

# Reinout Roels

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## ABOUT ME: SOFTWARE ENGINEER

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Computers and programming have always been my passion. Ever since I was 14 I have invested heavily in the related knowledge and skills and developed a **strong technical background** through **freelance work**. I am fluent in many of the commonly used programming languages, frameworks and API's and have worked on several large-scale projects including desktop, web and mobile applications. I later strengthened this knowledge with a **Master's degree and PhD in Computer Science**. Thanks to my education I am also a quick learner and I can pick up new languages and technologies quite fast. I don't believe that there is a "best programming language". I believe there is a tool for every job and I take pride in having a large toolbox and being able to choose and apply the right tools for the task at hand.

## TECHNICAL SKILLS

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Operating Systems	Windows, macOS, UNIX-based OSs (Ubuntu, Debian, Raspbian, ...)
Desktop Development	C, C++, .NET (VB/C#), Java, Python, Ruby, JavaScript, Bash, Rust Qt, SFML, OpenCV, Node.js, Electron, NodeWebkit (NW.js), JavaFX, JUnit, Javadoc
Web Development	HTML5, CSS, JavaScript, PHP, ASP(.NET), Java SASS, Less, Drupal, Node.js, Express.js, Handlebars.js jQuery, Bootstrap, Laravel, CakePHP, CodeIgniter, Wordpress, RESTful APIs, STRUTS
Mobile Development	Android Applications (Java, Gradle, SQLite)
Databases	SQL, Relational Databases (MySQL, SQLite, PostgreSQL), Object Databases (db4o, ObjectDB), Graph Databases (Neo4j), Document Stores (MongoDB)
Structured Data	XML (DTD, XML Schema, XSLT, XPointer, XLink, SOAP), JSON, RDF (RDFS, SPARQL)
Other	Make, CMake, Maven, Gradle, SVN, Git, LaTeX, Markdown, UML, ER

## WORK EXPERIENCE

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- 2004 - Now Freelance Software Development  
*Desktop, web and mobile applications.*
- 2012 - 2018 Teaching Assistant  
*Vrije Universiteit Brussel, teaching topics such as Programming, Databases, Web Technologies, Lambda Calculus, Propositional Calculus, Predicate Calculus and Information Systems.*
- 2012 - 2018 PhD Candidate  
*Vrije Universiteit Brussel, member of the Web and Information Systems (WISE) research lab.*

## EDUCATION

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- Dec. 2018 PhD in Computer Science, **Vrije Universiteit Brussel**, Brussels
- Sept. 2012 Master in Applied Computer Science, **Vrije Universiteit Brussel**, Brussels (*summa cum laude*)
- Sept. 2011 Bachelor in Computer Science, **Vrije Universiteit Brussel**, Brussels
- June. 2005 ASO, Latin, Economics, Maths **Sint-Lutgardisinstituut**, Oostende
- June. 2005 Certificate Business Management, **Sint-Lutgardisinstituut**, Oostende
- June. 2005 Elementary Music Theory, **Conservatorium**, Oostende

## LANGUAGES

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- Dutch Native language
- English Full professional proficiency
- French Limited working proficiency
- German Elementary proficiency

## AWARDS, GRANTS AND HONORS

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- 2015 Best Student Paper Award (CSEDU 2015).
- 2014 Best Paper Award (ICALT 2014).
- 2012 Received a 6-year PhD grant.
- 2012 Graduated Master's Degree "Summa Cum Laude".

## PERSONAL INTERESTS

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Current hobbies include poker AIs and algorithmic trading (stock, forex and cryptocurrency markets). I also finished various running events such as marathons and the infamous 100km "Dodentocht".

## TECHNICAL PORTFOLIO

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In order to keep this document short only a selection of projects is shown, and details are kept to a minimum. Please refer to <http://reinout.roels.me> for a more complete list.

- 2017 **Hypermedia Linking Platform:** A cross-media hypermedia linking platform based on the RSL meta-model. The system might be compared to an advanced graph-database. User can load their models and everything else is handled automatically. The system provides features related to security, user management, sharing, reuse, versioning, querying and context resolving. The platform is able to modify, compile and reload parts of its code in the reasoning and storage layers at runtime, for performance reasons. *Java, Gradle, linked data, model-driven, semantic links, websockets, RESTful API, JavaPoet, self-modifying code*
- 2016 **INFEX:** INFEX is a generic extensible framework that performs automatic protocol mediation and translation. This allows devices with different software and hardware specifications to exchange data, even if this was previously impossible. INFEX allows users to bypass proprietary software and abstracts technical difficulties away from end users. *Java, Gradle, publish-subscribe, extensibility*
- 2016 **Klio - Backtesting Framework for Algorithmic Trading:** The framework allows traders to implement trading strategies (e.g. stock, forex or cryptocurrency data) and to test them against historical data to see how the strategy performs. The framework is based on pipeline programming, allowing developers to build chains of reusable modules. The framework was built for performance, scales with the hardware and has a custom database solution for extremely fast querying of high-frequency time series. *PowerPoint Plug-in, HTML, JavaScript, CSS*
- 2012 **MindXpres:** A novel presentation tool based on web technologies. See <http://mindxpres.com> for more details. *HTML, JavaScript, CSS, SASS, NW.js, jQuery, D3.js, plug-in architecture, websockets*
- 2012 **VUB Crosstalks - PechaKucha:** The VUB Crosstalks organisation asked me to developed a presentation tool for the PechaKucha presentation format where the presenter shows 20 images and spends 20 seconds on each images (automatically timed). The tool includes a PowerPoint plug-in that can convert a PowerPoint presentation into an HTML-based PechaKucha presentation. *PowerPoint Plug-in, HTML, JavaScript, CSS*
- 2010 **Tinypaste.com - Firefox Plug-in:** I developed a Firefox plug-in for tinypaste.com, a web service that allows users to upload and share text snippets (comparable to Pastebin). The plugin would add an option to the contextual menu allowing users to quickly upload and share any highlighted text on a website. *Firefox, XAML, RESTfull APIs*
- 2010 **iOJ.com:** iOJ is a desktop application that allows users users to easily upload any file to the iOJ cloud service and get back a shareable link. The tool is also capable of taking and uploading screenshots and desktop recordings. A Windows and an OSX version were made. *.NET, Java, Windows APIs, RESTful APIs*
- 2009 **ControlC.com:** ControlC is an application that keeps track of your clipboard history allowing you to easily search and find important information. The application also displays from where the information was copied and information can be shared with friends. *.NET (C#), Windows APIs, jQuery, SQLite*
- 2009 **Terminal-based HTTP Download Manager:** This is a download manager for HTTP downloads, made in the Ruby programming language. Files can be queued for downloading and the application will go through the queue and download a configurable amount of them in parallel. Downloads can be paused and resumed. The application was made to be usable in a terminal and offers a console interface based on ncurses. *Ruby, ncurses, HTTP*
- 2008 **Pacman:** This is a complete implementation of the well-known classic pacman game. It was made for a school project in the Scheme programming language, a dialect of Lisp. *Scheme (Lisp dialect), game loop, tile-maps*
- 2008 **Infrared Gesture Tracking:** I prototyped a device that combines a matrix of infrared LEDs, a color camera and an infrared camera to track a user's arms and detect gestures in real-time. Dynamic time warping was used to detect gestures based on pre-trained models. Note that this was implemented before devices such as the Kinect existed. *C++, OpenCV, gesture recognition, dynamic time warping, machine learning*
- 2008 **Helios Solarium - POS Software:** I was asked to develop easy to use point-of-sale (POS) software for a solarium, as well as an automated system that gives customers access to tanning booths with their customer cards. *.NET, MySQL, POS, barcode scanner, access gates*
- 2007 **JFT Group and Capitole Gent Internal System Development:** I was hired to create software for internal use for a consultancy firm called JFT Group and was later put on a similar project for Capitole Gent. Work included a web-based facturation system and software for the management of events, theatre rooms, catering and hardware (e.g. lighting or sound installations). *PHP*
- 2006 **Multithreaded Static Web Server:** As part of a school project I implemented a functional web server in C++. It uses a threadpool to handle requests in parallel and can serve static files. *C++, multithreading, HTTP*
- 2005 **Gameboy Emulator:** A fully functional emulator for the original Gameboy. *Scheme (Lisp dialect), assembler*
- 2005 **Medical Appointment System:** Online appointment scheduling system with PDA front-end for doctors on the go. *PHP, WAP, i-mode, scheduling*
- 2005 **Younanimous.com:** A social search engine. Search results are aggregated from external search engines and enhanced with a crowd sourcing layer. A custom ranking algorithm takes user votes, bookmarks, discussions and sentiment into account. *ASP, database performance*
- 2004 **Plakit:** An application that allows users to stick virtual post-its on their desktop. *Visual Basic 6*