Gil Vegliach

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Personal:	Born on 19 Feb 1987 in Trieste (Italy), Italian citizen
Languages:	English C1+ (certified), German A2 (certified), Italian mother tongue

Gil is a highly skilled developer, with a strong theoretical background. Graduated in April 2013 in the European Master in Computational Logic, a joint degree by TU Dresden, FU Bozen and TU Wien, his early teenage interest in coding developed into an obsessive craving for more complex problems, where Gil's strong analytical-quantitative mindset, acquired in a bachelor of mathematics, and his research skills, matured in a top-notch overseas research centre, prove invaluable for individuating added-value solutions.

Employment

Cortado AG, Berlin, as an Android Software Developer, June 2013–present.

Projects:

1. User interface and browsing for Cortado Corporate
2. Document preview for Cortado Corporate
3. Personal Printing Client v3.0

Boss: Mathias Pröhl (mathias.proehl@cortado.com)

Previous boss: Johaness Orgis (linkedin: http://goo.gl/PurxAM)

Technologies: see descriptions per project below

Nicta Canberra, ACT, Australia, as an intern, August–December 2012.

Project: Formal properties of first-order temporal logic for runtime verification and business rules

Supervisor: Andreas Bauer (andreas.bauer@nicta.com.au)

Topics: runtime monitoring of mobile malware, business rules

Siemens AG Munich, as an intern February–April 2012.

Projects: REAgent, Optique

Supervisor: Mikhail Roshchin (mikhail.roshchin@siemens.com)

Topics: intelligent data analysis, logic description of data

Nicta Canberra, ACT, Australia, as an intern, August–November 2011.

Project: Runtime Verification meets Android Security

Supervisor: Andreas Bauer (andreas.bauer@nicta.com.au)

Topics: runtime monitoring of mobile malware, Android development, behavioural detection

Other mobile development

Title: Berlin Subway

G+ community: `http://goo.gl/da8Vh4`

Description: optimized subway map of Berlin, with search

Technologies: Canvas and Paint API, GestureDetector, BitmapRegionDecoder, Search API

Title: Paparazzi

Homepage: `http://goo.gl/541h6`

Description: tap the screen to upload a photo onto Facebook

Technologies: Facebook SDK 3.0: session management, publishing; Camera: surface, preview

Education

M.Sc. EMCL (Computational Logic in Computer Science), Technische Universität Dresden, Free University of Bozen, Technische Universität Wien, October 2010–April 2013, overall German mark: 1.2–Excellent, thesis mark: 1.0–Excellent; overall Italian mark: 110 cum laude out of 110.

B.S. Mathematics, University of Trieste, 2006–2010, mark: 110 cum laude out of 110.

Relevant IT Certifications

Oracle Certified Programmer, Java SE 5/SE 6 (OCPJP, formerly SCJP), 28 June 2012, score 95%

Oracle Certified Associate, Java SE 5/SE 6 (SCJA), 10 July 2010, score 86%

Publications

From propositional to first-order monitoring, 2013, with A. Bauer and J. Küstar, *Proc. 4th International Conference on Runtime Verification (RV)*

Runtime Verification meets Android Security, 2012, with A. Bauer and J. Küstar, *NASA Formal Methods Symposium (NFM 2012)*

Incomplete Databases: Missing Records and Missing Values, 2012, workshop paper with W. Nutt and S. Razniewski, *Data Quality in Data Integration Systems (DQIS 2012)*

Projects in detail

Title: User Interface and browsing for Cortado Corporate

Referees: Mathias Pröhl (mathias.proehl@cortado.com),
Johannes Orgis (linkedin: `http://goo.gl/PurxAM`)

Technologies: NavigationDrawer, Contextual Action Mode, flipping custom layout, custom themes, ContentProvider, IntentService, Loaders

Description: (see also Employment) Cortado Corporate and Cortado Workplace are multifunctional solutions for mobile productivity. Features comprehend file browsing, file previewing, file sharing, cloud storage, and cloud printing. Furthermore, the Corporate edition offers MDM and BYOD through the use of Cortado Corporate Server. Both apps are undergoing a complete rebuilt and rebrand. The main idea is to provide a more modern user-interface, additional features, and a cleaner codebase to maintain.

Gil's contribution was twofold: to implement UI/UX patterns for the best user experience and code maintainability, and to write the business logic for remote and local file browsing. For the former, in addition to the NavigationDrawer and the ActionBar with Contextual Actions, Gil reverse-engineered Gmail's approach to multi-select, building a custom layout that can flip between its child views.

For the latter, remote and local browsing were integrated following the best practices by the Google's engineer Virgil Dobjanschi (Google I/O 2010): a ContentProvider provides the UI with file data, merging a SQLite cache with content from network requests. Those are decoupled in an IntentService. The UI employs Loaders for background loading and uses a custom ActionBar animation to give feedback back to the user. The project took less than three weeks and all the components are back-compatible to Android 2.3.

Title: Document preview for Cortado Corporate

Referees: Mathias Pröhl (mathias.proehl@cortado.com),
Johannes Orgis (linkedin: `http://goo.gl/PurxAM`)

Technologies: Canvas and Paint API, GestureDetector, NinePatches, Service, LruCache, DiskLruCache, bitmap pooling

Description: (see also Employment and above) Document previewing is a key feature of Cortado Corporate and Workplace. On a preview request, the corresponding file is virtually printed on a remote server, and thereafter the pages are lazily downloaded one by one. The main challenge is to keep memory usage below the hard limit of the memory class while, at the same time, avoid garbage collection that would generate hiccups on the UI. Other constraints encompass avoiding unnecessary downloading and decoding, and performant touch gestures such as pinch zoom and quick scale.

The solution is totally decoupled component, made up of a UI part and a backend Service part. For the former, DocumentView has been entirely coded up, basically a zoomable ListView supporting different page geometries and page tiling, to reduce unnecessary drawing. The pixel-precise edge detection, the tiling, and the implementation of the scaling transformations would have been almost impossible without Gil's strong mathematical background. For the backend part, Gil implemented a Service with a efficiently synchronised two-level cache, a bitmap pool that let the decoder reuse memory and avoid garbage collection, and a network requests re-orderer that always tries to download first the currently visible pages on screen.

Title: Personal Printing 3.0 for Android

Referee: Johannes Orgis, linkedin: `http://goo.gl/PurxAM`

Technologies: Android 3.0+, HttpUrlRequest for REST, hybrid Services, ZXing, custom Views, animations

Description: (see also Employment) Personal Printing is Cortado AG's pull-printing solution that helps minimise printing costs in your company. Print jobs are managed directly at the printer by the Personal Printing app, letting the user delete unnecessary jobs, thus saving toner, and collect them on the spot, thus preventing private data leaks and printer trays clogging.

An iOS version had been already developed when Gil took up the task of porting the app to Android. The UI was adapted to an edgier, smoother, more asynchronous version, taking advantage of a custom SlideView that Gil coded up, and keeps maintaining, as a subproject. The REST requests, differently from the iOS version, do not block the UI: they were decoupled in a Service that elegantly communicates with the Activity through Messengers. Advanced animation tricks exploiting onPreDrawListener were employed for the ListView removal animation.

Title: Formal properties of first-order temporal logic for runtime verification and business rules

Referees: Andreas Bauer (andreas.bauer@nicta.com.au), Jan Küstar (NICTA and ANU)

Theories: LTL, model-checking, Büchi automata

Description: (see also Employment) The development of the previous project was carried out in the form of a Master's thesis. The concept of a proper monitor was formalised and, albeit the shown impossibility of building a complete monitoring algorithm, a correct construction based on a novel automata model was depicted and then finally tested in the context of Android policies and the PCBRP project, the Provably Correct Rules and Processes project at NICTA.

Title: Runtime Verification meets Android Security

Referees: Andreas Bauer (andreas.bauer@nicta.com.au), Jan Küstar (NICTA and ANU)

Technologies: Android OS 2.6, Java (Dalvik VM)

Environments: Eclipse, Android emulator and Samsung Nexus S

Description: (see also Employment and Publications) The goal was to develop a dynamic security mechanism for Android-powered handsets based on runtime verification, which lets users monitor the behaviour of installed applications. A prototype was implemented and it was shown how it could detect some real-world security threats.

Title: Incomplete Databases: Missing Records and Missing Values

Referees: Werner Nutt (nutt@inf.unibz.it), Simon Razniewski (razniewski@inf.unibz.it)

Description: (see also Publications) The goal was to extend the previous theory of incompleteness of database by W. Nutt and S. Razniewski with null values, which represent missing attributes. The concepts of query completeness and table completeness were extended, a description and a proof of tc-qc entailment given, and different real-world scenarios outlined.

Title: REAgent

Referee: Mikhail Roshchin (mikhail.roshchin@siemens.com)

Technologies: C#, Drool Expert, Drools Fusion

Environment: Visual Studio 2010 Express

Description: Siemens is currently working on automatic detection of turbines failure and malfunctioning. The abductive reasoning is carried out by an higher-level module which infers possible causes from event messages generated by a lower-level module. The messages represent the actual data or rather the meaningful pieces of it. The data needs to be translated in messages and this is done sieving raw data through logical expert-made formulas whose semantics clusters together and filters out pieces.

This project was about the lower-level component, improving an existent theory to the point of a (simple) working implementation. The formal syntax of the formulas was completely reworked and

a new semantics developed to mathematical rigour. A C# implementation was provided and tested against real use-cases. Documentation was written. A final reworking to the core algorithms made the Drools platform to be superfluous, leading to a sharp improvement of final speed. This would not have been possible without Gil's theoretical and research background which helped to point out existent foundational problems and to implement algorithms substituting Drool's rules engine.

Title: Optique

Referees: Mikhail Roshchin (mikhail.roshchin@siemens.com), Jan-Gregor Fischer

Technologies: SparkQl, D2RQ, Oracle Database 11g, Protegé, C#

Environments: Oracle Database 11g

Description: Siemens is currently working on automatic detection of turbines failure and malfunctioning. In the above mentioned project's framework, Siemens draws the adbuctive inferences from a formal description of the turbines themselves. The formal description of the turbines is rendered by an ontology, a UML-like diagram expressing relations among turbine's parts and among parts, observations and synthoms of those parts. After the logical schema is drawn, the structure needs to be populated as with classes and object instances. The individuals of the ontology are made from a large Oracle database through D2RQ mappings connecting raw table entries with abstract objects.

This project was about the mapping level, interfacing the database with the ontology. Setting up a suitable environment (Protegé and the Oracle Database 11g), layering and extending the existing ontology, writing up the mappings from scratch, developing a nice web-interface, making up meaningful queries, writing the documentation and even a slide presentation were all tasks that have been accomplished. To link the components Siemens-made C# software was used: Gil's expertise led to discover and quickly correct bugs in the source code.

Hobbies

Languages and linguistics, running, martial art (practised for two years by Makoto Gymn in Trieste) and basketball (played for one year in the university's team), playing piano, graphics and portrait drawing, travelling around the world

Last updated: May 4, 2014

`http://www.gilvegliach.it/files/CV.pdf`