

Reinout Roels

✉ reinout.roels@vub.be | 🏠 <http://reinout.roels.me> | 📞 (+32) xxx xx xx xx | 🇧🇪 Belgian | 📅 15/10/1987 | 📍 Brussels

ABOUT ME

Computers, programming, research and teaching have always been my passion. Ever since I was 14 I have invested heavily in related knowledge and skills. During my PhD I was able to apply my skills to advance the state of the art in research, and over 2000 hours were spent teaching others these skills as part of university courses. I also have some experience as a coach for a coder dojo, teaching young children how to program. On top of that, freelance work and hobby projects have kept me up to date with the most recent developments and with the skills currently required by companies.

Note that this document focusses on my academic competences. A technical CV with software engineering skills and projects can be found at <http://reinout.roels.me>.

WORK EXPERIENCE

- 2019 Pedagogisch Medewerker
Vrije Universiteit Brussel, member of the Web and Information Systems (WISE) research lab.
- 2012 - 2019 PhD Candidate, Researcher
Vrije Universiteit Brussel, member of the Web and Information Systems (WISE) research lab.
- 2012 - 2018 Teaching Assistant
Vrije Universiteit Brussel, teaching topics such as Programming, Databases, Web Technologies, Lambda Calculus, Propositional Calculus, Predicate Calculus and Information Systems.
- 2004 - 2018 Freelance Software Development
Desktop, web and mobile applications.

EDUCATION

- May 2019 Doctor of Sciences (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

AWARDS, GRANTS AND HONORS

- 2015 **Best Student Paper Award:** For the paper "Towards Enhanced Presentation-based Teaching of Programming: An Interactive Source Code Visualisation Approach", at CSEDU 2015.
- 2014 **Best Paper Award:** For the paper "A Unified Communication Platform for Enriching and Enhancing Presentations with Active Learning Components", at ICALT 2014.
- 2012 I was awarded a 6-year **PhD grant** by the Vrije Universiteit Brussel.
- 2012 I graduated my Master's degree in Applied Computer Science with greatest distinction, qualifying to graduate with "Summa Cum Laude" honors.

LANGUAGES

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

RESEARCH INTERESTS

Information management, information technology, content models, presentation software, hypermedia, data-driven information visualisation, human-computer interaction, learning, education

TEACHING

I have over 2000 in-class hours of teaching experience and I was responsible for exercise sessions, (guest)lectures and seminars, mainly on the following topics. Other than that, I also have some experience teaching children to program in a "coder dojo".

- 2012 - 2018 **Databases** *Entity-Relationship Modelling, Relational Algebra, SQL, DBMS Architectures, Transaction Management, Indexing, RAID, Query Processing and Optimisation, NoSQL*
- 2012 - 2018 **Web Technologies / Web Information Systems** *HTML5, JavaScript, CSS, jQuery, RESTful APIs, JSON, Server-side Frameworks, XML, XSLT, XLink, XPointer, DTD, XML Schema, Web Architectures, Web 2.0, Responsive Design, Semantic Web, RDF, OWL, SPARQL, SEO, Security, Privacy, Trust*
- 2012 - 2018 **Logic and Formal Methods / Foundations of Computer Science** *Lambda Calculus, Propositional Calculus, Predicate Calculus, Boolean Logic, Formal Deduction, Proofs*
- 2012 - 2018 **Advanced Topics in Information Systems** *In this seminar course students present and discuss the state of the art academic papers related to information systems and human-computer interaction from top conferences such as CHI.*

PROFESSIONAL ACTIVITIES

Departmental/Faculty Roles

- 2013 - 2018 Member of the University Council ("opleidingsraad") for the Master's of Applied Informatics
- 2013 - 2016 Member of the University Council ("opleidingsraad") for the Master's of Computer Science

Program Committees

- 2019 Hypertext 2019: Program committee member and reviewer for the 'User Interfaces and Hypertext Structures' track of the 30th ACM Conference on Hypertext and Social Media

PUBLICATIONS

- 2019 **A Conceptual Framework and Content Model for Next Generation Presentation Solutions**
Roels, R. and Signer, B.: "A Conceptual Framework and Content Model for Next Generation Presentation Solutions", Proceedings of the ACM on Human-Computer Interaction (PACMHCI), 3 (EICS, Article 7), June 2019
- 2018 **INFEX: A Unifying Framework for Cross-Device Information Exploration and Exchange**
Roels, R., De Witte, A. and Signer, B.: "INFEX: A Unifying Framework for Cross-Device Information Exploration and Exchange", Proceedings of the ACM on Human-Computer Interaction (PACMHCI), 2 (EICS, Article 2), June 2018
- 2017 **Interactive and Narrative Data Visualisation for Presentation-based Knowledge Transfer**
Roels, R., Baeten, Y. and Signer, B.: "Interactive and Narrative Data Visualisation for Presentation-based Knowledge Transfer", Communications in Computer and Information Science (CCIS), 739, 2017
- 2016 **An Interactive Data Visualisation Approach for Next Generation Presentation Tools: Towards Rich Presentation-based Data Exploration and Storytelling**
Roels, R., Baeten, Y. and Signer, B.: "An Interactive Data Visualisation Approach for Next Generation Presentation Tools: Towards Rich Presentation-based Data Exploration and Storytelling", Proceedings of CSEDU 2016, 8th International Conference on Computer Supported Education, Rome, Italy, May, 2016
- 2016 **An Interactive Source Code Visualisation Plug-in for the MindXpres Presentation Platform**
Roels, R., Mestereaga, P. and Signer, B.: "An Interactive Source Code Visualisation Plug-in for the MindXpres Presentation Platform" (extended version of CSEDU 2015 paper), Communications in Computer and Information Science (CCIS), 583, 2016
- 2015 **Towards Enhanced Presentation-based Teaching of Programming: An Interactive Source Code Visualisation Approach [Student Best Paper Award]**
Roels, R., Mestereaga, P. and Signer, B.: "Towards Enhanced Presentation-based Teaching of Programming: An Interactive Source Code Visualisation Approach", Proceedings of CSEDU 2015, 7th International Conference on Computer Supported Education, Lisbon, Portugal, May, 2015
- 2014 **A Unified Communication Platform for Enriching and Enhancing Presentations with Active Learning Components [Best Paper Award]**
Roels, R., Vermeylen, C. and Signer, B.: "A Unified Communication Platform for Enriching and Enhancing Presentations with Active Learning Components", Proceedings of ICALT 2014, 14th IEEE International Conference on Advanced Learning Technologies, Athens, Greece, July 2014
- 2014 **MindXpres: An Extensible Content-driven Cross-Media Presentation Platform**
Roels, R. and Signer, B.: "MindXpres: An Extensible Content-driven Cross-Media Presentation Platform", Proceedings of WISE 2014, 15th International Conference on Web Information System Engineering, Thessaloniki, Greece, October, 2014
- 2013 **An Extensible Presentation Tool for Flexible Human-Information Interaction**
Roels, R. and Signer, B.: "An Extensible Presentation Tool for Flexible Human-Information Interaction", Demo Proceedings of the 27th BCS Conference on Human Computer Interaction (HCI 2013), London, United Kingdom, September 2013

NOTABLE RESEARCH ARTEFACTS

Shortcomings and unmet user needs in presentation software: By means of literature study, observations, a survey and the programmatic analysis of over 12000 PowerPoint documents I have demonstrated various shortcomings and unmet user needs in existing presentation software.

Database of presentation metadata: I created a modular software framework for analysing PowerPoint documents and for extracting various metrics and statistics. This has resulted in a shareable database containing metadata and statistics on millions of slides, images, charts, animations and text fragments extracted from over 12000 PowerPoint documents.

MindXpres presentation platform and presentation solutions: Presentation tools such as PowerPoint originated as simulators for physical photographic slides, but they also inherited all limitations. For instance, content is still relatively static, spatially bounded and presented in linear sequences, even though computers are capable of so much more. We investigated and addressed issues related to dynamic content, interactivity, portability, presentation hardware, content reuse, collaboration and content sharing. The MindXpres presentation platform is a combination of a conceptual framework, content model, hypermedia link service and presentation engine. The platform serves as a research platform for prototyping and evaluating radically new presentation concepts that cannot be easily implemented in existing presentation software. MindXpres has allowed me to research, implement and evaluate over 19 presentation solutions.

RSL hypermedia link service: I have designed and built a complex model-driven link service for the RSL hypermedia metamodel. The system turns any RSL-based model into a functional information system for linked data. The design ensures a better performance than for instance graph databases, relational databases or RDF triple stores, with more functionality built into the core system. My implementation serves as an information back-end for MindXpres but is also used by students and other researchers as an easy-to-use foundation for various hypermedia-driven applications.

INFEX: Our lives are filled with smart devices such as digital cameras, smartwatches, fitness trackers and tablets, but when we want to move for instance a picture from a camera to a smartwatch we have to deal with incompatibilities, vendor-specific software and a tedious lengthy process of interactions. INFEX is a generic extensible framework that performs automatic protocol mediation and translation. This allows devices with different characteristics to exchange data, even if this was previously impossible. INFEX allows users to bypass proprietary software and abstracts technical difficulties away from end users.

THESIS SUPERVISION

2017	MA	Kwinten Pardon	An Extensible Presentation Framework for Real-time Data Acquisition, Interaction and Augmented Reality Visualisations
2016	MA	Arno De Witte	A User-friendly and Device-independent Interface for Cross-Device Information Exchange
2016	MA	Kushal Soni	An Extensible Virtual Assistant for the PowerPoint Presentation Tool
2016	BA	Linda de Corte	Context-aware Media Adaptation for Information Display
2015	MA	Chunxian Yan	Pen, Paper and Presentations
2015	MA	Jeroen Nyckees	Distributed Multi-touch User Interfaces for Modular Musical Expression
2015	MA	Jonas Vereyken	Investigating Graph-based Storage Backends for Link Services
2015	MA	Marius Hirjanu	Ambient Information Processing and Visualisation
2015	MA	Mohamed Zahir	An Extensible Platform for Real-Time Feedback in Presentation Training
2014	MA	Yves Baeten	Intuitive Information Visualisation for the MindXpres Presentation Tool
2014	MA	Tim Vereecken	ADFIS - An Application Development Framework for Interactive Surfaces
2014	MA	Joris Vandermeersch	Content Migration and Layout for the MindXpres Presentation Tool
2014	MA	David Bos	Multimodal Interaction for the MindXpres Presentation Tool
2013	MA	Jasper Debie	Automatic Data Visualisation for the MindXpres Presentation Tool
2013	MA	Paul Mestereaga	Intelligent Source Code Visualisation for the MindXpres Presentation Tool
2012	MA	Christophe Vermeylen	Audience-driven Presentations based on the MindXpres Presentation Tool
2012	MA	Jeroen Heymans	A WYSIWYG Template Authoring Solution for the MindXpres Presentation Tool
2012	BA	Kevin van Gysegheem	Dynamic Graph Visualisation for the MindXpres Presentation Tool