

# MILOŠ STANOJEVIĆ

SENIOR RESEARCH SCIENTIST AT GOOGLE DEEPMIND

## RESEARCH INTERESTS

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- Natural Language Processing (MT and Parsing)
- Structured Prediction
- Deep Learning
- Formal Syntax and Semantics
- Unsupervised Learning

## WORK EXPERIENCE

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- 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

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- 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, Czech Republic*
- 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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- arXiv 2022**      [Modeling neural structure-building with CCG parsing and large language models](#)  
*arXiv*  
Jonathan Brennan\*, **Miloš Stanojević\***, Donald Dunagan, Mark Steedman, John Hale  
\*co-first authors
- bioRxiv 2022**      [Long-distance linguistic dependencies in Chinese and English brains](#)  
*bioRxiv*  
Donald Dunagan, **Miloš Stanojević**, Maximin Coavoux, Shulin Zhang, Shohini Bhattachali, 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 2022**      [Transformer Grammars: Augmenting Transformer Language Models with Syntactic Inductive Biases at Scale](#)  
*Transactions of the Association for Computational Linguistics*  
Laurent Sartran, Samuel Barrett, Adhiguna Kuncoro, **Miloš Stanojević**, Phil Blunsom, Chris Dyer
- 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
- CL journal 2021**      [Formal Basis of a Language Universal](#)  
*Computational Linguistics Journal*  
**Miloš Stanojević** and Mark Steedman
- 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 Categorical Grammar](#)  
*Workshop on Cognitive Modeling and Computational Linguistics*  
**Miloš Stanojević**, Shohini Bhattachali, 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

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

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#### CONTRIBUTIONS TO COMMUNITY

Reviewing for conferences: ACL, NAACL, EMNLP, CoNLL, AACL

Reviewing for journals: TACL, CL, NLE, LREC, MT, LM

Organizing shared tasks: WMT Metrics and WMT Tuning tasks in 2015 and 2016

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#### SUPERVISION

2021 University of Edinburgh MSc thesis main supervisor	Seth Aycock <a href="#"><b>Target-side CCG Supertag Prediction Improves Machine Translation</b></a>
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2019  
*University of Edinburgh*  
*BSc project*  
*main supervisor*

Chiehmin Wei – accepted for PhD studies at Cornell  
**Zero-Shot and Universal Parsing with Multilingual  
Contextualized Embeddings**

2018 – 2019  
*University of Edinburgh*  
*PhD thesis*  
*co-supervised*

John Torr – accepted at Apple Research, Cambridge  
**Wide-Coverage Statistical Parsing with Minimalist Grammars**

## TEACHING

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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

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*ETH Zürich*  
Zürich, 2022

**CCG on all levels of analysis: Linguistic Universals,  
Incremental Processing and Brain Activity**

*Mathematics of Language*  
Montpellier, 2021

**CCG Combinators in Incremental Processing, Brain Activity  
and Linguistic Universals**

*DeepMind*  
London, 2021

**Integrating Deep Learning with Deep Syntax**

*Nuance NL & AI lab*  
Sunnyvale, 2017

**Learning Reordering Grammars**

*Rich Parsing Workshop*  
Amsterdam, 2016

**Minimalist Grammar Transition-Based Parsing**

*MT Marathon*  
Prague, 2015

**Discriminative Training for Statistical Machine Translation**

## SCHOLARSHIPS

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

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