Claudio Vittorio Russo

UK Address:
3F1 12 Dryden Street
Edinburgh, EH7 4PN
Scotland, UK
Tel: (0131) 650 5163 (work)
Tel: (0131) 554-4848 (home)
Fax: (0131) 667 7209

Nationality: German/Italian/US
Date of Birth: 30 March 1970
E-mail: `cvr@dcs.ed.ac.uk`
WWW: `http://www.dcs.ed.ac.uk/~cvr/`

Education

92-98 **PhD, Laboratory for Foundations of Computer Science (LFCS)**
Dept. of Computer Science, University of Edinburgh, Scotland
Completion 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.
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.

Work Experience

99 **Postdoctoral Research Fellow, (6 months, part-time)**
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, part-time)**
An-Teallach Ltd., Edinburgh
Contracted to design and implement a module system (in collaboration with Dr. D N Turner) for An-Teallach's domain-specific simulation language.

98 **Software Developer, (8.5 months, full-time)**
Harlequin Ltd., Edinburgh
Part of a three person **interoperability** team developing a **CORBA** IDL compiler, Object Request Broker and Object Adapter for Harlequin's newest programming language, Dylan. Assimilated the CORBA standard, designed and documented a Dylan-CORBA tutorial, verified conformance of our implementation to the OMG standard, and implemented a Java test suite for interoperability testing against another vendor's product. 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.

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.

[99] Claudio Russo, *"First-Class Structures for Standard ML"*,
Submitted to 1999 Int'l Conf. on Functional Programming,
available at `ftp://ftp.dcs.ed.ac.uk/pub/cvr/icfp99.ps`.

[99] Claudio Russo, *"Non-Dependent Types For Standard ML Modules"*,
Submitted to 1999 Int'l Conf. on Principles and Practice of Declarative Programming,
available at `ftp://ftp.dcs.ed.ac.uk/pub/cvr/ppdp99.ps`.

[99] Claudio Russo, *"The Definition of Non-Standard ML"*,
Draft (not for distribution),
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, available at `http://www.dcs.ed.ac.uk/publications/lfcsreps/`.

[96] Claudio Russo, *"Standard ML Type Generativity as Existential Quantification"*,
Dept. of Computer Science, University of Edinburgh, LFCS report ECS-LFCS-96-344, 19 pages, available at `http://www.dcs.ed.ac.uk/publications/lfcsreps/`.

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.

Skills

Computing: Unix, Mac OS, Windows NT, Standard ML, Dylan, Java, CORBA, C, Prolog, Lisp, TEX, various theorem provers (HOL, Lego, Coq).
Other: Bi-lingual English/German. Good conversational French. Clean driving licence.

Referees

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

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`