

# Nikolaos Pappas

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## Contact information

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## Employment history

- 7.2021–Present **Amazon**, *Applied Scientist*, AWS AI Human Language Technology group, Seattle, USA.  
2019–2021 **University of Washington**, *Postdoctoral Researcher*, Noah's ARK NLP group, Seattle, USA.  
2016–2019 **Idiap Research Institute**, *Postdoctoral Researcher*, NLP group, Martigny, Switzerland.  
2012–2016 **EPFL & Idiap Research Institute**, *Research Assistant*, NLP group, Martigny, Switzerland.  
7–12.2014 **Columbia University**, *Visiting Scholar*, DVMM lab, New York, USA.  
2009–2011 **I-Sieve Technologies**, *Software Engineer*, Athens, Greece.  
2007–2011 **Endysis Group**, *Software Engineer*, Athens, Greece.  
3–7.2007 **Optimor Labs**, *Software Developer*, Oxford, England.

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## Education

- 2016 **Ecole Polytechnique Fédérale de Lausanne (EPFL)**, *Lausanne, Switzerland*.  
*Ph.D. Electrical Engineering*  
Thesis Learning explainable user sentiment and preferences for information filtering  
Committee Sabine Süsstrunk, Thomas Hofmann, Shih-Fu Chang, Jean-Cédric Chappelier  
Advisor Andrei Popescu-Belis, Hervé Bourlard  
2011 **University of the Aegean**, Samos, Greece.  
*M.Sc. Information Management*  
2009 **University of the Aegean**, Samos, Greece.  
*Dipl. Eng. Information and Communication Systems*

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## Awards & Honors

- 2018 **Two-year postdoc fellowship to be hosted at the University of Washington**.  
*Swiss National Science Foundation*  
2017 **Best paper award "Multilingual Hierarchical Attention Networks for Document Classification"**.  
*8th International Joint Conference on Natural Language Processing, 2017*  
2016 **Best multimodal paper award "Multilingual Visual Sentiment Concept Matching"**.  
*ACM International Conference on Multimedia Retrieval, 2016*  
2015 **Best paper award "Adaptive Sentiment-aware One-Class Collaborative Filtering"**.  
*Idiap Research Institute*  
2013 **Ranked first on video hyperlinking task with Idiap's NLP group**.  
*MediaEval, ACM MM Conference 2013*  
2010 **Award for top graduates of Greek Polytechnic Schools (2009 – 2010)**.  
*TEE (Technical Chamber of Greece)*  
2006 **Scholarship for the third academic year (ranked 1st)**.  
*IKY (Greek State Scholarships Foundation)*  
2004 **Scholarship for the first academic year (ranked 2nd)**.

*IKY* (Greek State Scholarships Foundation)

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## Research funding

- 2019 **Swiss National Science Foundation**, 2 years, Applicant, Switzerland.  
UNISON, <http://p3.snf.ch/project-183911>.  
**Swiss National Science Foundation**, 6 months, Member, Switzerland.  
INTREPID, <http://p3.snf.ch/Project-180320>.
- 2018 **Intelligence Advanced Research Projects Activity (IARPA)**, 3 months, Member, USA.  
MATERIAL, <http://summa-project.eu/>.
- 2016 **European Union (Horizon 2020)**, 3 years, Member, Switzerland.  
SUMMA, <http://summa-project.eu/>.
- 2015 **TheArk Foundation**, 6 months, Member, Switzerland.  
HYBRID, <https://www.theark.ch/en/>.
- 2014 **Swiss National Science Foundation**, 1 month, Member, Switzerland.  
AROLEs, <http://p3.snf.ch/Project-144627>.
- 2012 **European Union (FP7-ICT)**, 4 years, Member, Switzerland.  
InEvent, <https://www.inevent-project.eu/>.

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## Teaching

### **Ecole Polytechnique Fédérale de Lausanne (EPFL)**

- 2016 EE-724 – Human Language Technology: Applications to Information Access  
4 guest lectures.
- 2012 EE-724 – Human Language Technology: Applications to Information Access  
1 guest lecture.

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## Mentoring

### **University of Washington**

- 2020 Daniel Zhu – UW CSE BS student, 01/2021 – present.  
Stephen Wu – UW CSE BS student, 02/2019 – present.  
Sean Hung – UW CSE BS student, 10/2020 – 12/2020.
- 2019 Xuhui Zhou – UW CLMS MS student, 10/2019 – 06/2020.  
Ivan Montero – UW CSE BS student, 10/2019 – present.

### **Ecole Polytechnique Fédérale de Lausanne (EPFL)**

- 2017 Khalil Mrini – EPFL CS MS student, 03/2017 – 09/2017.  
Jonathan Pilault – Idiap intern, 03/2017 – 09/2017.

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## Academic Service

- NLP **EMNLP**, *Conference on Empirical Methods on Natural Language Processing*, 2017-2021.  
**ACL**, *Annual Meeting of the Association for Computational Linguistics*, 2017, 2019-2021.  
**NAACL-HLT**, *Annual Conference of the North American Chapter of the Association for Computational Linguistics*, 2018-2021.  
**AACL-IJCNLP**, *Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 9th International Joint Conference on Natural Language Processing*, 2020.  
**ACL RR**, *ACL Rolling Reviews*, 2021.  
**TACL**, *Transactions of the Association for Computational Linguistics*, 2021.  
**COLING**, *International Conference on Computational Linguistics*, 2016, 2020.  
**LREC**, *Language Resources and Evaluation Conference*, 2018, 2020.

ML/Other **ICML**, *International Conference on Machine Learning*, 2020-2021.  
**ICLR**, *International Conference on Learning Representations*, 2021-2022.  
**NeurIPS**, *Conference on Neural Information Processing Systems*, 2021.  
**AAAI**, *Conference on Artificial Intelligence*, 2020-2022.  
**IJCAI**, *International Joint Conference on Artificial Intelligence*, 2021.  
**ICMR**, *International Conference on Multimedia Retrieval*, 2017-2019.  
**MM**, *ACM Multimedia*, 2017-2018.

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## Talks & Lectures

- 2021 **Large-context and efficient models of language**  
Pindrop, Online.
- 2020 **Grounded Compositional Outputs for Adaptive Language Modeling**  
EMNLP conference, Online.
- 2019 **Deep Residual Output Layers for Neural Language Generation**  
ICML Conference, Long Beach, CA, USA.
- 2018 **Basics and Modern Methods for Natural Language Processing**  
UnternehmerTUM, Munich, Germany.
- 2017 **Multilingual Hierarchical Attention Networks for Document Classification**  
IJCNLP conference, Tapei, Taiwan.  
**Labeling Text in Several Languages with Multilingual Hierarchical Attention Networks**, Swisstext, Zurich, Switzerland.
- 2016 **Deep Learning for NLP: Multilingual Word Sequence Modeling**  
EE-724 EPFL, Lausanne, Switzerland.  
**Human versus Machine Attention in Document Classification: A Dataset with Crowdsourced Annotation**, EMNLP conference, Austin, Texas.  
**Deep Learning for NLP: Word Representation Learning**  
EE-724 EPFL, Lausanne, Switzerland.  
**Explicit Document Modeling using Multiple-Instance Learning**  
Data Science group at Swisscom, Lausanne, Switzerland.  
**Labeling Text in Several Languages with Multilingual Hierarchical Attention Networks**, Swisstext, Zurich, Switzerland.
- 2015 **Weighted Multiple Instance Learning for Text Regression Tasks**  
Swiss Machine Learning Days, Lausanne Switzerland.
- 2013 **Learning Aspects and Ratings with Multiple-Instance Regression from Text**  
Swiss Machine Learning Days, Lausanne Switzerland.  
**Combining Content with User Preferences for TED Lecture Recommendation**  
CBMI conference, Veszprém, Hungary.
- 2012 **Intoduction to Recommender Systems**  
EE-724 EPFL, Lausanne, Switzerland.

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## Journal publications

### Resulting from Postdoctoral time

- 2019 [6] Nikolaos Pappas, James Henderson, “GILE: A Generalized Input-Label Embedding for Text Classification”, In *Transactions of the Association for Computational Linguistics* (TACL), 2019. URL <https://arxiv.org/pdf/1806.06219.pdf>.

2018 [5] Xiao Pu, Nikolaos Pappas, James Henderson, Andrei Popescu-Belis, “Integrating Weakly Supervised Word Disambiguation into Neural Machine Translation”, In *Transactions of the Association for Computational Linguistics* (TACL), 2018. URL <https://arxiv.org/pdf/1810.02614.pdf>.

2017 [4] Nikolaos Pappas, Andrei Popescu-Belis, “Explicit Document Modeling through Weighted Multiple-Instance Learning”, *Journal of Artificial Intelligence Research* (JAIR), pages 591–626, 2017. URL <https://jair.org/index.php/jair/article/view/11051/26228>.

#### Resulting from PhD time

2017 [3] Nikolaos Pappas, Mercan Topkara, Miriam Redi, Hongyi Liu, Brendan Jou, Tao Chen, Shih-Fu Chang, “Multilingual Visual Sentiment Concept Clustering and Analysis”, *International Journal of Multimedia Information Retrieval* (IJMIR), pages 1–20, 2017. URL <https://link.springer.com/article/10.1007/s13735-017-0120-4>.

2016 [2] Nikolaos Pappas, Andrei Popescu-Belis, “Adaptive Sentiment-Aware One-Class Collaborative Filtering”, *Expert Systems with Applications* (ESWA), 43(1): 23–41, 2016. URL <https://www.sciencedirect.com/science/article/pii/S0957417415005916>.

2015 [1] Nikolaos Pappas, Andrei Popescu-Belis, “Combining Content with User Preferences for Non-Fiction Multimedia Recommendation: A Study on TED Lectures”, *Multimedia Tools and Applications, Special Issue on Content-Based Multimedia Indexing* (MTAP), 74(4): 1175–1197, 2015. URL <https://link.springer.com/article/10.1007/s11042-013-1840-y>.

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## Conference and workshop publications

#### Resulting from Postdoctoral time

2021 [24] Ivan Montero, Nikolaos Pappas, Noah A. Smith, “Sentence Bottleneck Autoencoders from Pretrained Transformer Models”, In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2021. URL <https://arxiv.org/pdf/2109.00055.pdf>.

[23] Jungo Kasai, Hao Peng, Yizhe Zhang, Dani Yogatama, Gabriel Ilharco, Nikolaos Pappas, Yi Mao, Weizhu Chen, Noah A. Smith, “Finetuning Pretrained Transformers into RNNs”, In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2021. URL <https://arxiv.org/pdf/2103.13076.pdf>.

[22] Hao Peng, Nikolaos Pappas, Dani Yogatama, Roy Schwartz, Noah Smith, Lingpeng Kong, “Random Feature Attention”, In *Proceedings of the International Conference on Learning Representations* (ICLR), 2021. URL <https://openreview.net/pdf?id=QtTKTdVrFBB>.

[21] Jungo Kasai, Nikolaos Pappas, Hao Peng, James Cross, Noah Smith, “Deep Encoder, Shallow Decoder: Reevaluating Non-autoregressive Machine Translation”, In *Proceedings of the International Conference on Learning Representations* (ICLR), 2021. URL <https://openreview.net/pdf?id=KpfasTaLUpq>.

2020 [20] Nikolaos Pappas, Phoebe Mulcaire, Noah A. Smith “Grounded Compositional Outputs for Adaptive Language Modeling”, In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2020.

[19] Xuhui Zhou, Nikolaos Pappas, Noah A. Smith “Multilevel Text Alignment with Cross-Document attention”, In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2020.

[18] Florian Mai, Nikolaos Pappas, Ivan Montero, Noah A. Smith, James Henderson “Plug and Play Autoencoders for Conditional Text Generation”, In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2020.

[17] Angelos Katharopoulos, Apoorv Vyas, Nikolaos Pappas, Francois Fleuret, “Transformers are RNNs: Fast Autoregressive Transformers with Linear Attention”, In *Proceedings of the 37th International Conference on Machine Learning* (ICML), Vienna, Austria, 2020. URL <https://arxiv.org/pdf/2006.16236.pdf>.

- 2019 [16] Nikolaos Pappas, James Henderson, “Deep Residual Output Layers for Neural Language Generation”, In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, Long Beach, California, 2019. URL [http://publications.idiap.ch/downloads/papers/2019/Pappas\\_ICML\\_2019.pdf](http://publications.idiap.ch/downloads/papers/2019/Pappas_ICML_2019.pdf).
- 2018 [15] Lesly Miculicich Werlen, Dhananjay Ram, Nikolaos Pappas, James Henderson, “Document-Level Neural Machine Translation with Hierarchical Attention Networks”, In *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Brussels, Belgium, 2018. URL [http://publications.idiap.ch/downloads/papers/2018/Miculicich\\_EMNLP\\_2018.pdf](http://publications.idiap.ch/downloads/papers/2018/Miculicich_EMNLP_2018.pdf).
- [14] Nikolaos Pappas, Lesly Miculicich Werlen, James Henderson, “Beyond Weight Tying: Learning Joint Input-Output Embeddings for Neural Machine Translation”, In *Proceedings of the 2018 Third Conference on Machine Translation (WMT)*, Brussels, Belgium, 2018. URL [http://publications.idiap.ch/downloads/papers/2018/Pappas\\_WMT\\_2018.pdf](http://publications.idiap.ch/downloads/papers/2018/Pappas_WMT_2018.pdf).
- [13] Lesly Miculicich Werlen, Nikolaos Pappas, Dhananjay Ram, Andrei Popescu-Belis, “Self-attentive Residual Decoder for Neural Machine Translation”, In *Proceedings of the 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL)*, pages 1366–1379, New Orleans, USA, 2018. URL <http://aclweb.org/anthology/N18-1124>.
- 2017 [12] Nikolaos Pappas, Andrei Popescu-Belis, “Multilingual Hierarchical Attention Networks for Document Classification”, In *8th International Joint Conference on Natural Language Processing (IJCNLP)*, pages 1015–1025, Tapei, Taiwan, 2017. URL <http://aclweb.org/anthology/I17-1102>.
- [11] Xiao Pu, Nikolaos Pappas, Andrei Popescu-Belis, “Sense-Aware Statistical Machine Translation using Adaptive Context-Dependent Clustering”, In *Proceedings of Second Conference on Machine Translation (WMT)*, pages 1–10, Copenhagen, Denmark, 2017. URL <http://www.statmt.org/wmt17/pdf/WMT01.pdf>.
- 2016 [10] Nikolaos Pappas, Andrei Popescu-Belis, “Human versus Machine Attention in Document Classification: A Dataset with Crowdsourced Annotations”, In *Proceedings of 2016 Empirical Methods for Natural Language Processing SocialNLP Workshop (SocialNLP)*, pages 94–100, Austin, USA, 2016. URL <http://www.aclweb.org/anthology/W16-6213>.

#### **Resulting from PhD time**

- 2016 [9] Nikolaos Pappas, Mercan Topkara, Miriam Redi, Brendan Jou, Tao Chen, Hongyi Liu, Shih-Fu Chang, “Multilingual Visual Sentiment Concept Matching”, In *Proceedings of the ACM International Conference on Multimedia Retrieval (ICMR)*, pages 151–158, New York, NY, USA, 2016. URL <http://delivery.acm.org/10.1145/2920000/2912016/p151-pappas.pdf>.
- [8] Hongyi Liu, Brendan Jou, Tao Chen, Mercan Topkara, Nikolaos Pappas, Miriam Redi, Shih-Fu Chang, “Complura: Exploring and Leveraging a Large-scale Multilingual Visual Sentiment Ontology”, In *Proceedings of the 2016 ACM on International Conference on Multimedia Retrieval (ICMR)*, pages 417–420, New York, NY, USA, 2016. URL <https://dl.acm.org/citation.cfm?id=2911996.2912030>.
- 2015 [7] Brendan Jou\*, Tao Chen\*, Nikolaos Pappas\*, Miriam Redi\*, Mercan Topkara\* and Shih-Fu Chang, “Visual Affect Around the World: A Large-scale Multilingual Visual Sentiment Ontology”, In *Proceedings of ACM International Conference on Multimedia (ACMMM)*, Brisbane, Australia, 2015. URL <https://dl.acm.org/citation.cfm?doid=2733373.2806246>.
- 2014 [6] Nikolaos Pappas, Andrei Popescu-Belis, “Explaining the Stars: Weighted Multiple-Instance Learning for Aspect-Based Sentiment Analysis”, In *Proceedings of Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pages 455–466, Doha, Qatar, 2014. URL <http://www.aclweb.org/anthology/D14-1052>.
- [5] Chidansh A. Bhatt, Nikolaos Pappas, Maryam Habibi and Andrei Popescu-Belis, “Multi-modal Reranking of Content-based Recommendations for Hyperlinking Video Snippets”, In *Proceedings of ACM International Conference on Multimedia Retrieval (ICMR)*, pages 225–232, Glasgow, UK, 2014. URL <https://dl.acm.org/citation.cfm?id=2578752>.

- 2013 [4] Nikolaos Pappas, Andrei Popescu-Belis, “Sentiment Analysis of User Comments for One-Class Collaborative Filtering over TED Talks”, In *Proceedings of 36th ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR), pages 773–776, Dublin, Ireland, 2013. URL <https://dl.acm.org/citation.cfm?id=2484116>.
- [3] Nikolaos Pappas, Andrei Popescu-Belis, “Combining Content with User Preferences for TED Lecture Recommendation”, In *Proceedings of 11th International Workshop on Content Based Multimedia Indexing* (CBMI), pages 47–52, Veszprém, Hungary, 2013. URL <https://ieeexplore.ieee.org/document/6576551/>.
- [2] Chidansh A. Bhatt, Andrei Popescu-Belis, Maryam Habibi, Sandy Ingram, Stefano Masneri, Fergus McInnes, Nikolaos Pappas, Oliver Schreer, “Multi-factor Segmentation for Topic Visualization and Recommendation: the MUST-VIS System”, In *Proceedings of 21st ACM International Conference on Multimedia* (ACMMM), pages 365–368, Barcelona, Spain, 2013. URL <https://dl.acm.org/citation.cfm?id=2508120>.
- [1] Chidansh A. Bhatt, Nikolaos Pappas, Maryam Habibi and Andrei Popescu-Belis, “Idiap at MediaEval 2013: Search and Hyperlinking Task”, In *Proceedings of MediaEval 2013 Workshop*, Barcelona (MediaEval), Spain, 2013. URL [http://ceur-ws.org/Vol-1043/mediaeval2013\\_submission\\_47.pdf](http://ceur-ws.org/Vol-1043/mediaeval2013_submission_47.pdf).

\*: equal contribution.

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