Engineering Curriculum Vitae
Lynn S. Marshall, Ph.D., P.Eng. (Limited License: Teaching: 100164118)
Canadian Citizen

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Work Experience

Lecturer II, Department of Systems and Computer Engineering, Carleton University, Ottawa: July 2021 to Present

Sessional Lecturer, Department of Systems and Computer Engineering, Carleton University, Ottawa: September 2001 to June 2021

The courses I have taught range from first to third year undergraduate courses and have a software engineering focus. The courses I have taught are:
ECOR 1041: Computation and Programming
ECOR 1042: Data Management
ECOR 1051: Fundamentals of Engineering I
ECOR 1606: Problem Solving and Computers
ECOR 2606: Numerical Methods
SYSC 2001: Computer Systems Foundations
SYSC 2002: Data Structures and Algorithms
SYSC 2004: Object-Oriented Software Development
SYSC 2006: Foundations of Imperative Programming
SYSC 3303: Real-Time Concurrent Systems
SYSC 3310: Introduction to Real-Time Systems

Since fall 2021, I am also supervising fourth year capstone projects (SYSC 4907), and also have administrative duties in the department: Computer Science Board Representative and Library Representative.

Nortel Networks / Northern Telecom / BNR (Bell-Northern Research) December 1989 to April 2001

2000-2001
In May 2000, I became the Senior Project Manager for the Verification of two large DMS (Digital Multiplex Switch) Platform projects, the XA (eXtended Architecture)-Core (multi-processing DMS switch) and Spectrum (a DMS peripheral). This position involved planning, budget, lab management, and test strategy for approximately fifty testers. In addition, I retained the position I started in 1999, as the director group's Human Resources and Employee Satisfaction prime (approximately 100 employees). As the ESAT (Employee SATisfaction) prime I chaired weekly meetings with representatives from all departments. I also co-ordinated and primed all compensation and evaluation activities with the management team.

1993-2000

In 1993, I joined Nortel's DMS (Digital Multiplex Switch) Evolution program and was involved in the final stages of the software decoupling activities and creation of the DMS Platform layers in 1993-4. DMS Evolution was a two-year initiative undertaken to restructure the 25MLOC DMS Software into layers to make it easier to maintain and deliver.

From 1995 to 1997, I was the Shared Library Architect, managing the evolution of the DMS Shared Library, which contains product-level software shared among the DMS Products. From 1996 to 1998, I was the Telecom Layer Architect, managing the Telecom Layer architecture and evolution. The Telecom Layer is the top layer of the DMS Platform, shared by all DMS Products.

In 1997, I was promoted to manager of the DMS Platform Environment and Architecture group. For the first year, I held a dual management and technical role. I built the group up from two to eight people, which included the incorporation of the Platform Environment group with the Architecture team. The Platform Environment group is responsible for stream management, change propagation management, and the NUC (Non-Upwards Compatible) change processes and tools.

In early 1998, the KVEST program (Kernel VErification and Specification Technology) was incorporated in the department. This program involves one person in Ottawa and twenty Russian contractors working on state-of-the-art research and development in the application of Formal Methods to automated test case generation.

Over the course of 1998, I had four different managers but continued building a cohesive team with little attrition. The team was hit hard during the DMS re-structuring at the end of 1998 (as the focus was on infrastructure), and two of the eight team members were laid off.

In 1999, we were able to overcome the low morale and rebuild the team, growing to ten by mid-year. With the addition of the Test Engineering group to our department, we then grew to fifteen by year-end. On the 1999 Employee Opinion Survey, our department had the highest Q12 score (indicative of those areas of employee satisfaction within manager control) in the director group and one of the highest in the Vice-President group. We also had the lowest attrition rate in our director group.

Due to the management de-layering exercise in DMS at the end of 1998, I started reporting to a director (rather than a senior manager). I also took over as prime for all Human Resource functions for the director group in 1999.

1989 to 1993

From 1989 to 1993, I worked in BNR's Computing Research Laboratory. I primed several projects studying the use of Formal Methods and CASE tools at BNR. The largest and most successful project was the formalizing of OSI Network Management standards using VDM (the Vienna Development Method). I also helped develop Object-Oriented Analysis and Design courses for BNR.

Université Catholique de Louvain: 1987-1988

From 1987 to 1988, I worked as a Research Associate in the Unité d'Informatique (Compute Science Department) at the Université Catholique de Louvain in Belgium. I worked on an ESPRIT (European Community Sponsored) project, REPLAY, which examined the feasibility of reusing existing software development plans to semi-automate ("replay") the development process. I experimented with the B Tool, a theorem prover, and with VDM. I was also a member of the VDM-Europe group and was the Program Committee Chairman for VDM'88. I am currently a member of FME (Formal Methods Europe).

In 1988-1989, I spent a year travelling, mainly in Australia and Asia. During that time, I gave seminars at the University of Queensland and at the Acedemia Sinica in Beijing.

Education

Ph.D.: 1983-1986
I received my Ph.D. in Computer Science from the University of Manchester in 1986, after three years of study under the supervision of Prof. Cliff B. Jones. The Ph.D. program was research only (i.e. I did not take any courses as part of this degree). My research involved the study of formal description techniques, especially VDM. During my first year, I investigated the use of VDM for formalizing computer graphics concepts. My final two years and Ph.D. thesis involved the development of a formal description language suitable for interactive systems, with emphasis on the user interface. This language is a combination of a subset of Statecharts and VDM.

B.Math.: 1978-1983
I received my B.Math (Honours Cooperative Computer Science) from the University of Waterloo in 1983. I graduated on the Dean's Honours List with an overall average of 94% (second highest in the faculty), and received a Commonwealth Scholarship to pursue my Ph.D. in Manchester. I also received the Female Athlete of the Year award in my graduating year for my performance in Varsity Swimming (1 gold and 2 silver medals at the CIAU [Canadian Intercollegiate Athletic Union] championships).

Publications
1. Teaching in the Dark. Lynn Marshall, chapter in *Courage, Curiosity, Teapots and Snakes: Stories of Teaching at Carleton University* https://carleton.ca/teachinglearning/courage-curiosity-teapots-and-snakes-stories-of-teaching-at-carleton-university/, Carleton University, February 2019.
2. Telecom Layer Architecture Initiatives. Jeff Cheevers, Mohamed Boraie, Lynn S. Marshall, Bernard McPhail, Beth Trobridge, *Sixth BNR/Nortel Design Forum Proceedings* (Internal), June 1995.
3. Black Tie Optional: Formal Methods Applied! An OSI Network Management Standards Application. Lynn S. Marshall, *Second BNR/NT Design Forum Proceedings* (Internal), June 1993.
4. *Harmonizing the OSI Management and Control PrT-Petri Net Models for the Specification of Network Management Interfaces*. Colin Ashford, Lynn S. Marshall, and Linda Simon, BNR Internal Report TL930027, March 1993.

5. *Use of Formal Methods in the Specification of the Behaviour of Managed Objects*. Colin Ashford and Lynn S. Marshall, BNR Internal Report TL930013, February 1993.

6. Using VDM to Specify Managed Object Relationships. Lynn S. Marshall and Linda Simon, Proceedings of *Formal Description Techniques V (FORTE'92)*, IFIP Transactions C-10, North Holland, 1993.

7. Using VDM to Specify Managed Objects. Linda Simon and Lynn S. Marshall, Proceedings of *Formal Description Techniques IV (FORTE'91)*, Elsevier, 1992.

8. Using VDM within an Object-Oriented Framework. Lynn S. Marshall and Linda Simon, Proceedings of *VDM'91: Formal Software Development Methods*, LNCS 551:619-628, Springer-Verlag, 1991.

9. Overcoming the Hurdles between Phases. John C. Anderson and Lynn S. Marshall, Position Paper accepted at *CASE'90, Fourth International Workshop on Computer-Aided Software Engineering*, December 1990.

10. Formally Describing Interactive Systems. Lynn S. Marshall, Chapter 12 (pp.293-336) in *Case Studies in Systematic Software Development*, Cliff B. Jones and F. C. Shaw, editors. Prentice-Hall International, 1990.

11. A Formal Description of Line Representation on Graphics Devices. Lynn S. Marshall, Chapter 13 (pp.337-364) in *Case Studies in Systematic Software Development*, Cliff B. Jones and F. C. Shaw, editors. Prentice-Hall International, 1990.

12. Proceedings of *VDM'88: VDM-The Way Ahead*. R. Bloomfield, L. Marshall, and R. Jones, editors. LNCS 328, Springer-Verlag, September 1988.

13. *Using VDM and B for Replay* (Final Report). Lynn S. Marshall, UCL, Belgium, September 1988.

14. Formal Specification of a Small Example Based on GKS. D. A. Duce, E. V. C. Fielding, and L. S. Marshall, *ACM Transactions on Computer Graphics*, 7(3): 180-197, July 1988.

15. *Replay Experiments Using VDM and B.* Lynn S. Marshall, UCL, Belgium, Replay Forum, February 1988.

16. *Using B to Replay VDM Proof Obligations*. Lynn S. Marshall, UCL, Belgium, Replay Review, November 1987.

17. *A Formal Description Method for User Interfaces*. Lynn S. Marshall, Ph.D. Thesis and Technical Report UMCS-87-1-2, University of Manchester, November 1986.

18. A Formal Specification of Line Representations on Graphics Devices. Lynn S. Marshall, Proceedings of *TAPSOFT'85*, LNCS 186:129-147, March 1985.

19. *A Formal Specification of Line Representations on Graphics Devices.* Lynn S. Marshall, Transfer Report, University of Manchester, September 1984.

20. *Formal Specification and Graphics Software.* D. A. Duce, E. V. C. Fielding, and Lynn S. Marshall, Transfer Report, University of Manchester and Technical Report RAL-84-068, Rutherford Appleton Laboratory, August 1984.