Curriculum Vitae

Victoria Laura Bosch

Current Position:	**Ph.D. student | Cognitive Computational Neuroscience** Kietzmann Lab, Machine Learning Group Institute for Cognitive Science, University of Osnabrück, Germany
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Education

Nov 2022 – Current:	Ph.D. student at the University of Osnabrück. Advisor: Prof. Dr. Tim C Kietzmann Funded by ERC project 'It's about time: Towards a dynamic account of natural vision'.
Sep 2020 – Jul 2022:	MSc. in Cognitive Computing (Artificial Intelligence). *Cum laude*. Radboud University (Donders Institute). Thesis: '*Topographic Neural Networks show neural recycling of labile units during reading acquisition*'
Sep 2016 – Jul 2020:	BSc. in Liberal Arts & Sciences (i.e., interdisciplinary studies). Major in Artificial Intelligence and minor in Philosophy. University of Utrecht. Thesis: '*A Bayesian perspective on the interaction between numerical and temporal perception*'

Other education

Sept 2023:	Participation in the Analytical Connectionism Summer School at the Gatsby Computational Neuroscience Unit, UCL, London.

Positions

2021- 2022:	Member of the Degree Programme Committe (master student representative) of the Artificial Intelligence programme, Radboud University
2019-2021:	Editor in-Chief and Board Member at De Focus, Student platform for science communication and outreach

Publications

Publications in peer-reviewed scientific journals

Bosch V. and Mecacci G (2023) Eyes on the road: brain computer interfaces and cognitive distraction in traffic. *Front. Neuroergon.* 4:1171910. doi: 10.3389/fnrgo.2023.1171910

Preprints

Lu, Z.†, Doerig, A.†, **Bosch, V.**†, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). End-to-end topographic networks as models of cortical map formation and human visual behaviour: moving beyond convolutions. *Arxiv*. Open access link: https://arxiv.org/abs/2308.09431

Peer-reviewed conference proceedings

Bosch, V., Gütlin, D., Doerig, A., Anthes, D., Thorat, S., König, P., Kietzmann, T.C. (2024). CorText: large language models for cross-modal transformations from visually evoked brain responses to text captions. *Computational Cognitive Neuroscience (CCN).*

Lu, Z.†, Doerig, **Bosch, V.**†, A.†, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). The brain can't copy-paste: End-to-end topographic neural networks as a way forward for modelling cortical map formation and behaviour. *Computational Cognitive Neuroscience (CCN).*

Bosch V., Diehl A., Smits D., Toeter A. and Kwisthout J. (2021). Implementation of a Distributed Minimum Dominating Set Approximation Algorithm in a Spiking Neural Network. *BNAIC/BeneLearn*.

Conference contributions

Talks

Implementation of a Distributed Minimum Dominating Set Approximation Algorithm in a Spiking Neural Network. **V. Bosch**, A. Diehl, D. Smits, A. Toeter and J. Kwisthout. BNAIC/BeneLearn 2021, Luxembourg.

Posters

Emergence of topographic organization in a non-convolutional deep neural network. Doerig, A., Krahmer, B., **Bosch, V.**, & Kietzmann, T.C., NVP Winter Conference on Brain and Cognition, 2021

Lu, Z.†, Doerig, A.†, **Bosch, V.**†, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). The brain can't copy-paste: End-to-end topographic neural networks as a way forward for modelling cortical map formation and behaviour. *Computational Cognitive Neuroscience Conference, Oxford.*

Lu, Z.†, Doerig, A.†, **Bosch, V.**†, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). The brain can't copy-paste: End-to-end topographic neural networks as a way forward for

modelling cortical map formation and behaviour. *Analytical Connectionism Summer School, Gatsby Unit UCL London.*

Lu, Z.†, Doerig, A.†, **Bosch, V.†**, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). The brain can't copy-paste: End-to-end topographic neural networks as a way forward for modelling cortical map formation and behaviour. *NEAT: NeuroAI Talks conference, Osnabrück.*

Lu, Z.†, Doerig, A.†, **Bosch, V.†**, Krahmer, B., Kaiser, D., Cichy, R., Kietzmann, T.C. (2023). The brain can't copy-paste: End-to-end topographic neural networks as a way forward for modelling cortical map formation and behaviour. *The Interdisciplinary Computational Cognition Conference (ComCo), Osnabrück.*

Bosch, V., Gütlin, D., Doerig, A., Anthes, D., Thorat, S., König, P., Kietzmann, T.C. (2024). CorText: large language models for cross-modal transformations from visually evoked brain responses to text captions. *Computational Cognitive Neuroscience (CCN), Boston.*

Bosch, V., Gütlin, D., Doerig, A., Anthes, D., Thorat, S., König, P., Kietzmann, T.C. (2024). CorText: large language models for cross-modal transformations from visually evoked brain responses to text captions. *NEAT: NeuroAI Talks conference, Osnabrück.*

† Equal contributions

Outreach

Bosch, V., *Het voorspellende brein: perceptie als hypotheses over de werkelijkheid* (2021). Popular science article about predictive processing at De Focus.

Invited scientific talks

Invited talk at the Predictive Processing Lab, Donders Institute, 2024. *CorText: large language models for cross-modal transformations from visually evoked brain responses to text captions.*

Teaching

Teaching assistant:

2023: *Machine Learning for Cognitive Computational Neuroscience* (advanced bachelors, masters), University of Osnabrück.

2022: *Cognitive Computational Neuroscience* (advanced bachelors), Radboud University.

Student supervision:

Thesis supervisor for bachelor and master's students at the University of Osnabrück.

Emilly Sidaine-Daumiller (BSc, 2023-2024), Stefan Balle (MSc, 2023-2024), Sabine Scholle (BSc, 2023-2024), Tara Schuchort (BSc, 2024).

Reviewing

Cognitive Computational Neuroscience

Cognitive Computational Neuroscience Proceedings

PLOS Computational Biology

Scientific Reports

Organisation

NeuroAI Talks (NEAT) at the University of Osnabrück (2024).

NeuroAI Talks (NEAT) at the University of Osnabrück (2023).

Performing Robots Conference (2019, Panel Assistant).

Technical skills

Areas of expertise: Cognitive computational neuroscience, machine learning, deep learning, interdisciplinary research, analytic philosophy.

Programming languages: Fluent in Python. Experience with R, C#, Netlogo, Javascript, HTML and Solidity.

Deep learning frameworks: PyTorch, TensorFlow, HuggingFace.

Data analysis and tools: SciPy, NumPy, Scikit-Learn, Git and LaTeX software. Experienced with a wide range of data analysis methods for neuroscience and machine learning. Experience with High Performance Computing, SLURM.

Languages: Dutch (mother tongue), English (native), German (basic), French (beginner).