ANITA LILLA VERŐ

PERSONAL INFORMATION

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RESEARCH INTEREST

Machine Learning · Natural Language Processing · Computer Vision · Music Processing · Multimodal Semantics · AI Ethics

EDUCATION

2015-present **University Of Cambridge**

PhD

Natural Language and Information Processing Group ·
Thesis is soon to be submitted with the title: *Experiments Towards Measuring Information in Multi-Modality*
Description: Measuring useful information conveyed by image-based, structured, textual and multi-modal data in meaning representations.
Supervisors: Dr. Stephen Clark and Prof Ann Copestake

2012-2014 **Eötvös Loránd University**

Master of Science

Grade Outstanding · Faculty of Informatics · *Information Systems*
Thesis: *Comparison of different methods for semantic evaluation of symbol series based on language model generation and common sense knowledge*
Description: The thesis project involved natural language sentence generation methods from incomplete pictorial symbol series in order to reduce communication barriers for people with severe speech and physical impairments.
Advisors: Dr. habil. András Lőrincz & Balázs Pintér

2009-2012 **Eötvös Loránd University**

Bachelor of Science

Grade Excellent · Faculty of Informatics
Description: The thesis project was an enterprise management system including a product recommendation system using Collaborative Filtering methods.

2007-2009 **Eötvös Loránd University**

Bachelor of Arts

Faculty of Humanities · *Germanic studies*
Discontinued, moved to Faculty of Informatics.

EXTRACURRICULAR STUDIES

2018 **Santa Fe Institute**

Introduction to Complexity

Certification. · https://www.complexityexplorer.org/courses/97-introduction-to-complexity

2016 **Regularization Methods for Machine Learning**

Machine Learning, Regularisation

Certification. · http://lcsl.mit.edu/courses/regml/regml2016/

2014 **Lisbon Machine Learning Summer School**

Machine Learning and NLP

Certification. · *Main topic: Learning With Big Data.* · http://lxmls.it.pt/2014/

2014 **Stanford University · Coursera**

Machine Learning

Machine Learning · Statement of Accomplishment · Instructor: Andrew Ng · https://www.coursera.org/course/ml

WORK EXPERIENCE

Jan. – March 2015 **Guest researcher, German Research Center for Artificial Intelligence (DFKI)**

German Research Center for Artificial Intelligence

Kognit project · *Cognitive Models and Mixed Reality for Dementia Patients* · http://www.dfki.de/RadSpeech/Kognit

Image-based representation of phrases towards a goal-oriented, symbol-based dialogue system.

Reference: Dr. Daniel Sonntag · Daniel.Sonntag@dfki.de

2012–2015 **Researcher, Neural Information Processing Group**

Neural Information Processing Group

- **Neural network model for fast estimation of structured sparse code**
  - Implemented neural network architectures, synthetic data generation methods and evaluation.
- **Semantic grounding in a 3D virtual environment**
  - Experiments in a 3D virtual game environment using Oculus Rift and a hand gesture detector.
- **Sentiment analysis from linguistic and multimodal features**
- **Natural Language Generation**
  - Designed an algorithm for generating natural language fragments from pictorial symbols supporting Augmentative and Alternative Communication;
  - Applied statistical language modeling methods and the large scale Google N-gram Database;
  - Implementation of an API for the fragment generation method in Python;

  - Conducted practical experiments for testing the fragment generation method, combining with high-tech gaze tracking glasses and Optical Character Recognition;
  - Evaluated the results using standard statistical measurements.
- **Collaborative working support system of heterogeneous expert communities**
  - Participated in the design process and implemented a multi-level voting system to the MediaWiki collaborative content management system in the EuRoSurge (European Robotic Surgery) Project.

Reference: Dr. András Lőrincz · lorincz@inf.elte.hu

2010 Summer Intern, MorphoLogic

MorphoLogic

R&D in Natural Language Processing
I developed an Information Retrieval method using the WordNet ontology in C++ programming language.
Reference: Dr. Gábor Prószéky · proszeky@morphologic.hu

PUBLICATIONS

2021 Efficient Multi-Modal Embeddings from Structured Data

arXiv preprint

Anita L. Verő and Ann Copestake.

2019 Deconstructing Multimodality: Visual Properties and Visual Context in Human Semantic Processing

**SEM2019*

Authors: *Christopher Davis, Luana Bulat, Anita L. Verő and Ekaterina Shutova*
Proceedings of *SEM2019 2019, Minneapolis, USA

2018 Modelling Visual Properties and Visual Context in Multimodal Semantics

Machine Intelligence Workshop @ NIPS – 2018

Authors: *Christopher Davis, Luana Bulat, Anita L. Verő and Ekaterina Shutova*
Workshop on Visually Grounded Interaction and Language, NIPS 2018

2016 Virtual Embodiment: A Scalable Long-Term Strategy for Artificial Intelligence Research

Machine Intelligence Workshop @ NIPS – 2016

Authors: *Douwe Kiela, Luana Bulat, Anita L. Verő and Stephen Clark*
NIPS–2016

2016 Comparing Data Sources and Architectures for Deep Visual Representation Learning in Semantics

EMNLP – 2016

Authors: *Douwe Kiela, Anita L. Verő and Stephen Clark*
Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP-16)

2015 Columnar Machine: Fast estimation of structured sparse code

BICA – 2015

Authors: *András Lőrincz, Zoltán Á Milacski, Balázs Pintér, Anita L. Verő*
Biologically Inspired Cognitive Architectures, 2015

2015 Maintain and Improve Mental Health by Smart Virtual Reality Serious Games

MINDCARE – 2015

Authors: *András Sárkány, Zoltán Tősér, Anita L. Verő, András Lőrincz, Takumi Toyama, Daniel Sonntag.*
Proceedings of the 5th International Symposium on Pervasive Computing Paradigms for Mental Health, LNCS Spinger, 2015

2014 Towards a Smart Wearable Tool to Enable People with SSPI to Communicate by Sentence Fragments

MINDCARE – 2014

Authors: *Gyula Vörös, Anita Verő, Takumi Toyama, András Lőrincz, Balázs Pintér, Brigitta Miksztai-Réthey, Daniel Sonntag.*
Proceedings of the International Symposium on Pervasive Computing Paradigms for Mental Health, LNCS Spinger, 2014

2014 Mobile AAC Solutions using Gaze Tracking and Optical Character Recognition

ISAAC – 2014

Authors: *Gyula Vörös, Brigitta Miksztai-Réthey, Anita Verő, Takumi Toyama, Jason Orlosky, Daniel Sonntag, András Lőrincz.*
16th Biennial Conference of the International Society for Augmentative and Alternative Communication (ISAAC), 2014

2014 Gaze Tracking and Language Model for Flexible Augmentative and Alternative Communication in Practical Scenarios

ISAAC – 2014

Authors: *Anita Verő, Brigitta Miksztai-Réthey, Gyula Vörös, Ádám Zsigmond, Balázs Pintér, Takumi Toyama, Jason Orlosky, Daniel Sonntag, András Lőrincz.*
16th Biennial Conference of the International Society for Augmentative and Alternative Communication (ISAAC), 2014

AWARDS

OTDK

2013 · National Conference of Student's Scholarly Circles · Third Prize

Telepresence system

2014 · Award of the Challenge Handicap & Technologies 2014 - Reseau Nouvelles Technologies APF conference in Lille, France

AAAI Video competition

2014 · Best Student Video Award at AAAI Video Competition

TECHNOLOGIES

Programming languages

Python, MATLAB, SQL, C++, LaTeX, Web technologies: HTML, CSS, MaterialUI, React

Scientific Computing

Numpy, Scipy, Scikit Learn, NLTK, OpenCV, Caffe, PyTorch, TensorBoard, further NLP tools (language model toolkits, parsers)

Development Tools / Project management — Pytest, PDB, Git, Mercurial, Atlassian Jira / Confluence, AWS

Media Production — Logic Pro, iMovie

FURTHER INFORMATION

Communal Activities

2017/18 · I was a Mentoring Officer and Representative in the Cambridge Computer Laboratory's Graduate Forum of Women@CL (https://www.cst.cam.ac.uk/women). Women@CL is an organisation to support women in computer science. It involves a mentoring system and provides representation of role models by organising talks and conferences.

2017 · I organised the Cambridge NLIP Seminars, which is a weekly seminar series in NLP and Machine Learning related topics (http://talks.cam.ac.uk/show/index/6401).

Teaching / Supervising

2019 · I tutored a secondary school student who was working on a small data science project. I also proofread personal statements for PhD applications.

Lent 2017 · I was demonstrating and ticking for Machine Learning and Real-world Data (https://www.cl.cam.ac.uk/teaching/1617/MLRD/), A Part IA CST course at Computer Laboratory, University of Cambridge.

2016/17 · I co-supervised Christopher Davis, a Master student, on his thesis project about mutli-modal semantics. He got distinction and later a PhD position in our research group.

Media

2014 · "Augmentative and Alternative Communication and Telepresence" video that won the Best Student Video Award at AAAI Video Competition · http://aivideocompetition.org/telepresence-for-people-with-communication-impairment/

2014 · Interview about the AAC Telepresence system to one of the biggest Hungarian news portal called *index.hu* · http://index.hu/tudomany/2014/08/08/zseb_ki/

2014 · Interview to the Hungarian RTL Klub news. · http://rtl.hu/rtlklub/hirek/belfold/videok/389901

2014 · Interview in the Novum innovation and technology programme of the Budapest TV channel. · http://nava.hu/id/1960890/

2014 · Further articles of the AAC Telepresence project.

Languages

Hungarian · Native

English · Full proficiency

German · Intermediate

Hobbies

Singing · Guitar · Cycling · Yoga