Nicolas Van der Noot

Ph.D. Electromechanical Engineer

Born on October 11, 1990
in Brussels

Belgian nationality
Driving license B

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Career

Since 2023 **Staff engineer | Sony Depthsensing Solutions**
As a staff engineer, I lead a team of engineers in the development of cutting-edge AI software for industrial applications. This position allows me to take part in the development of our tools and products, while steering the project with other managers to meet the needs of our customers.

2019-2023 **Senior Software Engineer | Sony Depthsensing Solutions**
I developed and maintained computer vision and machine learning software applications. As a Senior Software Engineer, I was fully responsible for some of our core modules, took part in the product decision meetings and started to perform team management.

2018-2019 **R&D Software Engineer | Sony Depthsensing Solutions**
I developed and maintained computer vision and machine learning software applications.

2017 **Research assistant - Ph.D. | Université catholique de Louvain**
As a follow-up to my thesis, I performed additional research for the WALK-MAN project.

Education

2013-2017 **Ph.D. candidate - F.R.S.-FNRS Aspirant**
Joint Ph.D. thesis between UCL | Université catholique de Louvain
and EPFL | École Polytechnique Fédérale de Lausanne.

2011-2013 **Master of Science in Engineering**, electromechanical orientation (mechatronics)
UCL | Université catholique de Louvain - All years: Highest honors

2008-2011 **Bachelor of Science in Engineering**, specialization in electricity and mechanics
UCL | Université catholique de Louvain - All years: Highest honors

Experience

2013-2017 **Development of the Robotran simulation software**
In parallel to my Ph.D., I integrated the development team of Robotran, a multi-body simulation environment developed within UCL. I developed the C/C++ pipeline with real-time interactions, and implemented the 3D visualization using *OpenGL*.

2013-2017 **Student projects supervision**
On top of the research carried out during my Ph.D. thesis, I supervised the projects and practical sessions of four different courses (both at UCL and EPFL). I also organized the project of a BEST (*Board of European Students of Technology*) course. Finally, I supervised six master theses and one semester project.

2012-2013 **Erasmus exchange student in Lausanne**
EPFL | École Polytechnique Fédérale de Lausanne (Switzerland).

2011 & 2013 **Tutor in physics**
Tutoring in physics for UCL students in Bac 1.

2012 **Eurobot cup**
Participation in the 15th edition of Eurobot, an international amateur robotics contest in a team of 5 students (2nd of Belgium and participation in the European final).

Awards

2016 Second place for the **Best Conference Paper Award** at the 6th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics, for the paper *Bio-inspired balance controller for a humanoid robot* (second author).

2014 Third place at the **2014 IEEE Region 8 Student Paper Contest**, for the paper *Zero-Moment Point on a Bipedal Robot under Bio-Inspired Walking Control* (first author).

2013 **Best master thesis** in the fields of the Institute of Electrical and Electronics Engineers awarded by the UCLouvain IEEE Student Branch.

2013 Grand Prix - **Prix Pierre Decoux 2013** for the best master thesis awarded by AILouvain (Alumni Ingénieurs Louvain).

2008 **Top of the promotion** (96%) at the admission exam to the Bachelor in Engineering.

Ph.D. thesis

Title *Rich and Robust Bio-Inspired Locomotion Control for Humanoid Robots*

Description Implementation of bio-inspired controllers to achieve dynamic walking on humanoid robots, as part of the WALK-MAN project. The purpose was to obtain robust and human-like walking with biped robots, while steering their gait. This was a joint Ph.D. thesis between two institutes: UCL (within the *Center for Research in Mechatronics* laboratory) and EPFL (within the *Biorobotics* laboratory).

Languages

French Mother tongue

English Fluent (spoken & written)

Dutch Professional (spoken & written)

Computer skills

Languages C/C++, Python, C#, Matlab, Java, html, CSS, PHP, JavaScript, SQL, Latex

Tools, libraries Git, Mercurial, OpenGL, OpenCV, Qt, PyQt, SDL, TensorFlow, NNabla, CMake, conan, Unity, Unreal Engine

Personal interests

I am passionate about programming, numerical simulations, artificial intelligence, graphics computing, 3D geometry and robotics. On a non-professional note, I enjoy playing badminton and tennis, walking, running, cycling, photography, as well as playing and developing video games.

Publications

Journal

Van der Noot N, Ijspeert AJ and Ronsse R (2019) **Neuromuscular model achieving speed control and steering with a 3D bipedal walker**. Autonomous Robots, 43(6): pp. 1537–1554. DOI:10.1007/s10514-018-9814-6.

Van der Noot N, Ijspeert AJ and Ronsse R (2018) **Bio-inspired controller achieving forward speed modulation with a 3d bipedal walker**. The International Journal of Robotics Research, 37(1): pp. 168–196. DOI:10.1177/0278364917743320.

Zobova AA, Habra T, **Van der Noot N**, Dallali H, Tsagarakis NG, Fisette P and Ronsse R (2017) **Multi-physics modelling of a compliant humanoid robot**. Multibody System Dynamics, 39 (1-2), pp. 95-114. DOI: 10.1007/s11044-016-9545-4.

Conference

Van der Noot N, Ijspeert AJ and Ronsse R (2020) **Trajectory Planning of a Bio-inspired Walker in 3D Cluttered Environments using Internal Models**. In: 2020 8th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechatronics (BioRob), New York (virtual), 29 November-02 December 2020, pp. 727-733. DOI: 10.1109/BioRob49111.2020.9224461.

Greiner P, **Van der Noot N**, Ijspeert AJ and Ronsse R (2018) **Continuous Modulation of Step Height and Length in Bipedal Walking, combining Reflexes and a Central Pattern Generator**. In: 2018 7th IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), Twente, 26-29 August 2018, pp. 342-349. DOI: 10.1109/BIOROB.2018.8487799.

Harding M, **Van der Noot N**, Somers B, Ronsse R and Ijspeert AJ (2018) **Augmented Neuromuscular Gait Controller Enables Real-time Tracking of Bipedal Running Speed**. In: 2018 7th IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), Twente, 26-29 August 2018, pp. 364-371. DOI: 10.1109/BIOROB.2018.8488054.

Heremans F, **Van der Noot N**, Ijspeert AJ and Ronsse R (2016) **Bio-inspired balance controller for a humanoid robot**. In: 2016 6th IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), Singapore, 26-29 June 2016, pp. 441-448. DOI: 10.1109/BIOROB.2016.7523667.

Colasanto L, **Van der Noot N** and Ijspeert AJ (2015) **Bio-inspired walking for humanoid robots using feet with human-like compliance and neuromuscular control**. In: 2015 IEEE-RAS 15th International Conference on Humanoid Robots (Humanoids), Seoul, 3-5 Nov. 2015, pp. 26-32. DOI: 10.1109/HUMANOIDS.2015.7363518.

Van der Noot N, Colasanto L, Barrea A, van den Kieboom J, Ronsse R and Ijspeert AJ (2015) **Experimental validation of a bio-inspired controller for dynamic walking with a humanoid robot**. In: 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hamburg, Sept. 28 2015-Oct. 2 2015, pp. 393-400. DOI: 10.1109/IROS.2015.7353403.

Zobova AA, Habra T, **Van der Noot N**, Dallali H, Tsagarakis NG, Fisette P and Ronsse R (2015) **Multi-physics modelling of a compliant humanoid robot**. In: ECCOMAS Thematic Conference Multibody Dynamics 2015, Barcelona, 29 June-02 July 2015.

Van der Noot N, Ijspeert AJ and Ronsse R (2015) **Biped gait controller for large speed variations, combining reflexes and a central pattern generator in a neuromuscular model**. In: 2015 IEEE International Conference on Robotics and Automation (ICRA), Seattle, WA, 26-30 May 2015, pp. 6267-6274. DOI: 10.1109/ICRA.2015.7140079.

Van der Noot N and Barrea A (2014) **Zero-Moment Point on a bipedal robot under bio-inspired walking control**. In: MELECON 2014 - 17th IEEE Mediterranean Electrotechnical Conference, Beirut, 13-16 April 2014, pp. 85-90. DOI: 10.1109/MELCON.2014.6820512.