

SEP.15 Terence Parr, University of San Francisco

AN INTRODUCTION TO ANTLR AND DOMAIN-SPECIFIC LANGUAGES

Most people think of grammars and parser generators in terms of building compilers, yet the number of language recognition and translation tasks dwarfs the number of compilers being built. This lecture illustrates the wide applicability of parser generators to domain specific languages and other recognition and translation tasks. ANTLR codifies what programmers do naturally by hand, thereby placing the power of formal languages in the hands of the average programmer. This lecture is a practical introduction to ANTLR and uses numerous examples to demonstrate the power of simple grammars and their use in a variety of common tasks.

SEP.22 Raúl D. Ocazonez, Informatix, Inc., San Francisco & Sacramento

PROJECT MANAGEMENT IN IT

In today's competitive IT world of, successful companies require a scalable, step-by-step methodology for planning and executing projects. This talk discusses the approaches, tools, and strategies that are being used to effectively monitor and manage projects that keep IT companies thriving in today's competitive market. A certified Project Management Professional (PMP®) from the Project Management Institute (PMI®) himself, Mr. Ocazonez has transformed Informatix from its humble beginnings nearly 20 years ago into a formidable force in the areas of automated child support payment systems, electronic document management, and payment processing with plans to expand the company's reach even further. Mr. Ocazonez will address the importance of project management in IT while providing anecdotes about his own recipe for success.

SEP.29 Robert Filman, Research Institute for Advanced Computer Science, NASA Ames Research Center, Moffett Field

EVENT-BASED ASPECT-ORIENTED PROGRAMMING

For many applications, most code is not devoted to implementing the primary I/O functionality, but instead addresses other concerns, such as reliability, availability, responsiveness, performance, security, and manageability. Conventional programming practice requires the programmer to keep all these other "ilities" in mind while coding and to explicitly invoke behavior at exactly the right places to achieve them. Aspect-Oriented Programming (AOP) is an emerging technology for allowing the separate specification and coding of multiple concerns, while nevertheless providing mechanisms to automatically meld these separate expressions into working programs. This talk presents a pair of AOP systems, past work on the Object Infrastructure Framework (OIF) and current work on event-based quantification, and provides some observations on the distinguishing characteristics of AOP technology. OIF is a distributed object technology that implements separate concerns as dynamic wrappers on object components. Interesting elements of OIF include its mechanisms for application and aspect communication, its dynamic nature, and its language for expressing where aspects apply to base code. Current work is on understanding AOP in terms of quantification over the structures of program text, the results of static program analysis, and the events in program execution. Initial work on event-based quantification, an attempt to map directly and widely the interesting properties of programs into transformations that realize those properties, will be mentioned also.

OCT.06 Kim Wagner, VISA Worldwide Services, San Francisco

PAYMENT CARD SECURITY

Payment card fraud is a billion dollar global industry. Moreover, the fraud picture is constantly changing due to the rapid emergence of new payment mechanisms as well as the evolving battle between new frauds and new countermeasures. This presentation will give a snapshot of the prevailing threats and countermeasures, with a focus on card-present transactions.

OCT.13 Kinshuk Govil, VMWare, Palo Alto

THE DESIGN OF THE VMWARE VMKERNEL -- AN OS KERNEL FOR MANAGING VIRTUAL MACHINES

VMware ESX Server is a platform for running many Intel-x86 virtual machines on a single physical machine for purposes of consolidating workloads and simplifying system management. ESX Server runs an OS kernel specifically designed to manage virtual machines (VMs). This OS kernel, known as the VMkernel, provides strict resource allocation guarantees for VMs, highly efficient I/O, and advanced reliability features. It runs on servers with up to 16 processors and can manage up to 10 VMs per processor. This talk describes the architecture of the VMkernel, some of the unique issues that it solves in order to manage VMs effectively, and interesting research topics that remain.

OCT.20 Marc LeBrun, Fixpoint, Inc., Novato

1 + 1 = 3

"Incredible systems abound, but of pleasant construction or of a sensational kind." – Jorge Luis Borges, "Tlön, Uqbar, Orbis Tertius." We entertain the thesis that there are no bugs, only under-appreciated outputs. Probing familiar primitive

operations at subatomic scales, we sketch an introductory natural history of some arithmetics from alternate universes. This in turn recommends more systematic spelunking in the wide dark space of programs, attending carefully to the whispering vox machine. (Note: While abstaining from inventing any allegedly New Kinds of Science, we cannot rule out possible wild discursions into the nature of knowledge and the future of culture.) As a concrete warm-up exercise, you are invited to contemplate what the simple expression $x \& -x$ computes for integral x .

OCT.27 Eric Levinson, Turin Networks, Petaluma

MANAGING ORACLE APPLICATIONS: INTRODUCTION

This session will give a "big picture" look of what it takes to set up users, employees, responsibilities, accounting codes, reporting structures, and signing limits. We will cover how to run concurrent jobs (such as reports and bulk modification code), how to see if they are completed successfully, and how to change desired outcomes of programs already running.

NOV.03 Paul Lambert, PicoMobile Networks, Mountain View

WHAT'S NEXT IN WIRELESS SECURITY?

The latest IEEE wireless LAN standards have patched the blatant flaws of the WEP algorithm. The cryptographic algorithms have been improved, but there are still interesting system security issues and potential attacks to wireless LANS. This presentation describes new wireless protocols and emerging new security threats. The technologies covered will include 802.11i, WiFi Alliance protocols, FMC architectures and new device enrollment protocols. New system level threats like 'Evil Beacons', 'Countermeasure DoS', and 'NFC touch and steal' will be described.

NOV.10 John Sullins, Philosophy Department, Sonoma State University

THE TROUBLED RELATIONSHIP BETWEEN COMPUTERS AND ETHICS

Computer technology presents us with uniquely challenging ethical problems. This is due to the fact that the rate of change in the power and ubiquity of computers greatly exceeds the ability of those outside of computer science to analyze and moderate the inevitable social impacts of those changes. Since the computer is a central technology that affects every one's lives, choices computing professionals make in the design of computer systems deeply influence the way we live and interact with one another. Computer technology is designed to help us live a better life but often, what seems to computer engineers like an improvement in our lifestyle, is not perceived as such by users of that technology. Arguably what is needed to mitigate this problem is for those interested in ethics and social justice to become more computer savvy but more importantly it is crucial that students in computer science also be trained in the ethical and social impact of computing technology since they will be the ones with the real power to change society.

NOV.17 Kenneth I. Joy, University of California, Davis

INTERACTIVE RENDERING OF PLANETARY-SCALE GEOMETRY AND TEXTURE

The real-time display of huge geometry and imagery databases involves view-dependent approximations, typically through the use of precomputed hierarchies that are selectively refined at runtime. This talk focuses on the problem of terrain visualization, in which planetary databases involving billions of elevation and color values are displayed in PC graphics hardware at high frame rates. We show how innovative data structures, new out-of-core storage organization based on space-filling curves, and optimization using graphics processors can be used to solve this problem.

NOV.24 THANKSGIVING – NO LECTURE

DEC.01 Jason Shankel, Maxis/Electronic Arts, Walnut Creek

PROTOTYPING IN GAME DEVELOPMENT

Game development is both a technical and creative effort. Prototypes help us balance the complex interplay between creative inspiration and technical development specification. This talk describes the methods used in prototyping video games and discusses the role of prototyping in the larger game development cycle.