



Kristijan Armeni

POSTDOCTORAL FELLOW, COGNITIVE NEUROSCIENTIST

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Summary

Researcher with 5+ years of experience working in international academic teams specializing in *neuroscience and language data analyses*. • 3+ years of experience building *artificial neural networks and language models*. • 8+ years of experience in drafting/editing *clear, concise writing* either as scientist or translator. • Co-founder of Open Science Community Nijmegen. • Passionate about open science and working open. • I value robust and transparent – yet agile – workflows in research and development. • I love (com)passion-driven collaborative teams and community-building.

Work Experience

Department of Psychological and Brain Sciences, Johns Hopkins University

Baltimore, United States

POSTDOCTORAL FELLOW

Oct. 2020 - ongoing

- implementing signal processing and machine learning pipelines for analysis of human brain electrical activity data (Python, MATLAB)
- created pipelines for deep neural network (LSTM, transformers) training and analyses (Python scientific stack, PyTorch)
- building exploratory data analyses and data visualization scripts (Jupyter Lab)
- writing and editing of final research reports; presented research findings at department and international meetings

Department of Knowledge Technologies, Jozef Stefan Institute

Ljubljana, Slovenia

VISITING RESEARCHER

July. 2022

- short-term research visit in the context of the “Working-Memory based assessment of Large Language Models” collaboration grant
- tested automating prompt generation with sequence-to-sequence models
- updated the working-memory test suite for bidirectional language models (BERT)

Donders Institute for Brain, Cognition and Behaviour

Nijmegen, The Netherlands

PHD CANDIDATE

Sep. 2016 - Sep. 2020

- built and deployed neural data analyses pipelines using the FieldTrip toolbox, MATLAB, and Python; example code: <https://github.com/KristijanArmeni/Armeni-NeuroImage-2019>
- designed, collected, and managed two large-scale datasets of brain electrical activity during story listening (> 150 GB data per set) example dataset: https://data.donders.ru.nl/collections/di/dccn/DSC_3011044.02_183?3
- presented research outcomes at international meetings (e.g. International Conference for Cognitive Neuroscience, Bernstein Conference for Computational Neuroscience)
- organized and chaired monthly interdisciplinary meetups (25+ events) on AI, cognitive neuroscience, and philosophy drawing a diverse array of international speakers at all career levels: Foundations of Cognition Series <https://www.ru.nl/fcs>

Prevajanje, Kristijan Armeni, s.p.

Ljubljana, Slovenia

TRANSLATOR AND EDITOR (SOLE-OWNERSHIP)

2015 - 2017

- translated medical texts and academic articles (Slovene to English) for professional clients in academia and healthcare industry;
- example work: Medical Ethics in Clinical Practice, Springer Nature, <https://doi.org/10.1007/978-3-030-00719-5>

Education

Donders Graduate School for Cognitive Neuroscience, Radboud University

Nijmegen, The Netherlands

PHD IN COGNITIVE NEUROSCIENCE

2016 - 2021

disseration: *On model-based neurobiology of language comprehension: Neural oscillations, processing memory, and prediction.*

Donders Graduate School for Cognitive Neuroscience, Radboud University

Nijmegen, The Netherlands

MSC IN COGNITIVE NEUROSCIENCE

2014 - 2016

thesis: *Using probabilistic language models for tracking modulations in MEG spectral power during auditory narrative comprehension.*

Faculty of Arts, University of Ljubljana

Ljubljana, Slovenia

MA IN TRANSLATION STUDIES

2011 - 2014

thesis: *Eye-tracking measures as indicators of readability in machine-translated texts.*

Publications

PEER-REVIEWED

- **Armeni K**, Honey C, Linzen T. Characterizing Verbatim Short-Term Memory in Neural Language Models. 2022. Accepted at Conference on Computational Natural Language Learning 2022. <https://doi.org/10.48550/arXiv.2210.13569>
- Heilbron M, **Armeni K**, Schoffelen JM, Hagoort P, de Lange F. 2022. A hierarchy of linguistic predictions during natural language comprehension. Proceedings of the National Academy of Sciences. <https://doi.org/10.1073/pnas.2201968119>
- **Armeni K**, Güçlü U, Van Gerven M, Schoffelen JM. 2022. A 10-hour within-participant magnetoencephalography narrative dataset to test models of language comprehension. Scientific Data. <https://doi.org/10.1038/s41597-022-01382-7>
- Armeni, K, Brinkman L, Carlsson L, ..., Zurita-Milla R. 2021. Towards wide-scale adoption of open science practices: The role of open science communities. Science and Public Policy. 48(5), 2021, 605–611. <https://doi.org/10.1093/scipol/scab039>
- **Armeni, K**, RM Willems, A van den Bosch, and JM Schoffelen. 2019. Frequency-specific brain dynamics related to prediction during language comprehension. NeuroImage 198, 283–295. <https://doi.org/10.1016/j.neuroimage.2019.04.083>
- **Armeni, K**, RM Willems, and SL Frank Dec. 2017. Probabilistic language models in cognitive neuroscience: Promises and pitfalls. Neuroscience & Biobehavioral Reviews 83, 579–588. <https://doi.org/10.1016/j.neubiorev.2017.09.001>

UPCOMING AND PAST PRESENTATIONS

- **Armeni K**, Honey C, Linzen T. Characterizing Verbatim Short-Term Memory in Neural Language Models. December 2022. [Memory in Artificial and Real Intelligence](#). [NeurIPS2022 Workshop](#).
- **Armeni K**, Honey K, Linzen T. August 2022. [A contextual encoding model for human ECoG responses to a spoken narrative](#). Conference on Cognitive Computational Neuroscience 2022.

Invited talks

Meta-research paves the way, open science communities walk the walk

SPEAKER | STANFORD METRICS SEMINAR

virtual

Oct. 2021

- presented the International Network of Open Science Communities: an international initiative to spur the adoption open science practices; whitepaper: <https://doi.org/10.1093/scipol/scab039>; recording: <https://vimeo.com/630219778>

Collaborative version control with Git and GitHub

SPEAKER | INTERNATIONAL MAX PLANCK RESEARCH SCHOOL

virtual

Nov. 2019

- designed and ran a standalone 3-hour hands-on workshop on the basics of version control with Git and GitHub
- repository with workshop materials: <https://doi.org/10.17605/OSF.IO/ZVKYX>; video recording: <https://vimeo.com/688652849>

Honors & Awards

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| 2022 | Grant , Working-memory based assessment of large language models | Slovenia, U.S.A |
| 2016 | Finalist , Donders Institute Top Talent Research Grant | The Netherlands |
| 2016 | Finalist , International Max-Planck Research School Fellowship | The Netherlands |
| 2014 | Award , Prešern Faculty Award for outstanding MA thesis | Slovenia |

Mentoring

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| 2022 | Gabriel Kressin Palacios , Working Memory for Sentences in Transformer Language Models (BSc) | JHU, FU Berlin |
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Program Committees

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| 2020 | Program Committee Member , National Open Science Festival: https://opensciencefestival.nl | The Netherlands |
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Volunteering and Service

VTIS Data Science Group (Association of Slovenians Educated Abroad)

LEADER | [HTTPS://WWW.DRUSTVOVTIS.SI/](https://www.drustvovtis.si/)

virtual

Feb. 2022 - ongoing

- organizing virtual monthly data science meetups and events
- managing an online community of approximately 80 members

eSinapsa – online magazine of the Slovenian Neuroscience Association

Ljubljana, Slovenia

EDITOR | [HTTPS://WWW.SINAPSA.ORG/ESINAPSA](https://www.sinapsa.org/esinapsa)

Sep. 2016 - ongoing

- making editorial decisions on submitted articles (1-2/month)
- providing critical feedback to authors and reviewers, ensuring that published work meets minimal required scientific standards

Open Science Community Nijmegen

Nijmegen, the Netherlands

CO-FOUNDER | [WWW.OPENSOURCE-NIJMEGEN.NL](http://www.openscience-nijmegen.nl)

Jan. 2019 - Aug. 2020

- organized a community devoted to developing scientific practices that ensure transparency, rigour, and reproducibility of research work
- lead and chaired monthly organizing committee meetings (5-10 members), set-up and maintained the website, edited monthly, cross-faculty newsletters (200+ subscribers)

Writing

The Embodied Mind (book translation)

Ljubljana, Slovenia

TRANSLATOR | [HTTP://WWW.ZALOZBAKRTINA.SI/INDEX.PHP?PAGE=KNJIGA&KID=387](http://www.zalozbakrtina.si/index.php?page=knjiga&kid=387)

Sep 2016 - Sep. 2017

- upon its anniversary edition by the MIT Press, translated the 300-page cognitive science classic from English to Slovene (Krtina Press: ISBN 978-961-260-111-9)

Skills

Scientific Computing Python scientific stack, PyTorch, Scikit-Learn, MATLAB, Git/GitHub, Jupyter Lab, Rmarkdown, bash, \LaTeX

MLOps High-performance computing clusters (slurm), Weights and Biases

Languages Slovenian (first language), English (fluent), French (fluent)