by the adoption of digital systems in high-integrity applications.

93-94 **Tutor, Lab Demonstrator, Dept. of Computer Science, University of Edinburgh**

Tutored 3rd year undergraduate courses: Programming Methodology (8 contact hrs), Language Semantics and Implementation (2 years, 16 contact hrs), Algorithms and Data Structures (8 contact hrs).

91 **Summer Student, Edinburgh Parallel Computing Centre (EPCC)**

Designed and implemented (in C) a generic programming language for rapid prototyping of genetic algorithms.

Education

92-98 **PhD, Laboratory for Foundations of Computer Science (LFCS)**

Dept. of Computer Science, University of Edinburgh, Scotland

Graduation Date: July 98.

Thesis Title: "Types for Modules".

Abstract: Standard ML is distinguished from most other programming languages by its rich modules language and the existence of a formal semantics. Although the core language bears a close resemblance to type theory, the modules language does not. Previous type theoretic models of the modules language have resorted to heavy constructions with a tenuous relationship to the actual semantics. I give a much simpler and direct account of Standard ML modules. Less restrictive than its competitors, it supports extensions to higher-order and first-class modules. A prototype implementation, written in ML, accompanies the thesis.

Thesis Options: Concurrency theory, denotational and operational semantics, category theory, computer assisted formal reasoning, type theory, computation theory.

Research Interests: Language design & implementation, type theory, formal methods, computer assisted formal reasoning, systems engineering, software engineering practice.

88-92 **B.Sc. Hons Artificial Intelligence & Computer Science (First)**

University of Edinburgh, Scotland

Honours project: Extending the HOL-theorem prover with a package automating the safe definition and logical characterisation of mutually inductive datatypes (implemented in **Standard ML**).

Options: Pure Maths, Discrete Maths, programming language semantics and implementation, compilers, logic, operational and denotational semantics, concurrency (CCS), program logics, automated theorem proving, functional and logic programming, program methodology, systems design project: a text-to-speech terminal for the blind.

Awards: First class merits all years, AI Dept. prize for overall performance ('92), Science Faculty Vacation Scholarship to support work at EPCC ('91), Science Faculty Bursary for overall performance in 2nd year ('90), CS Dept. class medal for top academic performance in 2nd year ('90).

83-88 **European Baccalaureate, German Section, 87% overall**

European School of Brussels, Belgium.

Bi-lingual education. Concentrations in Maths, Pure Maths, Physics and English.

Conferences & Publications

Gave presentation at Workshop on Dependent Types in Programming, Gothenburg 99.

Gave presentation at Workshop on Advances in Type Systems for Computing, Cambridge '95.

Attended Principles of Programming Languages '95, Advanced School on Typed Lambda Calculus & Functional Programming '94, Compiler Construction & European Symposium on Programming '94, TEMPUS Summer School on Algebra & Logic '93, Marktoberdorf Summer School on Proof & Computation '93.

Publications available from my web-site:

[99] Claudio Russo, "*First-Class Structures for Standard ML*", submitted to 1999 Int'l Conf. on Functional Programming.

[99] Claudio Russo, "*Non-Dependent Types For Standard ML Modules*", accepted at 1999 Int'l Conf. on Principles and Practice of Declarative Programming.

[99] Claudio Russo, "*The Definition of Non-Standard ML*",
draft available at `ftp://ftp.dcs.ed.ac.uk/pub/cvr/nsml.ps`.

[98] Claudio Russo, "*Types For Modules*", Dept. of Computer Science, University of Edinburgh, LFCS thesis ECS-LFCS-98-389, 353 pages.

[96] Claudio Russo, "*Standard ML Type Generativity as Existential Quantification*", Dept. of Computer Science, University of Edinburgh, LFCS report ECS-LFCS-96-344.

[92] Claudio Russo, "*Automating Mutually Recursive Type Definitions in HOL*", University of Edinburgh, Honours dissertation.

Interests

I swim regularly and love to sail. I have an active social life, enjoy the outdoors and have travelled widely in North America and Europe. I am a keen reader and amateur photographer.

Referees

Dr. Donald Sannella
Computer Science Dept.
University of Edinburgh
JCMB
King's Buildings
Edinburgh EH9 3JZ
Tel: (0131) 650 5184
dts@dcs.ed.ac.uk

Mr. Stuart Anderson
Computer Science Dept.
University of Edinburgh
JCMB
King's Buildings
Edinburgh EH9 3JZ
Tel: (0131) 650 5191
soa@dcs.ed.ac.uk

Dr. Jason Trenouth
Harlequin Ltd.
Longstanton House
Lonstanton
Cambridge CB4 5BU
Tel: (01954) 785424
jason@harlequin.co.uk

Dr. Dave Berry
Harlequin Ltd.
Lismore House
127 George Street
Edinburgh EH2 4JN
Tel: (0131) 240 6100
daveb@harlequin.com