Richard Evans

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PERSONAL PROFILE

I am a goal-driven natural language processing (NLP) specialist with more than 25-years of academic and commercial experience. My areas of expertise include automatic text simplification (ATS), automatic readability assessment (ARA), information extraction (IE), and synthetic data generation. I have developed annotation schemes and annotation tools, and have annotated data in projects on these topics.

My skills are at the mid- to upper levels of the Data Science Hierarchy of Needs:

- *AI/Deep learning* (limited to finetuning LLMs)

- *Learn/Optimize* (A/B testing, experimentation, simple ML algorithms)

- *Aggregate/Label* (metrics, segments, features, training data)

- *Explore/Transform* (data cleaning, anomaly detection, and preparation).

I have presented my research remotely and in person at international conferences.

RELEVANT SKILLS

Natural Languages: English (native), International Phonetic Alphabet (IPA transcription experience)
Teaching: Since 2020, I have prepared and delivered lectures for Master's students on ATS, aspect-based sentiment analysis, text summarisation, machine translation, and research ethics. I have marked MA dissertations on other NLP topics.
Postgraduate Supervision: 2 PhD students (biographical IE; deep learning models to identify ethical misconduct in legal documents) and 2 MA students (aspect based sentiment analysis in Kazakh; ATS for Italian).
Programming Languages: HTML, JSON, JSpeech Grammar Format (JSGF), LATEX, Perl, Python.
Developer Tools: Bash, Conda, Emacs, Excel, Git, GitLabs, Google Cloud Platform, jq, PyCharm, Google Colab.
Libraries: CoreNLP, ElementTree XML, json, NLTK, NumPy, pandas, PyTorch, RegEx, spaCy, Transformers.
Machine Learning: CRF++, TiMBL, Weka.
Collaborative Coding: I have experience using Git and the GitLabs DevOps platform to actively contribute to a shared codebase and to review colleagues' code.
Peer Review: I participate in ACL's Rolling Review system and have served as reviewer for conferences (*ACL*, *COLING*, *EMNLP*) and journals (*Computer Speech and Language*, *JAIR*, *Natural Language Engineering*).

EDUCATION

PhD in Computer Science: "Sentence Simplification for Text Processing" University of Wolverhampton, UK	Feb. 2012 – Jan. 2020
Msc in Cognitive Science and Natural Language University of Edinburgh, UK	Sep. 1995 – Jul. 1996
BA (Hons) Linguistics University College of North Wales, UK	Sep. 1992 – Jun. 1995

WORK EXPERIENCE

RWS Holdings PLC (Mar. 2025 – Present)

Audio Attributes Annotator (Contract)   Mar. 2025 – Present

I annotated sound events and acoustic environments in short videos with an 8-word description and information about the type of each sound event, its onset time, and duration. I had to identify the sound events manually. The fact that they often overlapped added to the difficulty of the task.

Audio-Visual Segmentation (Contract)   Apr. 2025 – May. 2025

I added hand-drawn visual masks for objects contributing to the sound events annotated in the Audio Events Annotator project. I used the client's video processing model to infer masks for relevant objects in unannotated video frames.

Technical Environment: *Single Review Tool (SRT) Workplace, SRT HALO*

Smart Ecosystem, Inc. (May 2024 – Present)

I used the company's *Outlier AI* platform, which connects subject matter experts with AI developers to help build advanced Generative AI models.

AI Writing Evaluator (Contract)   June 2024 – Ongoing

I developed and evaluated training data for the models. This involved developing educational assessment items that require generative models to use complex reasoning and calculation skills. My contributions helped to implement a *reinforcement learning from human feedback* (RLHF) framework. They included:

- Developing new postgraduate-level multiple-choice questions on the topic of computer science (machine learning)
- Evaluating, reviewing, and correcting MCQs developed by others.

AI Writing Evaluator (Contract)   May 2024 – Jun. 2024

In this project, my work was focused on developing new multimedia prompts and responses that require complex mathematical reasoning and perception skills. My contributions included:

- Developing new tasks that use multiple prompt-response turns
- Evaluating, reviewing, and correcting tasks developed by others.

Technical Environment: *Google Sheets, Outlier AI, Python, Slack*

Cerence Inc. (Feb. 2023 – Mar. 2024)

The company's main business is to develop cloud-based and embedded AI voice assistants for drivers and passengers of automobiles and other vehicles. Cerence's clients include Audi, BMW, Mercedes, and Volkswagen.

NLU English Language Consultant (Contract)   Feb. 2023 – Mar. 2024

My work was focused on *semantic signatures* which represent user intentions signalled by their spoken commands (e.g. to receive directions to restaurants serving certain types of food at particular times of day in specified cities) and the various concepts and entities relevant to those commands (such as food types, city names, and temporal information). My main contributions were to:

- Develop JSGF grammars, gazetteers, and other resources to automatically generate synthetic data to train AI voice assistants capable of parsing spoken utterances with respect to the semantic signatures that they express
- Fix bugs and use proprietary build automation tools based on *gradle* to stage data, train, and evaluate the cloud-based and embedded AI models
- Coordinate my work using GitLab, with numerous local and remote mainline branches being used to update different versions of the system
- Develop python scripts to assist the development of resources which meet user requirements and comply with technical specifications for the annotation of utterances, for the canonicalisation of entity mentions, and for the conversions of annotations required at different points in the system build
- Improve the coverage of the models with respect to user queries about numerous topics (e.g. I developed annotated data to support coverage of queries about football matches played during the UEFA EURO 2024 competition).
- Developed grammars to generate new data that was used to train a semantic parser of around 400 new types of spoken commands. For the new utterance types, the parser had over 95% accuracy.

Technical Environment: *JSGF, Git, GitLabs, Excel, Emacs, JSON, gradle, Python, screen, xterm, jq, WinSCP*

University of Wolverhampton (Sep. 1998 – Feb. 2023)

From my initial appointment as research assistant, my duties were to conduct research in computational linguistics and related areas; to write papers for publication in peer-reviewed journals and conference proceedings; to make competitive proposals to fund research projects; and to otherwise support the Research Group in Computational Linguistics (RGCL). I list the posts I held and the notable achievements associated with each.

Lecturer in Computational Linguistics (Permanent)   Feb. 2020 – Feb. 2023

- Delivered lectures on ATS, aspect-based sentiment analysis, multi-document summarisation, and on research ethics, in an Erasmus+ European Master's programme on *Technology for Translating and Interpreting (EMTTI)* and in RGCL's MA in *Computational Linguistics* programme
- Co-organised the SemEval-2021 shared task on Lexical Complexity Prediction
- Participated in Ethics committees: UoW Ethics Subcommittee (Member), EMTTI Ethics Committee (Chair)
- Co-authored 3 peer-reviewed research papers (2 journal papers) on topics including anaphora resolution and lexical complexity prediction.

Researcher / Research Associate (Permanent)   Dec. 2016 – Feb. 2020

- Developed a method for partial parsing (identification of compound clauses and complex constituents) based on conditional random fields (CRF). This included development of annotation tools and annotation of training data. I implemented the method in Perl and Python
- Co-authored a successful bid (impact and dissemination) to fund the 6-year, €2.99 million, EMTTI programme
- Co-authored 6 peer-reviewed research papers (1 journal paper) on topics including ARA, ATS, irony detection in tweets, and pronoun classification.

Research Fellow in Natural Language Applications (Permanent)   Dec. 2013 – Dec. 2016
- Served as scientific coordinator of the EU-funded FIRST project (see SELECTED PROJECTS)
- Developed and evaluated language technology (LT) and annotated corpora for automatic sentence simplification. I implemented the LT in Perl
- Developed LT to detect and report on various features of reading difficulty (e.g. passive sentences, other types of syntactic complexity, psycholinguistic features) occurring in English sentences for people on the autism spectrum
- Co-authored 6 peer-reviewed academic papers (1 journal paper) on topics including ARA and ATS.

Technical Environment: *Perl, Python, CRF++, TiMBL, Weka, XML, Excel, spaCy, LaTeX, CoreNLP, Google Colab, BERT, PyTorch, RegEx*

SELECTED PROJECT (LEADER)

In this section and the next, I provide information about selected projects that I have been engaged in. In most cases, I developed new annotated data: devising new annotation schemes and guidelines and evaluating the reliability and consistency of human annotations. For LT approaches, modules, and systems, the verb *developed* denotes algorithm design and implementation in Perl or Python, as indicated.

Partial Parsing Using BERT for Sentence Simplification | *Google Colab, Python*   Feb. 2020 – Feb. 2023

<u>Goal</u>: To develop a method for syntactic simplification which exploits a reliable, robust, and efficient syntactic analysis step which identifies compound and complex constituents in input sentences. I addressed this by:
- developing a sequence tagging approach to perform syntactic analysis (partial parsing) of input sentences
- finetuning a pretrained language model (BERT) for more accurate *sign tagging* – identification of the syntactic functions of punctuation marks, conjunctions, and relative pronouns (signs of syntactic complexity)
- finetuning pretrained language models (BERT, DeBERTa, and ELECTRA) for *partial parsing* (tagging of complex and compound syntactic constituents). These outperformed baselines using CRF or memory-based learning (MBL)
- developing XML-based sentence transformation functions to simplify sentences analysed using the partial parser.
- A publicly accessible Google Colab notebook implementing the sentence simplification method is available here.

SELECTED PROJECTS (PARTICIPANT)

A Flexible Interactive Reading Support Tool (FIRST) | *CRF++, Git, Perl*   Oct. 2011 – Sep. 2014

<u>Goal</u>: To develop assistive language technology (LT) to convert documents into a more readable form for autistic individuals. A video about the project is available. The project was funded by the EC under its 7th Framework Programme in ICT. My contribution to the project included:
- improving my earlier approach to sentence simplification to simplify a wider range of sentences
- developing handcrafted rules to perform syntactic analysis of input sentences (partial parsing)
- developing corpora to train a shallow syntactic analyser (see the GitHub page)
- employing a token sequence classifier based on CRF for sign tagging.

SELECTED PAPERS

Evans, R. and Orasan, C. (2019). Identifying signs of syntactic complexity for rule-based sentence simplification. *Natural Language Engineering*, 25 (1):69–119.

Parodi, G., Evans, R., Ha, L. A., Mitkov, R., c. J. J. Vergara, and Olivares-López, R. (2021). A sequence labelling approach for automatic analysis of *ello*: tagging pronouns, antecedents, and connective phrases. *Language Resources and Evaluation*, 56 (1):139–164.

Shardlow, M., Evans, R., and Zampieri, M. (2022). Predicting lexical complexity in English texts: the Complex 2.0 dataset. *Language Resources and Evaluation*, 56:1153–1194.

Yaneva, V. and Evans, R. (2015). Six good predictors of autistic text comprehension. In *Proceedings of Recent Advances in Natural Language Processing (RANLP 2015)*, pages 697–706, Hissar, Bulgaria.

Please visit this link for a complete list of my peer-reviewed research papers.