C L I F F O R D L. L A U R E N C E, Ph.D.

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SUMMARY OF EXPERIENCE

3 years intensive use of Java for performance analysis and benchmarking.
10 years using and teaching Pascal, C, C++, and Object Oriented Programming concepts, data structures, microcontroller programming, and computer graphics.
5 years technical program management of software engineering for tactical military system.
5 years technical program management for the design of a satellite multi-band optical sensor.
10 years of software design and development using assembly language and Fortran.

COMPUTER LANGUAGES EXPERIENCE

Object Oriented Programming, Java, Java 2, Swing, Java2D, applets, Java Native Interface, JavaScript, HTML.
C/C++, Standard Template Library, Pascal, Fortran, Java and C++ benchmarking
Assembly Language Programming: Intel x86, Motorola 68000, MC68HC11 microcontroller

OPERATING SYSTEMS EXPERIENCE

Windows 95/98, NT/2000 IBM: OS/2 Java Virtual Machine Java Native Interface

APPLICATION AREAS

software performance analysis, performance optimization, use of performance software tools, benchmarking, university undergraduate teaching of computer science subjects, technical management, object oriented programming, data structures, program management, software engineering, optical systems design, infrared optical systems, software design and development, development of scientific applications.

EDUCATION

Ph.D. - Electrical Engineering, Rice University, 1972
B. S. - Physics, Massachusetts Institute of Technology, 1964

PROFESSIONAL EXPERIENCE

IBM Software Group System Performance, Austin, Texas**.**
May 98 - present Advisory Software Engineer

Java performance analysis (Java 1.1.x, 1.2.x, 1.3.0, and Java Operating System)
Java benchmarking using JMark 2.0, Caffeine Mark 3.0
Designed, developed, coded, tested, and ran Java Swing Benchmarks
Code analysis and code redesign of Java programs and C++ support code for Windows and OS/2 systems
Extensive use of performance analysis software tools, time profiling, etc.
Extensive modifications to Java benchmarking environment (DecafMark V2.0)
Redesigned many benchmarks to run under modified benchmarking environment.
Developed and maintained Performance Group Java benchmarks DFS web site to disseminate verified, standardized Java benchmarks
Experience using Tektronix TLA 700 Series Logic Analyzer

UT Electrical and Computer Engineering Dept. Austin, Texas
Sept. 1991 - May 98 Senior Lecturer

Teaching of junior/senior courses in computer graphics, numerical methods, and microprocessor architecture and programming

COURSES TAUGHT

EE348 Optics and Laser Engineering
EE325 Engineering Electromagnetics
EE383P Fourier Optics (graduate course)
EE332 Computer Graphics (2D graphics on Macintosh).
EE332 Computer Graphics (3D graphics on IBM PC using OpenGL).
EE319K Microprocessor Programming (Motorola 68000)
EE319K Microprocessor Programming (Motorola MC68HC11 micro-controller)
EE319K Microprocessor Programming (Motorola MC68HC12 micro-controller)
EE312 Introduction to Programming Languages (Pascal)
EE312 Introduction to Programming Languages (C++)
EE360C Object Oriented Programming and Data Structures in C++.

McDonnell Douglas Space Systems Co. Houston, Texas
July 1989 - Sept. 1991 Staff Engineer
Designed a large-scale flight software test facility
Coordinated European Space Agency Interface to Space Station

Tracor Aerospace, Inc., Advanced Engineering Austin, Texas
Jan. 1988 - April 1989 Engineer-Scientist
Developed and designed laser warning receiver systems

Lockheed Austin Division Austin, Texas
Nov. 1982 - Dec. 1987 Data Systems Engineer
Maintained real-time software for tactical military observation system, Wrote proposals

University of Houston, Energy Laboratory Houston, Texas
Dec. 1978 - April 1982 Staff Research Scientist
Analyzed and designed large-scale solar-thermal power systems

Aerospace Corporation El Segundo, California
Sept. 1973 - Nov. 1978 Member of the Technical Staff
Technical direction of the development of a multi-band infrared space based telescope
Designed and analyzed central-receiver type solar energy systems.

PUBLICATIONS (partial listing)

The Laser Book, A New Technology of Light, Clifford L. Laurence, Prentice-Hall Press, New York, 1986.

"A Design Method for Optimizing Collector Systems for Small Solar Central Receivers", R.B. Bannerot and C.L. Laurence, *Transactions of the ASME, Journal of Biomechanical Engineering*, Vol. 102, p. 240, November, 1982.

"Visible CW Optical Parametric Oscillator Using Barium-Sodium Meta-Niobate," C.L. Laurence and F.K. Tittel, *Journal of Applied Physics*, Vol. 42, p. 2137, 1971.

PROFESSIONAL PRESENTATIONS AND PAPERS (partial listing)

"A Design Method for Optimizing Collector Systems for Small Solar Central Receivers," R.B. Bannerot and C.L. Laurence, Winter Annual Meeting, American Society of Mechanical Engineers, New York, December, 1979.

"A User's Manual for the University of Houston Computer Code - RCELL: Cellwise Optimization for the Solar Central Receiver Project," C.L. Laurence and F.W. Lipps, Energy Laboratory, University of Houston, U. S. Department of Energy, SAN/0763-3, December, 1980.

"A User's Manual for the University of Houston Computer Code - IH: Collector-Receiver Performance Analysis by Individual Heliostats," C.L. Laurence and F.W. Lipps, Energy Laboratory, University of Houston, U.S. Department of Energy, SAN/0763-5, April, 1982.