



Editorial

It gives us great pleasure to present this special issue, containing papers from the conference on the *Principles and Practice of Programming in Java* held in Kilkenny City, Ireland, in June 2003. All authors of full papers presented at PPPJ 2003 were invited to submit revised and extended version of their papers for this special issue. These papers were rigorously reviewed, resulting in the six papers presented here.

PPPJ 2003 was the second conference in the *Principles and Practice of Programming in Java* series. This conference series seeks to draw together researchers, teachers and programmers who study or work with the Java programming language to discuss the principles and practice of its use. PPPJ 2003 was organised in cooperation with ACM SIGAPP, the Special Interest Group in Applied Computing, and reflects its emphasis on “*the development of new applications and the transfer of computing technology to new problem domains*”.

Our first two papers deal with traditional algorithmic topics in computer science, but use Java to provide a new perspective. In the first paper, *Mutable strings in Java: design, implementation and lightweight text-search algorithms*, Paolo Boldi and Sebastiano Vigna present a proposal for a new Java string class for data-intensive text applications, and discuss its efficiency. In *Object-oriented algorithm analysis and design with Java*, Sergio Rajsbaum and Elisa Viso exploit the layering of abstraction provided by an object-oriented inheritance hierarchy in developing and reusing correctness proofs and complexity measures. Both papers touch on familiar sorting and searching algorithms, but shed new light on these issues through their use of Java.

Our next two papers give a taste of the flexibility and power of Java in co-operative environments. In *The Claim Tool Kit for ad hoc recognition of peer entities*, Jean-Marc Seigneur and Christian Damsgaard Jensen describe a toolkit that implements entity recognition for pervasive computing environments. In *Exploiting runtime bytecode manipulation to add roles to Java agents*, Giacomo Cabri, Luca Ferrari and Letizia Leonardi present an infrastructure to facilitate interaction between agents by allowing them to dynamically assume roles at run-time. In both cases the authors were able to harness Java in order to tap into cutting edge frameworks and techniques, including the JXTA, the Java Security Architecture, XML schemas and dynamic bytecode manipulation.

The final two papers give some idea of the breadth of Java applications, and the ubiquity of Java, even in areas traditionally reserved for other programming languages. In *Implementing advanced spoken dialogue management in Java*, Ian O’Neill, Philip Hanna, Xingkun Liu, Des Greer and Michael McTear describe the implementation of a spoken dialogue manager in Java, originally prototyped in Prolog++. In *A spectral estimation toolkit for Java applications*, Vijay Shah, Nicholas Younan, Torey Alford and Anthony Skjellum describe their implementation of a signal processing package, an area

traditionally dominated by C++ and Fortran libraries. In both cases the authors note that the use of Java facilitates portability and interoperability, with a hub-and-spoke style architecture in the case of the dialogue manager, and with handheld devices for the spectral estimation toolkit.

The editors would like to thank all the authors from PPPJ 2003 for their participation in, and cooperation with, the production of this special issue. Also, we are grateful to the many anonymous reviewers who volunteered their time to provide the reviews and advice for the authors.

In a journal special issue such as this it is impossible to capture the full range of topics related to Java programming. In particular, the advent of Java had led to a renaissance in compilation techniques such as dynamic compilation and garbage collection, as well as providing a *lingua franca* for initiatives in teaching computing. Even as a relatively young technology, Java has already staked its claim to be considered in any list of influential programming languages. We can only hope that the articles in this special issue, along with the PPPJ conference series, can also provide some insight into the exciting currents flowing through modern computing that use Java as their medium.

James F. Power
*National University of Ireland,
Maynooth, Co. Kildare, Ireland*
E-mail address: jpower@cs.may.ie

John T. Waldron
*Trinity College Dublin,
Dublin 2, Ireland*

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