ACM SIGPLAN '85: Symposium on Language Issues in Programming Environments

Seattle, WA June 25 - 28, 1985

SYMPOSIUM WEDNESDAY 26 JUNE 1985

9:00 - 10:30 Session 1
Chair: Steven Reiss, Brown U.

SW2 - An Object-Based Programming Environment
Mark R. Laff, Brent Hailpern, IBM T. J. Watson Research Center

Polypath: An Environment to Support Management of Tool Interfaces
James Purtill, U. of Illinois at Urbana-Champaign

Dialogues: A Basis for Constructing Programming Environments
John T. O'Donnell, Indiana U.

11:00 - 12:30 Session 2
Chair: Thomas Reps, Cornell U.

The PSG - Programming System Generator
Rolf Bahike, Gregor Snelting, Technische Hochschule, Darmstadt

Maintained & Constructor Attributes
George McArthur Beshers, Roy Harold Campbell, U. of Illinois at Urbana-Champaign

Endpoint Specified Attribute Propagation to Perform Incremental Semantic Checking
Anne Rogers, Frank Kenneth Zadeck, IBM T. J. Watson Research Center

12:30 - 2:00 Lunch

2:00 - 3:30 Session 3
Chair: Daniel Weinreb, Symbolics Inc.

Debugging in a Side Effect Free Programming Environment
Cordelia V. Hall, John T. O'Donnell, Indiana U.

Mechanical Analysis of Program Complexity
D. Le Metayer, IRISA/INRIA

A Semantic Editor
R. Kent Dybvig, Bruce T. Smith, U. of North Carolina

4:00 - 5:30 Session 4
Chair: Mayer Schwartz, Tektronix

Libraries as Programs Preserved within Compiler Continuations
Mark B. Wells, Margaret A. Hug, New Mexico State U.; Rollo Silver, John Brockmeyer, The Programmers, Inc.

Relational Databases and Attribute Grammars - a symbiotic basis for editing environments
Susan Horwitz, Tim Tettebaum, Cornell U.

The Impact of Interprocedural Analysis & Optimization on the Design of a Software Development Environment
Keith D. Cooper, Ken Kennedy, Linda Torson, Rice U.

THURSDAY 27 JUNE 1985

9:00 - 10:30 Session 5
Chair: Mark Moriconi, SRI International

Towards a Theory of Packages
Snorri Aagnarsson, M. S. Krishnamoorthy, RPI

A New Model of Encapsulation
David Gries, Jan Prins, Cornell U.

Structured Editor Support for Modularity and Data Abstraction
Nicolai Caplinger, Rice U.

11:00 - 12:30 Session 6
Chair: David Wile, USC/ISI

PegaSys: A System for Graphical Explanation of Programs
Mark Moriconi, Dwight F. Hare, SRI International

An Algebra for Program Fragments
Bent Bruun Kristensen, Aalborg U.; Ole Lehrmann Madsen, Aarhus U.; Birger Moller-Pedersen, Norwegian Computing Center; Kristen Nygaard, U. of Oslo

Efficient Abstractions for the Implementation of Structured Editors
Robert Hood, Rice U.

12:30 - 2:00 Lunch

2:00 - 3:30 Session 7
Chair: L. Peter Deutsch, Xerox PARC

Programming environment research comes of age: where have we been and where are we going? A retrospective presentation by the program chair followed by audience discussion.

4:00 - 11:00 Demonstrations of programming environments

FRIDAY 28 JUNE 1985

9:30 - 1:00 Session 8
Chair: Alan Borming, U. of Washington

An Environment for Logic Programming
Nissim Francez, Technion; Shalom Goldemberg, Ron Pinter, Michael Tiomkin, IBM Israel Scientific Center; Shalom Tsur, MCC

Logic Programming Engineering Shell
Henryk Jan Komorowski, Shigeo Omon, Harvard U.

A Simple Software Environment Based on Entities and Relations
Bruce J. MacLennan, Naval Postgraduate School

Design Issues in a Rule-Based System
Stephen Fickas, U. of Oregon

11:00 - 1:00 Lunch

1:00 - 2:30 Session 9
Chair: Robert Ellisson, Carnegie-Mellon U.

The Mesa Programming Environment
Richard E. Sweet, Xerox PARC

The Structure of Cedar
Daniel Swinehart, Polle Sellweger, Robert Hagmann, Xerox PARC

Integration Mechanisms in Cedar
James Donahue, Xerox PARC

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TUTORIAL
TUESDAY 25 JUNE 1985

Chair: James Solderitsch, Villanova University

8:00 - 8:40 An Environments Overview
Peter Henderson, SUNY at Stony Brook
A brief look at currently available programming environments focusing on the principal features of systems and how these relate to language features and application areas.

8:40 - 9:45 A Loosely Coupled Environment Architecture
Leon Osterweil, University of Colorado
Contrary to some approaches to the design of programming environments which favor the tailoring of the design to the hosted programming language, this talk will focus on a generalized perspective which can lead to improved qualities for environments including extensibility, distributability and flexibility. The basic notions of the approach will be presented as well as two specific instances: one supporting Fortran (TOOLPACK) and one for Ada (ARCADIA).

10:15 - 11:30 The UNIX/C Environment
Sally Browning, AT&T Bell Laboratories
UNIX was designed by a programmer as a personal programming environment. Since its inception, many have contributed tools and system features leading to today's rich UNIX environment. Some tools and features to be discussed are: the programmable shell, pattern matching languages like Awk and Sed, and the C language itself. Current UNIX developments take advantage of new technologies (e.g. bit-mapped terminals) and advances in language design, debugging capabilities, and expert systems. These will also be presented.

11:30 - 12:30 The Smalltalk Environment
Evelyn Van Orden, Xerox Special Information Systems, Pasadena
Smalltalk tightly couples language and environment to provide a highly functional and interactive programming system. Smalltalk is built on the model of communicating objects. The object-message orientation is uniformly carried out in the system, thus there are few programming concepts to learn. Smalltalk is also a graphical, interactive programming environment.

12:30 - 2:00 Lunch

2:00 - 3:30 Ada Environments
Hal Hart, Frank C. Bely, TRW
There are now several development efforts underway which are to result in practical and usable Ada programming environments. The characteristics which these systems have in common will be presented along with their important differences. Recent work on the standardization of Ada environments will also be discussed.

4:00 - 5:00 Lisp Based AI Environments
Larry Matiun, Xerox PARC
AI research has led to the exploration of new programming paradigms and languages oriented toward representing and manipulating information about the world in symbolic form. These systems are significantly enhanced by the existence of tools which know about the new paradigms, -- knowledge bases, object hierarchies, rule languages, and the like. This tutorial will describe some of the commercial AI environments, and the ways in which they've expanded on the underlying Lisp programming environments on which they are built.

5:00 - 5:30 Concluding Remarks & Discussion
Peter Henderson, SUNY at Stony Brook
A review of the day's sessions will be held with an opportunity for audience and speakers to exchange views and experiences.

SYMPOSIUM

SIGPLAN '85 is one of the first symposia devoted to exploring the mutual influence of programming languages and programming environments. Programming environments have reached a level of significant maturity. This conference attempts to place them within the rich context of programming language concepts recognized at past SIGPLAN conferences.

SIGPLAN '85 includes papers ranging from highly formal studies of program structuring mechanisms to explications of mature industrial programming environments; discussing environments for languages ranging from FORTRAN to the latest experiments in functional and logic programming; drawing on university and industrial work from several overseas groups as well as in the U.S. Both developers and users of programming environments will find valuable material in the technical program.

Recognizing the fact that this is the first conference of its kind, three special program events will complement the papers. A full day of tutorials by experts, covering all mature programming environments in current use, will precede the symposium. A retrospective of programming environments research will be presented, followed by an opportunity for extended give-and-take discussion. Attendees will be able to see demonstrations of programming environments selected by the program committee for their relevance to the topic of the conference.

We look forward to seeing you in Seattle.

TUTORIAL

In conjunction with the symposium, a one-day tutorial will be presented consisting of six intensive sessions addressing language/environment architecture issues, and particular environments for FORTRAN, ADA, UNIV/C, LISP, and SMALLTALK.

The tutorial sessions will emphasize what currently exists in specific language areas with sessions presented by experts who have been involved in the development and use of the environments. Understanding the interplay between programming environments and programming languages is an issue critical in providing state-of-the-art programmer support. Issues arise such as: how language features affect the supporting toolset and how the environment can be built to optimally handle such features; should programming environments be language-specific or be able to handle several similar or diverse languages. The tutorial sessions provide a framework for the papers and demonstrations of the symposium and give an overview of environment architecture, environments for functional languages as well as traditional procedural languages, and environments in which the language and toolset are very tightly coupled. Attending the tutorials will make the professional aware of both the similarities and differences in supporting a variety of modern programming languages.

Tutorial Notes (copies of viewgraphs) will be provided.

REGISTRATION

The advance registration fee for the tutorial includes a set of notes, luncheon, refreshments during breaks, and the reception Tuesday evening. The advance registration fee for the conference includes a copy of the proceedings, three LUNCHEONS, REFRESHMENTS DURING BREAKS, THE RECEPTION Tuesday evening, and the DINNER EXCURSION Wednesday evening. Student registration fees do not include luncheons or the dinner excursion.

Advance registrations will be acknowledged before June 17th.

Late registrations will be accepted beginning at 5 pm on Monday, June 24th at the conference hotel. However, we cannot guarantee availability of tickets for late registrants.
SEATTLE

Located in the center of western Washington, on the eastern shore of Puget Sound, Seattle has grown to include a metropolitan area of over 1,800,000 people. With the Olympic Mountains to the west, the Cascades to the east, and Mount Rainier to the south-east, Seattle is a beautiful city with unmatched mountain and water views. The last week of June is especially beautiful and we should have little rain and warm (but not hot) weather. The city's unique geographic location offers a wide spectrum of recreational and entertainment opportunities, and the city itself provides plenty of sights to see, as well as cultural and gastronomic attractions. Within walking or "free bus" distance of the hotel are Seattle's water-front, Aquarium and famous "Pike Place Market", Pioneer Square (Seattle's "Old Town"), and literally hundreds of restaurants.

ACCOMODATIONS

SIGPLAN '85 will be held at the Stouffer Madison Hotel, 515 Madison Street, Seattle, Washington, 98104. Telephone: 206-583-0300.

Please make room reservations prior to June 3 using the attached form. Reservations at the hotel will be held until 6 p.m. unless payment is guaranteed. Check out time is 1 p.m. For reservations, call toll free: 800-HOTELS1.

TRANSPORTATION

The Greyline Downtown Airporter runs every half hour between the Seattle-Tacoma airport and the Stouffer Madison Hotel. Cost is around $5.

RECEPTIONS

A welcoming reception will be held on Tuesday evening. On Wednesday evening, a ferry boat will take us to Blake Island, birthplace of Chief Seattle, for a traditional northwest coast Salmon Bake.

ADVANCE REGISTRATION FORM

Please make checks or money orders payable (in U. S. currency) to ACM SIGPLAN '85.

Mail with completed form to: ACM SIGPLAN '85, c/o Peter Mager, P.O. Box 175, Lincoln Center, MA 01773

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<td>ACM and SIGPLAN member</td>
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*Those affiliated with SIGPLAN institutional members also qualify for this rate.

Requests for refunds will be honored until June 15, 1985.

Name
Address
Affiliation
Phone
ACM number

Do not include me on the Symposium mailing list (which may be sold by ACM).

CONFERENCE COMMITTEE

General Chairperson: Teri F. Payton, SDC
Program Chairperson: L. Peter Deutsch, Xerox PARC
Tutorials: James Swoffer, U. of Washington
Demonstrations: John Sapka, DEC
Publicity: Craig Schaffert, DEC
Local Arrangements: Judith Bayard, Evergreen State College Olympia, Washington 98505
(Tel: 206-866-6000 x6652)

HOTEL REGISTRATION FORM

ACM SIGPLAN '85: Language Issues in Programming Environments

RETURN THIS FORM (before June 3) TO:
STOUFFER MADISON HOTEL
515 Madison Street
Seattle, Washington 98104
Attn: Reservations

Name
Address

Arrival Date
Time
Departure Date
Time
Single ($63/night)
Double ($68/night)

Reservations held until 6 p.m. unless payment guaranteed