TEEMU PÖYHÖNEN

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Helsinki, Finland

WORK EXPERIENCE

Senior Data Scientist

In Parallel

Nov 2024 – Present Helsinki, Finland

Promoted from Data Scientist (Nov 2024 – Feb 2025). Working on large language models and agentic LLM systems, with focus on evaluation and applied LLM business solutions.

AI Engineer

Silo AI

Jun 2023 – Oct 2024 Helsinki, Finland

Worked on customer-facing LLM projects and generative AI systems, including public-sector use cases. Contributed to internal R&D as tech lead on agentic LLMs.

NLU specialist

Cerence, via H-FARM

Feb 2022 - Jun 2023

Creation of Finnish language resources for voice assistants in automotive systems.

Expert & Challenge Partner

Goethe-Institut e.V

Sep 2021

Structuring the Hackathon challenge, in which participants developed datasets and solutions on gender bias in AI systems. Also, providing guidance and answering any questions from the teams.

NLP Specialist

Hetki.ai

May 2020 – May 2022

Developing and testing NLP approaches.

MAIN INTERESTS

- LLMs
  - Evaluation (LLM Judges)
  - Agents
  - Societal impact
  - User-centric approaches
- Computational Creativity
- AI Ethics
- Data Science

EDUCATION

M.A. Linguistic Diversity and Digital Humanities

University of Helsinki

Aug 2020 – May 2023

- Language Technology study track
- Thesis: RPG-GPT — creative NLG for RPG dialogue (fine-tuned GODEL; user study)

B.A. English Philology

University of Helsinki

Aug 2017 – Aug 2020

- Thesis: Diachronic embeddings for semantic change (Reddit 2006–2019; TWEC + PCA)

PUBLICATIONS

Multilingual Persuasion Detection: Video Games as an Invaluable Data Source for NLP

Teemu Pöyhönen, Mika Hämäläinen, Khalid Alnajjar
Proceedings of the 2022 DiGRA International Conference • July 2022
First author • *12 citations*

Multilingual persuasion dataset extracted from RPG dialogue (EN, ES, DE, FR, IT) using semi-annotated in-game text. Demonstrates video games as a scalable NLP data source and evaluates monolingual vs. multilingual BERT models, showing strong gains from domain-aligned monolingual models. Data and models released openly.

LIBRARIES

- DSPy
- LangChain
- LlamaIndex
- LangGraph
- transformers
- BAML
- Mem0
- AutoGen

THESES

RPG-GPT: Leveling up game dialogue with creative NLG (Master's Thesis)

This thesis explores the use of natural language generation (NLG) systems to generate dialogue for non-playable characters (NPCs) in role-playing games (RPGs). The research involves extracting dialogue data from popular RPGs and fine-tuning Microsoft's GODEL to create an "RPG chatbot" (RPG-GPT). A survey and interactive experiment were conducted to evaluate the creativity and effectiveness of RPG-GPT. The evaluation indicates that RPG-GPT can provide relevant responses, enhancing gaming experiences through a task-oriented game dialogue (TOGD) system. In this framework, creative TOGD systems could solve a common issue where pre-written NPCs are unable to provide the specific information sought by players.

Survey respondents rated dialogues on a 5-point agree-disagree Likert scale, with questions related to e.g. the relevance of the NPC answers. Results show that RPG-GPT can provide relevant responses with a mean difference of game relevance of 3.93 vs. 3.85 of RPG-GPT (p=0.0364). Also, the participants of the interactive experiment reported engagement when interacting with RPG-GPT. These findings suggest that creative NLG has the potential to address the limitation of pre-written NPCs and enhance gaming experiences. The study also discusses the incorporation of external knowledge and context to further improve the TOGD systems, indicating future research in this area.

"This is lit, fam": Diachronic word embeddings and classifying semantic change (Bachelor's Thesis)

The aim of this thesis was to examine whether static word embeddings can be used effectively to provide evidence for semantic shifts, and specifically, how we may operationalize traditional categories of semantic change in terms of word embeddings. The methodology for training diachronic word embeddings is borrowed from the TWEC approach by Di Carlo, V. et al.

The data used consists of Reddit comments ranging from 2006 to 2019. First, we train an embedding for each of these years. Then, for a target word, such as "toxic," we take the ten most similar words for each year. With these neighboring words, we take their most recent (2019) position on the vector space, as well as the position of the word "toxic" for each year. Then, we transform these highly dimensional positions using principal component analysis (PCA), constructing a two-dimensional vector space representation consisting of each of the neighboring words and the target words for each of the years.

LANGUAGES

- Finnish (native)
- English (advanced)
- Swedish (basic)
- Japanese (beginner)
- Russian (native, but forgotten)

VOLUNTEERING

President

HELdance ry

Apr 2019 – Mar 2022 Helsinki

Founded HELdance and was part of the board which officially registered the organization.

Head of Sound Design

Humanistispeksi

Jul 2019 – Feb 2020 Helsinki

Sound Designer

Humanistispeksi

Oct 2018 – Feb 2019 Helsinki

PROJECTS

Relics

Apr 2024 – Sep 2024

Video game development project using a local LLM model with a retrieval-augmented generation (RAG) pipeline running entirely on the player's PC. Developed as part of Espoo Game Lab.

Gender Correct?

I was invited by Goethe-Institute & SKTL to discuss gender bias in (machine) translation. The "Gender Correct?" panel was hosted during the Night of Science in 2022. I also wrote an article about the topic and our discussion for the SKTL magazine.

Multi-label text classification

Collaborative project as a part of the Introduction to Data Science course. The data used for this project was from the Reuters corpus, with 126 different labels and almost 300,000 instances.

RELEVANT COURSES

Machine Learning & NLP • Approaches to Natural Language Understanding • Models and algorithms in NLP-applications • Neural Machine Translation • Building NLP Applications • Computational semantics • Computational syntax • Computational morphology • Mathematics for Linguists • Statistics for Linguists • Machine Learning for Linguists • Ethics of Artificial Intelligence • Introduction to the Philosophy of Mind and Artificial Intelligence • Command-Line course (Linux) • Linguistics in the Digital Age • Organizational Communication in the Digital Age