

GIDO MARTIJN VAN DE VEN

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PROFESSIONAL AFFILIATIONS

Postdoctoral Associate

KU Leuven (Belgium), Mar 2022 – now

Addressing the problem of continual learning using deep generative neural networks.

Postdoctoral Associate

Baylor College of Medicine (Houston), Oct 2017 – Feb 2022

Applying insights and experimental observations from neuroscience to state-of-the-art deep neural networks to make their performance more human-like, with special focus on continual learning.

Visiting Researcher

University of Cambridge, Oct 2018 – Feb 2022

Leading the deep learning research for a large collaborative grant from DARPA's Lifelong Learning Machines (L2M) program, with neuroscience labs at NYU and Columbia University.

EDUCATION

PhD	University of Oxford, Neuroscience Dissertation: "Reactivation and reinstatement of hippocampal assemblies" <i>National PhD Thesis Award</i> from the British Neuroscience Association	2013-2017
MSc	University of Oxford, Neuroscience <i>Sherrington Prize in Neuroscience</i> for best performance	2011-2012
MA	UC Berkeley, Statistics <i>Elizabeth Scott Memorial Award</i> for outstanding performance	2009-2011
BSc	Erasmus University Rotterdam, Econometrics Graduated <i>cum laude</i> , top of class	2005-2008

FUNDING / GRANTS / SCHOLARSHIPS (SELECTION)

MSCA Postdoctoral Fellowship – €191,760	Two-year fellowship for postdoc at the KU Leuven	2022-2024
FWO Senior Postdoctoral Fellowship – €250,000 (estimate)	Three-year fellowship for postdoc at the KU Leuven	2022-2025
DARPA's Lifelong Learning Machines (L2M) Program – \$2,904,658 (total)	"Continual Learning Across Synapses, Circuits & Brain Areas" (PI: Andreas Tolias; collaboration with NYU & Columbia), I am listed as key personnel and had an important role securing this grant	2018-2021
IBRO-ISN Research Fellowship – €35,000	One-year fellowship for postdoc at the Baylor College of Medicine	2017-2018
MRC Research Studentship – £102,674	Three-year studentship for PhD at the University of Oxford	2013-2016

TEACHING (SELECTION)

NeurIPS tutorial Prepare and present the tutorial “ Lifelong Learning Machines ”	Dec 2022
University of Pisa Guest lecture on the use of generative models for continual learning (link)	Dec 2021
NeuroMatch Academy (deep learning summer school) Prepare tutorial and give online lecture on benchmarks for continual learning (link)	Aug 2021
UC Berkeley <i>Graduate Student Instructor</i> <ul style="list-style-type: none">- STAT151B: advanced upper-division course in Machine Learning- STAT248: graduate course in Time Series Analysis Recipient of <i>Outstanding Graduate Student Instructor Award</i> (awarded to less than 10% of GSIs)	2009-2011

PUBLICATIONS (SELECTION)

- van de Ven GM**, Tuytelaars T, Tolias AS (2022), “Three types of incremental learning”, *Nature Machine Intelligence*, **4**(12): 1185-1197.
- De Lange M, **van de Ven GM**, Tuytelaars T (2022), “Continual evaluation for lifelong learning: identifying the stability gap”, *arXiv preprint*, arXiv:2205.13452.
- Kudithipudi D, Aguilar-Simon M, Babb J, Bazhenov M, Blackiston D, Bongard J, Brna A, Chakravarthi Raja S, Cheney N, ..., **van de Ven GM**, ..., Siegelmann HT (2022), “Biological underpinnings for lifelong learning machines”, *Nature Machine Intelligence*, **4**(3): 196-210.
- Li S, Du Y, **van de Ven GM**, Mordatch I (2022), “Energy-based models for continual learning”, *Proceedings of the 1st Conference on Lifelong Learning Agents (CoLLAs)*, PMLR **199**: 1-22.
- van de Ven GM**, Zhe L, Tolias AS (2021), “Class-incremental learning with generative classifiers”, *CVPR workshop on Continual Learning in Computer Vision*, p3611-3620.
- Kao TC, Jensen KT, **van de Ven GM**, Bernacchia A, Hennequin G (2021), “Natural continual learning: success is a journey, not (just) a destination”, *NeurIPS*, 34.
- Lomonaco V, Pellegrini L, Cossu A, Carta A, Graffieti G, Hayes TL, De Lange M, Masana M, Pomponi J, **van de Ven GM**, Mundt M, ..., Maltoni D (2021), “Avalanche: an end-to-end library for continual learning”, *CVPR workshop on Continual Learning in Computer Vision*, p3600-3610.
- van de Ven GM**, Siegelmann HT, Tolias AS (2020), “Brain-inspired replay for continual learning with artificial neural networks”, *Nature Communications*, **11**: 4069.
- van de Ven GM**, Tolias AS (2019), “Three scenarios for continual learning”, *NeurIPS workshop on Continual Learning*.
- van de Ven GM**, Tolias AS (2018), “Generative replay with feedback connections as a general strategy for continual learning”, *arXiv preprint*, arXiv:1809.10635.
- van de Ven GM**, Trouche S, McNamara CG, Allen K, Dupret D (2016), “Hippocampal offline reactivation consolidates recently formed cell assembly patterns during sharp wave-ripples”, *Neuron*, **92**(5): 968-974.

OPEN SCIENCE / REPRODUCIBILITY

Continual learning library: github.com/GMvandeVen/continual-learning (>1000 stars)

Contributor to Avalanche project: avalanche.continualai.org (>1000 stars)

INVITED TALKS

ContinualAI Seminar, “Class-Incremental Learning with Generative Classifiers”, 21 May 2021

Reading Group of Simons Institute (UC Berkeley), “Brain-inspired replay”, 11 Nov 2020

ContinualAI Meetup, “Robustness and Generalization in Continual Learning”, 30 Oct 2020

Cambridge Memory Meeting, “The role of replay in stabilizing memories”, 4 April 2019

PROFESSIONAL SERVICE

Peer-reviewed articles for:

- Nat Mach Intell, Nat Commun, PLoS Comp Biol, IEEE TAMPI, TMLR
- NeurIPS, ICML, ICLR, CVPR

Organizer of scientific meetings:

- Dagstuhl Seminar “[Deep Continual Learning](#)”, 19-24 March 2023, Germany
- CVPR Workshop “[Continual Learning in Computer Vision](#)”, 20 June 2022, New Orleans

REFERENCES

Prof. Tinne Tuytelaars

Postdoctoral mentor (Mar 2022 – now)

Address: ESAT-PSI – bus 02441, KU Leuven, Kasteelpark Arenberg 10, 3001 Leuven, Belgium

E-mail: tinne.tuytelaars@esat.kuleuven.be

Prof. Andreas S. Tolias

Postdoctoral mentor (Oct 2017 – Feb 2022)

Address: Dept Neuroscience, Baylor College of Medicine, 1 Baylor Pl, Houston 77030 TX, USA

E-mail: astolias@bcm.edu

Prof. David Dupret

PhD supervisor (Oct 2013 – Aug 2017)

Address: MRC Brain Network Dynamics Unit, Univ of Oxford, Mansfield Rd, OX1 3TH, UK

E-mail: david.dupret@bndu.ox.ac.uk

Prof. Máté Lengyel

Host of extended stay as visiting researcher (Oct 2018 – Feb 2022)

Address: Dept Engineering, Univ of Cambridge, Trumpington Street, CB2 1PZ, UK

E-mail: ml468@eng.cam.ac.uk