

# Curriculum Vitae | Wouter van Toll

*Updated on January 29, 2017*

## Personalia

Full name                    Wouter Geert van Toll  
Given name                Wouter  
Place of birth/residence   Utrecht, The Netherlands  
Date of birth                March 6, 1989

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Websites

- LinkedIn: [www.linkedin.com/in/wouter-van-toll-67845b43](http://www.linkedin.com/in/wouter-van-toll-67845b43)
- Utrecht University staff page: [www.uu.nl/staff/WGvanToll](http://www.uu.nl/staff/WGvanToll)
- Google Scholar: [scholar.google.nl/citations?user=r1fSeRoAAAAJ](http://scholar.google.nl/citations?user=r1fSeRoAAAAJ)

## Education

- 1993 - 2000 Primary school: St. Dominicus, Utrecht, The Netherlands.
- 2000 - 2006 High school: St. Bonifatiuscollege, Utrecht, The Netherlands. Gymnasium (i.e. with Latin course) and “Nature & Technology” specialization (e.g. physics, mathematics and chemistry).  
  
Graduated summa cum laude in 2006.
- 2006 - 2009 **BSc in Computer Science** at Utrecht University, The Netherlands. 180 ECTS of courses.  
  
Courses included programming (Java, PHP, Prolog), logic and set theory, algorithms and data structures, human-computer interaction, 3D modelling, and game design.  
  
Graduated cum laude in 2009; 4.0/4.0 GPA.
- 2009 – 2011 **MSc in Game and Media Technology** at Utrecht University, The Netherlands. 60 ECTS of courses; 60 ECTS of individual research.  
  
Specialization of Computer Science, with a focus on new academic developments in algorithms for games and simulations.
- 60 ECTS: Courses, including game programming in C++, geometric algorithms, computer vision, motion planning, human animation, virtual worlds, and crowd simulation.
  - 15 ECTS: Experimentation project on adapting a navigation mesh to dynamically changing environments.
  - 45 ECTS: MSc thesis project, titled “A navigation mesh for efficient density-based crowd simulation in multi-layered environments”, supervised by Roland Geraerts.
- Graduated cum laude in 2011; 4.0/4.0 GPA.
- 2012 – 2017 **PhD in Computer Science** at Utrecht University.  
See “Work experience” for more details.

## Work experience

- 2005 – present Design (graphics + CSS) of various Dutch websites, often hosted by Martin van Toll Producties. Examples:
- beterspellen.nl, betterrekenen.nl
  - stemmenweb.nl
  - cechi.nl, deweduwen.nl (Flash interfaces)
  - woutervantoll.nl (personal portfolio, actively maintained up to 2014)
- 06/2007 – 09/2008 Re-stocking and sales at the “Supplies” department of Office Centre Nieuwegein, The Netherlands. Team-oriented work.
- 2007 – 2010 Writing and submitting articles to Natuurkunde.nl, a Dutch website about physics education, aimed at high school students. Answering and explaining official country-wide physics exam questions; converting external modules to an XML structure.
- 2008 – 2010 Teaching assistance for various BSc courses in Computer Science, Utrecht University, The Netherlands.
- 2008/2009: Mathematical techniques for computer science (INFOWIS)
  - 2008/2009 and 2009/2010: Data structures (INFODS)
  - 2009/2010: Statistics (INFOSTAT)
  - 2009/2010: Logic and set theory (INFOLV)
- 2009 – 2010 Development of a web-based quiz game “Vragen rond het Veen”, as promotional material for the BSc Information Science programme, Utrecht University, The Netherlands. Combination of HTML, CSS, JavaScript and graphic design in an interactive website.
- 01/2011 – 08/2011 Internship at Incontrol Simulation Solutions (incontrolsim.com), Utrecht, The Netherlands. Combined with MSc thesis project.
- Development of new algorithms for a multi-layered navigation mesh and density-based crowd simulation.  
Implementation of MSc thesis concepts in C++; integration with Incontrol’s pedestrian simulation tool, *Pedestrian Dynamics*.
- 2011 – 2014 Development of *Stample*, a location-based Android app in which users collect virtual stamps by visiting interesting locations in the Netherlands. Website: [stample.orangegearsinteractive.com](http://stample.orangegearsinteractive.com).
- I have worked on this app one day per week, next to my PhD on which I spent four days per week. The app launched in the Dutch Google Play Store on April 24, 2014. We have published the app under the (then unofficial) company name *Orange Gears*.
- Involved skills: native Android programming (Java), logo/UI design, creating stylized artwork of locations.

- 2012 – 2013      Freelance artist for Briquid, a puzzle game for tablets.  
The game was released by publisher Gamious BV in February 2013.  
Website: [www.briquid.com](http://www.briquid.com).
- 02/2012 – 04/2012      Continued development on *Pedestrian Dynamics* at Incontrol, Utrecht.
- 07/2012 – 09/2016      PhD student at Utrecht University, Department of Information and Computing Sciences, *Games and Virtual Worlds* group.
- I have written several publications, and I have given presentations at national and international scientific conferences. See “Scientific publications” for an overview.
- An important part of my PhD track was the extension of the crowd simulation software from my MSc thesis project.
- I have defended my PhD thesis, titled *Navigation for Characters and Crowd in Complex Virtual Environments*, on March 30, 2017.
- Supervisor (“promotor”): prof. dr. Marc J. van Kreveld.  
Daily supervisor (“co-promotor”): dr. Roland Geraerts.
- During my PhD, I have co-supervised several MSc student projects together with my own daily supervisor.
- I have also fulfilled the following other education duties:
- 2013/2014 and 2014/2015: Algorithmics (INFOAL), exercise sessions (“werkcolleges”).
  - 2013/2014, 2014/2015 and 2015/2016: Logic for computer sciences (INFOB1LI), exercise sessions.
  - 2015/2016: Geometric algorithms (INFOGA), homework assignments.
  - Yearly: Path planning (INFOMPAP), workshops and seminars.
- I have worked as a PhD students four days per week (0.8 fte); I have used the other 0.2 fte for personal projects with Orange Gears (see next page).
- 01/2016 – 02/2017      Scientific programmer (ICT Developer) at Utrecht University, as part of a government-funded STW Demonstrator project.
- In this project, I have continued working on the crowd simulation software from my PhD track. The goal of the project is to build a “market-ready” version of the software that can be integrated into the software of other companies, e.g. for gaming or safety/security purposes.

01/2014 – heden

Co-founder of *Orange Gears*, together with former fellow student Jeroen van Knotsenburg. Website: [www.orangegears.nl](http://www.orangegears.nl). We work as Orange Gears one day per week, next to our 4-day regular jobs.

Projects:

- An app for the *Beter Afrikaans* website, which offers daily tests about (and in) the Afrikaans language. Developed in Appcelerator (Javascript, XML) with a server side in PHP and MySQL. I have designed logos and other visual elements using CorelDRAW and Photoshop.

We have published the app for Android and iOS in 2015.

- Apps for Beter Spellen ([www.beterspellen.nl](http://www.beterspellen.nl)), Beter Rekenen, NU Beter Engels, NU Beter Duits, NU Beter Frans, and Beter Bijbel.

Dutch daily tests for various subjects. We have rebuilt the Beter Afrikaans app such that the source code is generic and re-usable for comparable websites.

The apps for Beter Spellen, Beter Rekenen, and NU Beter Engels have been published by Noordhoff Uitgevers BV (a large publisher of school books in The Netherlands) in 2016. We have published the other apps as Orange Gears in 2016/2017.

## Languages

- Fluent in Dutch (native language) and English.
- Programming languages include Java, C++, C#, Javascript, and PHP.

## Interests and hobbies

- Improvised comedy (“theatre sports”)
- Visual arts (e.g. drawing)
- Visual design (e.g. websites, logos)
- Game design and development
- Gaming
- Acting
- Piano playing

## Scientific publications (updated up to 2015)

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***Navigation Meshes for Realistic Multi-Layered Environments***

In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'11)*, 2011, pp. 3526-3532 (San Francisco, CA, USA).

Paper and oral presentation.

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***Multi-Layered Navigation Meshes***

In *ICT.OPEN 2011, ASCI track* (Veldhoven, The Netherlands)

Paper and oral presentation. Received the "Best Paper Award" of ASCI 2011.

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***Real-Time Density-Based Crowd Simulation***

In *Computer Animation and Virtual Worlds (CAVW)*, vol. 23 (1), pp. 59-69, 2012.

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***A Navigation Mesh for Dynamic Environments***

In *Computer Animation and Virtual Worlds (CAVW)*, 2012.

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***Realistic Crowd Simulation with Density-Based Path Planning***

In *ICT.OPEN 2012, ASCI track* (Rotterdam, The Netherlands)

Paper, presentation, and poster. Received the "Best Presentation Award" of ASCI 2012.

Jordi Janer, Roland Geraerts, Wouter G. van Toll, Jordi Bonada

***Talking soundscapes: Automating voice transformations for crowd simulation***

In *AES 49th International Conference on Audio for Games*, 2013.

Norman Jaklin, Wouter van Toll, Roland Geraerts

***Way to go - A framework for multi-level planning in games***

In *3rd International Planning in Games Workshop*, pp. 11-14 (in *ICAPS 2013*, Rome, Italy).

Wouter G. van Toll, Atlas F. Cook IV, Roland Geraerts

***Game-Changing: Fast Dynamic Updates in a Flexible Navigation Mesh***

In *ASCI.OPEN / ICT.OPEN 2013*.

Rudi Bonfiglioli, Wouter van Toll, Roland Geraerts

***GPGPU-Accelerated Construction of High-Resolution Generalized Voronoi Diagrams and Navigation Meshes***

In *7th International ACM SIGGRAPH Conference on Motion in Games*, pp. 25-30, 2014 (Los Angeles, CA, USA).

Wouter van Toll, Norman Jaklin, Roland Geraerts

***Towards Believable Crowds: A Generic Multi-Level Framework for Agent Navigation***

Paper, presentation, and poster in *ASCI.OPEN / ICT.OPEN 2015* (Amersfoort, The Netherlands).

Received the *Best Presentation Award* of ASCI.OPEN 2015.

Received the *Best Poster Award* of ICT.OPEN 2015 (ASCI track, imaging category).