Editorial

PPPJ special issue – Foreword

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Originally established in 2002 in Kilkenny, Ireland, the Principles and Practice of Programming in Java (PPPJ) conference series has been held 2003 in Dublin (Ireland), 2004 in Las Vegas (USA), 2006 in Mannheim (Germany), 2007 in Monte de Caparica–Lisbon (Portugal), and 2008 in Modena (Italy). The conference has experienced a steady growth in participation because it is a lively forum for leading researchers and industry experts to discuss issues related to the Java programming language and its applications. For several years now, the best contributors of the conference were invited for a special PPPJ issue in Science of Computer Programming. So again, we are happy to present you with extended versions of the best papers from the 5th PPPJ conference hosted by the Universidade Nova de Lisboa, Portugal. The presented papers cover the wide range from low-level Java specifics to application level innovation.

On the language level, "Featherweight Java with Dynamic and Static Overloading" by Bettini and Capecchi provides a formal framework for reasoning about extensions of Java-like languages with multi-methods. The developed Featherweight Multi Java (FMJ) provides encapsulated multi-methods and thus dynamic overloading.

Würthinger, Wimmer, and Mössenböck present a paper called "Array Bounds Check Elimination in the Context of Deoptimization". They identify situations where array bound checks are performed unnecessarily and evaluate the performance enhancement against several benchmarks.

Also looking for performance improvements are Borys Bradel and Tarek Abdelrahman. In their paper "A Study of Potential Parallelism among Traces in Java Programs" they show that trace-based parallelization potentially improves the performance of Java programs on multi-processor machines. Trace-based parallelization is based on the exploitation of parallelism among traces; the hot paths of execution in programs.

Another angle on parallel programming in Java is taken by Chandra Krintz and Lingli Zang. They introduce an "as-if-serial" exception concept based on the futures parallel programming construct in their paper titled "As-If-Serial Exception Handling Semantics for Java Futures".

The paper by Hoffman and Eugster explores new possibilities in language design that open up when the base code is aware of cross-cutting aspects. The authors extend AspectJ with concise yet powerful constructs, while maintaining full backwards compatibility.

Moving a bit up from the level of language-related research, Mäkelä and Leppänen present a novel metric called Lack of Coherence in Clients (LCIC). LCIC measures if a particular class has a coherent set of roles in a program. The proposed metric has been implemented in a tool that can analyze Java projects in the Eclipse environment.

Last but not least, Arno Puder and Sascha Häberling provide us with a very interesting paper from the AJAX context called "Byte Code Level Cross-Compilation for Developing Web Applications". Arno and Sascha describe a new approach that converts a Java or .Net application into an AJAX-enabled Web application.

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The presented papers show a wide range of topics covered at the PPPJ conference, exposing the issue of Java-based computing from different perspectives and proposing new exciting challenges that this area still has to face in the near future. We are happy to present you with these papers and would like to thank the reviewers that helped us make this selection for you. In particular, we are indebted to Raffaele Quitadamo (University of Modena and Reggio Emilia, Italy), Herbert Kuchen (Westfälische Wilhelms-Universität Münster, Germany), Tim Majchrzak (Westfälische Wilhelms-Universität Münster, Germany), Philipp Ciechanowicz (Westfälische Wilhelms-Universität Münster, Germany), Luís Marcelino (Instituto Politécnico de Leiria, Portugal), João Seco (CITI/ Universidade Nova de Lisboa , Portugal), João Lourenço (CITI/ Universidade Nova de Lisboa , Portugal), Luís Veiga (INESC / Universidade Técnica de Lisboa, Portugal), John Hunt (Covenant College, USA), Giacomo Cabri (University of Modena and Reggio Emilia, Italy), H. Conrad Cunningham (University of Mississippi, USA), Pallavi Tadepalli (University of Mississippi, USA), David Gries (Cornell University, USA), Artur Miguel Dias (CITI/ Universidade Nova de Lisboa , Portugal), Cong-cong Xing (Nichols State University, USA), George Wells (Rhodes University, South Africa), Ryan Stansifer (Florida Institute of Technology, USA), Robert Cook (Georgia Southern University, USA), Jeremy Singer (University of Manchester, United Kingdom), Nigel Horspool (University of Victoria, Canada).

Interesting reading with this special issue wish you the guest editors.

Markus Aleksy received the Management Information Systems degree in 1998, and the Doctorate degree in 2002 from the University of Mannheim, Mannheim, Germany, and the Doctorate degree in Information Science in 2007 from Tokyo Denki University, Tokyo, Japan. He lectured in University of Mannheim, Germany and Queen's University, Canada. Dr. Aleksy is the author or coauthor of more than 60 research papers published in international journals and conference proceedings. He is currently a Research Fellow at the ABB AG Corporate Research Center, Ladenburg, Germany. His research interests include analysis, design, implementation, and evaluation of mobile and distributed systems.

Vasco Amaral worked as a Software Engineer in two high energy physics experiments at project ATLAS at CERN (Switzerland) and Hera-B at DESY (Germany). He received his doctorate degree from the University of Mannheim in Germany in 2005. He is currently professor at Universidade Nova de Lisboa and researcher at the research institute CITI in Portugal. He is currently interested in research topics within the scope of Domain Language Engineering. In other words he wants to derive tools and dedicated formalisms for modeling specific software intensive domains by means of conceptual notations, semantically well described and eventually verified. In addition he wants to study a systematic methodology to consistently build DSLs.

Ralf Gitzel is a life-cycle cost specialist at ABB German's Research Center. He holds a Management Information Systems degree as well as a Doctorate degree from the University of Mannheim in Germany. His research interests currently focus on the life-cycle cost of hardware and software for the end user. As corresponding editor, Ralf would be pleased to hear from you to get your criticisms, suggestions, and other remarks.

Dr. James Power is a member of the Principles of Programming research group at the National University of Ireland, Maynooth. He graduated with a B.Sc. from University College Dublin in 1990, and an M.Sc. and Ph.D. from Dublin City University in 1991 and 1995 respectively. His research centers on the analysis of object-oriented languages, with a strong interest in the formal underpinnings of software technology. Primary areas of application include software visualization, program comprehension and reverse engineering.

John Waldron graduated from TCD in 1986 with a degree in Computer and Electronic Engineering and a M.Sc. for research in computer science in 1989. He obtained his Ph.D. from the Department of Microelectronics and Electrical Engineering TCD. He has been a full-time lecturer at the Department of Computer Science at the Trinity College Dublin since September 2000. His current research focuses on using graphics processing units to implement cryptography.