

jonasdegrave

Research Scientist

contact

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languages

Dutch

mother tongue

English

near-native (C2)

French

professional (C1)

German

basic (A2)

programming

I ♥ Python, C++ & C

I have **XP** with PHP,

Shell, Javascript, Java,

C#, Matlab, TeX, ASM,

Redcode, Ruby, Lua,

SQL, Delphi & Basic

platforms

Jax, Tensorflow, Linux,

Theano, Lasagne,

Apache, PostgreSQL,

Drupal, Django, CSS3,

HTML5, MPLab X

experience

2017–now **Google Deepmind** Google, London
Senior Research Scientist
Researching reinforcement learning for control. Started and lead the nuclear fusion project. Worked on using reinforcement learning algorithms such as MPO for robotics and general control applications.

education

2012–2018 **Doctor** in Computer Science Engineering Ghent University, Belgium
With a specialization in robotics and neural networks. Developing hardware, firmware and software of a compliant quadrupedal robot. Developing machine learning algorithms to teach it how to walk. Researching new approaches for adding prior information into deep learning frameworks.

2010–2012 **Masters of Science** in Electrical Engineering Ghent University, Belgium
With a specialization in information and communication technology and a focus on media and machine learning.

2011 **Masters of Science** in Informatics Institut Polytechnique de Grenoble, France
Erasmus experience in order to specialize in graphics, vision and robotics

2007–2010 **Bachelor of Science** in Electrical Engineering Ghent University, Belgium

awards

2015 – 2017 **3 times Kaggle's National Data Science Bowl** Oregon State University, USA
Awarded \$100,000 in 2015 to our team of 7 for developing the best algorithm to classify images of plankton. Awarded \$50,000 in 2016 to our team of 4 for developing the second best algorithm to measure the ventricle size in 4D MRI-data of the heart at the second Data Science Bowl. Awarded \$25,000 in 2017 to our team of 6 for developing the ninth best algorithm to predict which patient will get lung cancer from 4D MRI data at the third.

2009 **Marianne De Leenheer Prize** Ghent University, Belgium
Awarded €1,250 to promote creativity in math, for solving the "Blacksburg Middle School" problem, which was an open mathematical problem in combinatorics.

2005–2007 **7 times finalist across various science olympiads in Flanders** Brussels, Belgium
Finished 7 times among the top 15 students for the Olympiads in mathematics, chemistry, physics and geography.

interests

professional: robotics, deep learning, reinforcement learning, machine learning, control theory, big physics, software development

personal: politics, the science of cooking, board games, producing music, running

publications

I have published first author publications at Nature, Neurips and IROS and various other journals and conferences within the area of robotics and machine learning. I included a selection of my most impactful publications underneath. My h-index is 16. You may find a complete list of 30 of my publications which received citations on [Google Scholar](#).

selected publications

Magnetic control of tokamak plasmas through deep reinforcement learning

Jonas Degraeve, Federico Felici, Jonas Buchli, Michael Neunert, Brendan Tracey et al.
Nature pp. 414–419. Nature Publishing Group, 2022

Learning by playing solving sparse reward tasks from scratch

Martin Riedmiller, Roland Hafner, Thomas Lampe, Michael Neunert, Jonas Degraeve et al.
International Conference on Machine Learning, 2018

BRUNO: A Deep Recurrent Model for Exchangeable Data

Iryna Korshunova, Jonas Degraeve, Ferenc Huszar, Yarin Gal, Arthur Gretton et al.
Advances in Neural Information Processing Systems pp. 7190–7198. 2018

A Differentiable Physics Engine for Deep Learning in Robotics

Jonas Degraeve, Michiel Hermans, Joni Dambre, Francis wyffels
arXiv preprint arXiv:1611.01652. 2016

Developing an Embodied Gait on a Compliant Quadrupedal Robot

Jonas Degraeve, Ken Caluwaerts, Joni Dambre, Francis wyffels
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2015, Hamburg, Germany

invited talk

Data Science for Social Good: How the Data Science Bowl Advanced the Field of Deep Learning and Ocean Science

Jonas Degraeve
IEEE Data Science and Advanced Analytics conference (DSAA), 2015

achievements and media

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| 2022 | AI for control of nuclear fusion plasmas | United Kingdom |
| | This scientific work was featured in various media globally, such as Wired, New Scientist, CNBC, Ars Technica and many others. | |
| 2018 | Featured in 'De Morgen' as pioneer in technology | Belgium |
| | I was featured in the Flemish newspaper 'De Morgen' as one of their five pioneers in technology. | |
| 2015 | LSD Neural Net artwork | Trbovlje, Slovenia |
| | Exposition of my artwork based on artificial neural networks at the international new media festival 'Speculum Artium'. This neural network media piece was featured on Twitch, where it received critical acclaim from New Scientist, The Guardian and Der Spiegel. | |
| 2012–2014 | Co-President Pirate Party Belgium | Belgium |
| | I was co-president of the Belgian section of the Pirate Party. I led the party to the 2012 and 2014 elections. When I left, I had brought the party from not featuring in the polls, to a voting intention of 1.4%. | |