PETER VICKERS

Applied Machine Learning Scientist with a passion for high impact projects.

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CAREER PROFILE

Enthusiastic and innovative Machine Learning Scientist with a proven track record in developing scalable AI and ML solutions across academic and industrial settings. Specializing in NLP, Computer Vision, and Multimodal AI with a keen focus on human-machine collaboration. Committed to a multidisciplinary approach, leveraging a rich background in English Literature and advanced computing to foster innovative AI research and applications. Adept at translating complex technical concepts to diverse audiences, demonstrating leadership in cross-functional teams, and dedicated to responsible AI development and lifelong learning.

EXPERIENCE HIGHLIGHTS

Applied Scientist II Intern, Amazon UK (Oct 2022 - May 2023)

- Improved product precision by 12% with a novel loss function for adapting OpenCLIP H-14 for image retrieval, enhancing model performance and advancing the state-of-the-art in computer vision.
- Helped authored and develop human evaluation guidelines for image retrieval systems and joined annotation workflow.
- Built interactive Jupyter notebooks to give visual, interactive demonstrations of technical approaches in metric spaces to non-technical stakeholders, enhancing cross-team collaboration.

Academic Researcher, JSALT 2023, Le Mans University, France (Jun - Aug 2023)

- Spearheaded the development of a forecasting dataset for document representation, showcasing a 3% improvement in Citation Prediction for the team's work over the SOTA SPECTER model.
- Mentored early-stage researchers, fostering a culture of excellence and innovation.
- Presented our research live to a team of hundreds of international researchers.
- Developed a novel citation prediction task to benchmark scale and forecasting for document representation models.
- **Comparing Edge-based and Node-based Methods on a Citation Prediction Task**
- Peter Vickers, Kenneth Church, (Forthcoming) 2024

Consultant, Sheffield University Library (2020 - Present)

- Led design and execution of a user study on paper recommendation systems for PhD students, significantly improving research accessibility and efficiency.
- Delivered comprehensive talks on recommendation systems to senior staff, facilitating the adoption of innovative AI solutions in academic research.

EDUCATION

PhD in Multimodal NLP, University of Sheffield (Sept 2019 - May 2024)

- Research including integrating linguistically motivated features into models for predicting human eye-tracking data, leveraging LLMs for mapping logical forms to English language questions, and building a Visual Question Answering Dataset.
- Enriched academic and practical knowledge by taking elective modules in Neuroscience, Bayesian statistics, and Signal Processing.

MSc in CS with Speech and NLP (Distinction), University of Sheffield (2018 - 2019)

- Excelled in ML, Speech Processing, and NLP, culminating in a distinguished dissertation on Essay Generation using Transformer architecture.

MA in English Language and Literature, Magdalen College, Oxford (2015 - 2018)

- Applied self-taught NLP techniques to analyze 18th-century novels, demonstrating an early commitment to interdisciplinary research and innovation.

TECHNICAL SKILLS

- **Programming Languages**: Proficient in Python, Java, and familiar with MATLAB, Julia, and C++ for AI and algorithm development.
- **AI and Machine Learning Libraries**: Expert in PyTorch, TensorFlow; developed computer vision models and worked with large AI models, including LLama2 and OpenCLIP.
- **Data Science and Deployment**: Experienced in handling Terabyte-scale datasets with Pandas, PostgreSQL, and deploying AI models in AWS, emphasizing efficient resource management.

PUBLICATIONS

My Google Scholar. Selected First Author Publications:

- **We Need to Talk About Classification Evaluation Metrics in NLP**
  - Introduces use of a debiased metric for analyzing classification models in the case that the class distribution is imbalanced.
  - Peter Vickers, Loïc Barrault, Emilio Monti, Nikolaos Aletras
  - AACL 2023
- **In Factuality: Efficient Integration of Relevant Facts for Visual Question Answering**
  - Uses an intuitive method to cast knowledge graph facts into textual representations to improve VQA performance by 19%.
  - Peter Vickers, Nikolaos Aletras, Emilio Monti, Loïc Barrault
  - ACL 2021
- **Blending Cognitively Inspired Features with Transformer-based Language Models for Predicting Eye Tracking Patterns**
  - Examines the value of a variety of cognitively and linguistically inspired features for predicting eye tracking patterns.
  - Peter Vickers, Rosa Wainwright, Harish Tayyar Madabushi, Aline Villavicencio
  - CMCL 2021

INTERESTS

- Leadership role in wilderness ski expeditions to Norway and Greenland.
- Volunteering: Disability Hackathon, English Language Tutoring, and Charity Bookstore Sales and Pricing.