Menelaus Perdikeas

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Summary

I have been coding in Java since version 1.1 came out in 1997. Over the years I have written more than 300K LoC in Java and have explored a wide array of technologies and frameworks in the landscape. I am a proficient Emacs user (with an Emacs setup that I've honed over the years for maximum productivity) and I like to live as close to the command line as possible (though I can of course also use an IDE if required). I have worked commercially in practically the entire stack from front-facing web services, rich client applications, server-side Java code all the way to the back-end relational database. I am also typically involved in devops stuff as well. That is, in addition to writing the code I can handle the build system (Ant / Ivy), test cases, coding standards, compliance checking, code coverage, integration testing, shell-scripting, etc. HTML in the browser is the only part of the stack where I haven't worked in a professional capacity though I am very proficient in JavaScript-the-language (ECMAScript 6) including the Node and Babel ecosystem and have experience in HTML/CSS3/JavaScript in the browser (using WebPack etc.) (check my my github page for some sandbox projects) — I am also currently exploring ReactJS in my free time.

Experience

ESAC (through Neuropublic) — European Space Agency / ESAC, Madrid, Spain

Software Architect and Lead Programmer — *March '13 – January '16*

I was the software architect and lead coder for the new EuroVO Registry system which is scheduled to replace the existing EuroVO Registry system that had been serving the global IVOA community for the last ten (10) years.

I worked for three years with people from the Science Archives Team at ESAC, with no company supervision and designed and implemented the entire system from scratch with the exception of most of the front-end web-based GUI (done in GWT). Among others, I designed and implemented:

- the OAI-PMH harvesting functionality. I couldn't find a reliable 3rd party OAI-PMH library so I implemented the entire protocol from scratch.
  Technologies: Java, XPath 2.0 (Saxon), XSLT, REST (Jersey), HTTP, Tomcat 7
- the RegTAP functionality and interface. I came into the project with **zero** domain-specific knowledge and I managed to implement the second, globally, RegTAP search interface and make material contributions to the RegTAP specification itself to the effect that I was recognized as a co-author of the spec.
  Technologies: Java, XPath 2.0 (Saxon), REST (Jersey), JDBC, Tomcat 7
- the IVOA RI1 Search interface. This is a SOAP interface, defined in WSDL (i.e. following a top-down approach). Due to the complexity of the XSDs used by the IVOA community I ran into problems with the automatic stub generation by tools like XJC (which I have documented in SO and raised against the tool's JIRA). So I decided to implement my own wsimport-like tool that reads WSDL and generates Java code (stubs and skeletons) to perform SOAP calls.
  Technologies: Java, SOAP (Jersey), XSD, template-based code generation with String Template
- the XML XSD schema-validation and the IVOA validation of the various services.
  Technologies: Java, XML, XSD, XPath 2.0 (Saxon), HTTP.
- the report, email notifications and visual plots generation subsystem.
  Technologies: Java, JFreeChart
- the entire database schema for PostgreSQL. I wrote the DDL statements for the entire database which comprises 102 tables in 4 schemas and was responsible for the installation, fine-tuning, index creation, performance optimization, etc of the PostgreSQL database. Wrote the entire DB-facing DAO code in Java.
  Technologies: PostgreSQL 9.2, PL/pgSQL, JDBC, SQL.
- Finally, I also handled all DevOps aspects including: installing and configuring Apache Tomcat7 and the PostgreSQL cluster, authoring the entire build system based on Ant and Ivy, writing test cases (JUnit), coding standards checking with Checkstyle, source code analyzers with PMD and FindBugs, code coverage with Cobertura, etc.

Neuropublic S.A. — Piraeus, Greece

Senior Software Engineer — *June '12 – March '13*

I worked as a software engineer in the company's flagship GAIA series of cloud-based services. Among the things I did:

- designed and developed all the server-side code for an expert system that advises farmers on the subsidies they are entitled to apply for. I devised a formal way to capture the legal requirements for each subsidy in the form of Lisp S-expressions. Essentially, each subsidy ministerial decision is modelled as a declarative, Lisp-like DSL. Then the system reads from the database the profile of each user (age, income, past subsidies, location and size of fields, crops, animal capital) and dynamically evaluates them against all possible subsidies. The system finally informs the user which subsidies (s)he can apply for and also creates a visual diagram that explains to the users why they failed to qualify for certain subsidies. S-expressions were used in order to allow for dynamic evaluation and also because the company wanted the DSL logic / script to be created by business people. So S-expression were chosen as Lisp has no other syntax except the opening and closing parenthesis.
  Technologies: Clojure (for the dynamic evaluation of the S-expressions), dynamic evaluation of Clojure code from Java, DOT (for visualizing criteria logic using graphs), iText for creating PDF reports, StringTemplate, JDBC.
- designed and developed the authentication / authorization database and implemented all back-end Java code to integrate Apache Shiro into our JSF pages and deliver an elaborate RBAC authentication solution for all GAIA applications.
  Technologies: Apache Shiro, PostgreSQL, JDBC.
- implemented a Jython solution integrating Java code with Python scripts. The objective was to allow the accounting people to write simple arithmetic expressions (formulas) to derive dynamically various fields that were used in the generation of financial reports.
  Technologies: Jython, Python, Jasper Reports.

Synelixis Solutions — Athens, Greece

Senior Software Engineer at the COAST project — *Feb '10 – March '12*

I led the company's technical participation in this project. The domain of the project was multimedia content delivery and streaming over a dynamically configured mesh of network caches that are co-located with network routers (something *like* a content delivery network). Some of the things I did:

- designed and implemented: (a) the cache communication protocol on top of TCP and (b) custom HTTP proxies in Java that transparently take advantage of the caches. Also, for demonstration purposes, coded a few pages for video streaming solutions.
  Technologies: Java TCP networking, HTML, integration with video streaming / playback.
- designed and implemented a rich client overview and monitoring application that visualizes the utilization and available capacity of all network caches, plots graphs over time and allows an operator to dynamically interact with them by issuing commands or writing Python scripts (to automate common administrative logic) in a console-like prompt.
  Technologies:Java (networking), Java Swing, Jython (for the dynamic console)

Senior Software Engineer at the BeyWatch project — *Jan '09 – Oct '10*

I led the company's technical participation in this project. The domain of the project was home automation and centralized optimization and scheduling of household tasks involving use of electrical appliances in a system of continuously changing real-time tariffs. Some of the things I did:

- implemented a brute-force particle swarm optimization algorithm in Java that accepts as inputs a set of tasks, electricity tariffs over the next 24 hours and a weather forecast (so that solar panel output or heating needs may be anticipated) and calculates the best possible scheduling of tasks to minimize either cost or carbon footprint or a combination of both.
  Technologies: Java
- implemented a rich client Java application that visualizes the scheduling of the various tasks against the electricity tariffs
  Technologies: Java Swing
- implemented the client (scheduler) side of a number of controllers that are used to program or monitor household appliances (washing machines, refrigerators, solar panels)
  Technologies: Java, REST, OSGI.

Semantix — Athens, Greece

Technical Project Manager for the EGOS Visualization Tool — *March '08 – Sep '08*

I was technical project manager for the EGOS Visualization Tool for ESOC (Contract C21283). The project implemented a graphical front-end that integrates and provides additional functionality on top of the existing tools used by ESOC to check compliance with coding standards and conventions.

Software Engineer in Roaming Studio products — *2005 – 2007*

I was responsible for the implementation of the critical conversions functionality in both the Roaming Studio and the Roaming Components products. These products are the company's flagship telecom products and revolve around the processing of TAP files which are used in GSM Roaming. The

conversion logic is responsible for converting, e.g., a TAP file of version TAP3.11 into a file of version TAP3.10. The files are defined using different ASN.1 grammars both from a syntax and a semantics point of view so the transformation is a complex business logic procedure. Since there are more than 7 different TAP3 versions and conversion had to take place between any arbitrary pair there was a large number of conversion routines to be written. I defined a DSL used to describe the logic behind these conversions (essentially transformation algorithms on deeply nested ASN.1 trees) and built a Python script that automatically generated C++ code implementing these transformations. In total I was able to reduce tens of thousands of lines of C++ code into as little as 700 conversion rules expressed in the above DSL (plus the Python script code generator).
Technologies: ASN.1, C++, Python

Software Engineer at project ATLAS *2002 – 2004*

I was part of the engineering team that was tasked to implement the new Vodafone Greece billing system. Data (customer, subscriber, bills and calls information) migration to the new billing system and integration with over a dozen legacy peripheral systems which were scheduled to survive the migration to the new billing system. I was responsible for the integration code which was implemented in C++ and Java (for higher-level daemons) and which undertook to sustain the information flow between the new billing system and legacy systems which were not going to be replaced. Since no modifications were permitted in the legacy systems, the new billing system had to be wrapped in a façade allowing it to expose the same interface towards the legacy systems. I was also involved with the design of a massive "mediating" staging database of more than 400 tables and 40,000 lines of PL-SQL code (a large percentage of which I implemented myself). Finally I had small exposure with Portal Infranet programming (now Oracle Billing and Revenue Management).
Technologies: Java, Oracle, PL-SQL, C++, C

Software Engineer at project DCH *2001 – 2002*

Design and implementation of the Vodafone Greece Data Clearing House system for roaming calls. I implemented code in C++ (for the decoding / encoding and validations / transformations of the TAP records), Java (for the orchestration logic) and PL/SQL (for server-side processing)
Technologies: C++, ASN.1, Java, Oracle, PL-SQL.

Education

National Technical University of Athens — Athens, Greece

Ph.D. from the Department of Electrical and Computer Engineering *1997 – 2001*

NTUA is the oldest and most prestigious technical university in Greece. I was awarded a Ph.D. for research into applying modern (at that time) software technologies in telecommunications networks. During that period of time I worked mostly with C++ and Java and developed code using distributed technologies like CORBA, RMI; Java applets, code interacting with telecom switch equipment, developed specialized video streaming applications in C++, etc. During that period of time I also published about a dozen papers (3 in international refereed journals including IEEE, the rest in conferences). Publications list provided at the end.

Technical University of Patras — Patras, Greece

Five-year Engineering Diploma from the Computer Engineering and Informatics Department *1992 – 1997*

CEID is the oldest university department in Greece focusing exclusively in computer and software engineering and awarding an engineering diploma after 5 years of studies. I entered 1st in rank after a nationwide competitive examination and finished 2nd in rank (class size ~150). Coded various applications in technologies like Pascal, Lisp, C and Java.

Skills

Technical specialties: Software design and implementation, alone or in a team. I am a professional Java coder but also love and have written production code in C, C++ and (more recently) Python and Clojure. Also, non-production code in JavaScript and OCaml. I am very comfortable at the command line and casually write Bash one-liners daily. Solid knowledge of the following technologies: Java 7, JDBC, XML, XPath, XSD, REST, SOAP, RDBMSs, bare-bones JavaScript. Linux administration skills: bash, Apache Tomcat, PostgresSQL

Natural languages: Greek *(mother tongue)*, English *(full professional proficiency: Cambridge Certificate of Proficiency in English, Grade A)*, Spanish *(elementary)*

References

Available upon request.

Publications

Books

2001 Co-author of the "Distributed Intelligent Network" article in the "Encyclopedia of Telecommunications" published by Wiley.

2000 Co-author in "Object Oriented Software Technologies in Telecommunications: from theory to practice", edited by I.Venieris, F.Zizza, T. Magedanz. Published by John Wiley & Sons LTD, Chichester, UK, April 2000.

1999 M. K. Perdikeas, O. I. Pyrovolakis, F. G. Chatzipapadopoulos and I. S. Venieris, "Service Design in Distributed Intelligent Networks" in "On the Way to the Information Society — A Retrospective View on 5 Years of ACTS IS&N Research" Baltzer press, 1999.

Peer-reviewed Papers in International Journals

2001 M.K. Perdikeas and I.S. Venieris, "Parlay-based Service Engineering in a Converged Internet-PSTN Environment" Computer Networks (Elsevier), vol. 35, Issue 5, April 2001, pp. 565–578

2000 F. G. Chatzipapadopoulos, M. K. Perdikeas and I. S. Venieris, "Mobile Agent and CORBA Technologies in the Broadband Intelligent Network", IEEE Communications Magazine., Vol. 38, Issue 6, pp. 116–124

1999 M.K. Perdikeas, F.G. Chatzipapadopoulos, I.S. Venieris and G. Marino, "Mobile Agent Standards and Available Platforms", Computer Networks (Elsevier), vol. 31, Issue 19, August 1999, pp. 1999–2016

Papers in International Conferences, Workshops etc.

2014 Christophe Arviset, Menelaus Perdikeas et al., "The Euro-VO Registry, re-engineering the back-end" (abstract) in the 24th annual conference on Astronomical Data Analysis Software and Systems, Calgary—Canada

2011 Theodore Zahariadis, Menelaos Perdikeas, Fotis Chatzipapadopoulos, Javier Lucio Ruiz Andino, Maria Angeles Barba Rodriguez: Middleware for energy aware appliances 2nd Workshop on eeBuildings Data Models, Sofia Antipolis—France

2010 Menelaos Perdikeas, Theodore Zahariadis, and Pierre Plaza: The BeyWatch Conceptual Model for Demand-Side Management, E-Energy conference, October 14–15, Athens—Greece

…and nine (9) others in previous years including a couple of IEEE and ICIN conferences.

Interests

Non-exhaustive: optimizing my environment, setup and workflow; Emacs, JavaScript, ReactJS, Linux, i3 window manager, LaTeX; historical reading, Chess, boardgames.