Miloš Stanojević

Senior Research Scientist at Google DeepMind

Research Interests

- Syntactic Parsing
- Formal Language Universals
- Incremental Sentence Processing
- Unsupervised Learning
- Machine Translation

Work Experience

Nov 2021 – now	**Senior Research Scientist** ***Google DeepMind*** Language Team, London, UK
Nov 2017 – Oct 2021	**Research Associate** ***University of Edinburgh*** with Prof. Mark Steedman School of Informatics, Edinburgh, UK
July 2017 – Oct 2017	**Internship** ***Nuance Communications (now part of Microsoft)*** with Prof. Edward Stabler Natural Language and AI group, Sunnyvale, US

Education

2013 – 2017	**Ph.D. Natural Language Processing** ***University of Amsterdam, Netherlands*** topic: Permutation Forests for Modeling Word Order in MT supervised by Prof. Khalil Sima'an and Dr. Wilker Aziz
2011 – 2013	**Mgr. Mathematical Linguistics** ***Charles University in Prague, Czechia***
2010 – 2011	**M.Sc. Human Language Science and Technology** ***University of Malta, Malta***
2006 – 2010	**B.Sc. Electrical Engineering** ***University of Niš, Serbia***

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PUBLICATIONS

EMNLP System Demonstrations 2023
SynJax: Structured Probability Distributions for JAX
Empirical Methods in Natural Language Processing System Demonstration
Miloš Stanojević and Laurent Sartran

Cognitive Science *journal* 2023
Modeling structure-building in the brain with CCG parsing and large language models
Cognitive Science — journal
Miloš Stanojević, Jonathan Brennan**,** Donald Dunagan, Mark Steedman, John Hale

Neurobiology of Language *journal* 2023
Neural correlates of long-distance dependencies in Chinese and English
Neurobiology of Language — journal
Donald Dunagan, **Miloš Stanojević**, Maximin Coavoux, Shulin Zhang, Shohini Bhattasali, Jixing Li, Jonathan Brennan, John Hale

EMNLP 2022
Unbiased and Efficient Sampling of Dependency Trees
Conference on Empirical Methods in Natural Language Processing
Miloš Stanojević

TACL *journal* 2022
Transformer Grammars: Augmenting Transformer Language Models with Syntactic Inductive Biases at Scale
Transactions of the Association for Computational Linguistics — journal
Laurent Sartran, Samuel Barrett, Adhiguna Kuncoro,
Miloš Stanojević, Phil Blunsom, Chris Dyer

Computational Linguistics *journal* 2021
Formal Basis of a Language Universal
Computational Linguistics — journal
Miloš Stanojević and Mark Steedman

EMNLP 2021
A Root of a Problem: Optimizing Single-Root Dependency Parsing
Conference on Empirical Methods in Natural Language Processing
Miloš Stanojević and Shay B. Cohen

IWCS 2021
Computing All Quantifier Scopes with CCG
International Conference on Computational Semantics
Miloš Stanojević and Mark Steedman

CMCL 2021
Modeling incremental language comprehension in the brain with Combinatory Categorial Grammar
Workshop on Cognitive Modeling and Computational Linguistics
Miloš Stanojević, Shohini Bhattasali, Donald Dunagan, Luca Campanelli, Mark Steedman, Jonathan Brennan, John Hale

CASE 2021
Modality and Negation in Event Extraction

Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text
Sander Bijl de Vroe, Liane Guillou, **Miloš Stanojević**, Nick McKenna and Mark Steedman

ACL 2020 **Max-Margin Incremental CCG Parsing**
Annual Meeting of the Association for Computational Linguistics
Miloš Stanojević and Mark Steedman

IWPT 2020 **Span-Based LCFRS-2 Parsing**
The 16th International Conference on Parsing Technologies
Miloš Stanojević and Mark Steedman

CUNY 2020 **Predictive Processing of Coordination in CCG**
CUNY Human Sentence Processing Conference
Miloš Stanojević, John Hale and Mark Steedman

ACL 2019 **Wide-Coverage Neural A* Parsing for Minimalist Grammars**
Annual Meeting of the Association for Computational Linguistics
John Torr, **Miloš Stanojević**, Mark Steedman and Shay B. Cohen

FG 2019 **On the Computational Complexity of Head Movement and Affix Hopping**
Conference on Formal Grammar
Miloš Stanojević

NAACL 2019 **CCG Parsing Algorithm with Incremental Tree Rotation**
Conference of the North American Chapter of the Association for Computational Linguistics
Miloš Stanojević and Mark Steedman

CMCL 2019 **The active-filler strategy in a move-eager left-corner Minimalist Grammar parser**
Workshop on Cognitive Modeling and Computational Linguistics
Tim Hunter, **Miloš Stanojević** and Edward Stabler

CogACLL 2018 **A Sound and Complete Left-Corner Parsing for Minimalist Grammars**
Workshop on Cognitive Aspects of Computational Language Learning and Processing
Miloš Stanojević and Edward Stabler

PROPOR 2018 **SICK-BR: a Portuguese corpus for inference**
International Conference on Computational Processing of the Portuguese Language
Livy Real, Ana Rodrigues, Andressa Vieira e Silva, Beatriz Albiero, Bruna Thalenberg, Bruno Guide, Cindy Silva, Guilherme de Oliveira Lima, Igor CS Câmara, **Miloš Stanojević**, Rodrigo Souza, Valeria de Paiva

PhD Thesis 2017 **Permutation Forests for Modeling Word Order in Machine Translation**
University of Amsterdam 2017
Miloš Stanojević

EMNLP 2017 **Neural Discontinuous Constituency Parsing**
Conference on Empirical Methods in Natural Language Processing
Miloš Stanojević and Raquel G. Alhama

ACL 2017 short paper **Alternative Objective Functions for Training MT Evaluation Metrics**
Annual Meeting of the Association for Computational Linguistics
Miloš Stanojević and Khalil Sima'an

LACL 2016 **Minimalist Grammar Transition-Based Parsing**
Logical Aspects of Computational Linguistics
Miloš Stanojević

COLING 2016 **Hierarchical Permutation Complexity for Word Order Evaluation**
International Conference on Computational Linguistics
Miloš Stanojević and Khalil Sima'an

COLING 2016 **Universal Reordering via Linguistic Typology**
International Conference on Computational Linguistics
Joachim Daiber, **Miloš Stanojević** and Khalil Sima'an

WMT 2016 **Examining the Relationship between Preordering and Word Order Freedom in Machine Translation**
Conference on Machine Translation
Joachim Daiber, **Miloš Stanojević**, Wilker Aziz and Khalil Sima'an

WMT 2016 **Results of the WMT16 Metrics Shared Task**
Conference on Machine Translation
Ondřej Bojar, Yvette Graham, Amir Kamran and **Miloš Stanojević**

WMT 2016 **Results of the WMT16 Tuning Shared Task**
Conference on Machine Translation
Bushra Jawaid, Amir Kamran, **Miloš Stanojević** and Ondřej Bojar

EMNLP 2015 **Reordering Grammar Induction**
Conference on Empirical Methods in Natural Language Processing
Miloš Stanojević and Khalil Sima'an

PBML 2015 **Evaluating MT systems with BEER**
The Prague Bulletin of Mathematical Linguistics
Miloš Stanojević and Khalil Sima'an

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WMT 2015	**BEER 1.1: ILLC UvA submission to metrics and tuning task** *Workshop on Machine Translation* **Miloš Stanojević** and Khalil Sima'an
WMT 2015	**Results of the WMT15 Metrics Shared Task** *Workshop on Machine Translation* **Miloš Stanojević**, Amir Kamran, Philipp Koehn and Ondřej Bojar
WMT 2015	**Results of the WMT15 Tuning Shared Task** *Workshop on Machine Translation* **Miloš Stanojević**, Amir Kamran and Ondřej Bojar
SSST 2014	**Evaluating Word Order Recursively over Permutation-Forests** *Workshop on Syntax, Semantics and Structure in Statistical Translation* **Miloš Stanojević** and Khalil Sima'an
WMT 2014	**BEER: BEtter Evaluation as Ranking** *Workshop on Machine Translation* **Miloš Stanojević** and Khalil Sima'an
EMNLP 2014 short paper	**Fitting Sentence Level Translation Evaluation with Many Dense Features** *Conference on Empirical Methods in Natural Language Processing* **Miloš Stanojević** and Khalil Sima'an
WMT 2012	**Selecting data for English-to-Czech machine translation** *Workshop on Machine Translation* Aleš Tamchyna, Petra Galuščáková, Amir Kamran, **Miloš Stanojević**, Ondřej Bojar

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Contributions to the community

Reviewing for conferences:	ACL, NAACL, EMNLP, CoNLL, AAAI
Reviewing for journals:	TACL, CL, NLE, LREC, MT, LM
Organizing shared tasks:	Workshop on Machine Translation - Metrics task in 2015 and 2016
	Workshop on Machine Translation - Tuning task in 2015 and 2016

Supervision and Mentorship

2022 ***DeepMind*** ***scholar mentor***	Mukhtar Mohamed – now MSc student at University of Edinburgh **Part of DeepMind's scholars programme.**
2021 ***University of Edinburgh*** ***MSc thesis*** ***main supervisor***	Seth Aycock – now PhD student at University of Amsterdam **Target-side CCG Supertag Prediction Improves Machine Translation**
2019 ***University of Edinburgh*** ***BSc project*** ***main supervisor***	Chiehmin Wei – now MSc student at Cornell **Zero-Shot and Universal Parsing with Multilingual Contextualized Embeddings**
2018 – 2019 ***University of Edinburgh*** ***PhD thesis*** ***co-supervisor***	John Torr – now RS at Apple Research, Cambridge **Wide-Coverage Statistical Parsing with Minimalist Grammars**

Teaching

2012/2013 summer *University of Amsterdam*	TA **Statistical Structure in NLP**
2013/2014 winter *University of Amsterdam*	TA **Elements of Language Processing**
2014/2015 summer *University of Amsterdam*	TA project course on **Monte Carlo Inference for PCFG**
2015/2016 summer *University of Amsterdam*	TA **Natural Language Processing 2**
2016/2017 summer *University of Amsterdam*	TA **Natural Language Processing 2**

Invited Talks

University of Cambridge *Cambridge, UK, 2023*	**The role of syntax in the world of large language models**
UCL *London, UK, 2023*	**What is the relation of Syntactic Parsing, Language Universals, Brain Activity and Large Language Models?**
ETH Zürich Zürich, Switzerland, 2022	**Testing Syntactic Theory on all Marr's Levels of Analysis**
Mathematics of Language Montpellier, France, 2021	**CCG Combinators in Incremental Processing, Brain Activity and Linguistic Universals**
DeepMind London, UK, 2021	**Integrating Deep Learning with Deep Syntax**
Nuance NL & AI lab Sunnyvale, USA, 2017	**Learning Reordering Grammars**
Rich Parsing Workshop Amsterdam, 2016	**Minimalist Grammar Transition-Based Parsing**
MT Marathon Prague, Czechia, 2015	**Discriminative Training for Statistical Machine Translation**

Scholarships

2010 - 2012	**Erasmus Mundus scholarship**
2004 - 2010	**Scholarship from the Ministry of Science and Technological Development of Serbia** awarded for taking part in international mathematical competitions
2002 - 2004	**Scholarship from the Ministry of Education of Serbia** awarded for taking part in international mathematical competition