Joe Makepeace - CV

Socials

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Socials: linkedin.com/in/joe-makepeace | github.com/MiscellaneousStuff

Work Experience

Azolla - Co-Founder & Chief Technology Officer — July 2024 - Present

- Developed an AI-powered accounting platform with email fetch integration, OCR invoice extraction, and Xero publishing capabilities.
- Conducted extensive market research, interviewing 70+ accountants and securing trials with multiple accounting firms.
- Implemented key features including:
    - Multi-organization support
    - Document editing, translation, and handling of multiple formats
    - Integration with Xero for bill and invoice uploads
    - Email and file uploading systems
    - Invoice OCR extraction
- Managed the full development lifecycle, from initial architecture planning to production deployment.
- Utilised Test Driven Development (TDD) methodologies to ensure robust and reliable code.
- Implemented feature flagging for staged rollout of key features to different users.
- Integrated various third-party services including Nylas for email fetching and Google Analytics.
- Developed and maintained multiple web properties including the main site (azolla.ai) and the accounting platform (app.azolla.ai).
- Conducted regular code reviews and implemented best practices for code quality and security.
- Actively participated in product strategy, pivoting from an AI coding agent to an AI-powered accounting solution based on market feedback.

Technologies Used: Next.js, React, Node.js, MongoDB, AWS, Claude 3.5-Sonnet, Docker, Python, Prompt Engineering

Codeverse Studio Ltd - Chief Technology Officer — February 2024 - July 2024

- Led development of AI-powered platforms, including a code generation agent and invoice processing system.
- Innovated AI workflows through XML-based prompt engineering and AI-spreadsheet integration. Developed a content generation pipeline that significantly improved project efficiency for high-value clients.
- Drove expansion into the accountancy sector by creating AI-driven financial tool prototypes. Balanced technical leadership with strategic responsibilities, including client management and YC application preparation.

Technologies used: Claude 3, GPT-4, Google Sheets, Langchain, Python, Docker

Neofront LTD - Consultant ML Specialist / Software Engineer — February 2023 – November 2023

- Worked with Apidura Ltd and a Cyber Security Company (NDA) simultaneously. Trained a bespoke object detection model to recognise bike wheels with high recognition accuracy and bike wheel location accuracy. Model currently being deployed to automate detection and sizing of bike wheels during user journey. Model achieved an mAP@0.5 score of 0.995 and showed strong performance across different edge cases with a low number of trained images.
- Re-imagined and redesigned the user experience for the Realtime Dashboard.
- Improved main dashboard page loading time from 2.9 seconds down to 0.8 by improving efficiency of backend calls from frontend.

Technologies used: Python, YOLOv8, HTML5, VanillaJS, Bootstrap, Flask.

Hackathon Achievements

Gen AI Hackathon – 1st Place — 11th November 2023 – 12th November 2023

Project: Lip2Nav (Speech Impairment Accessibility App) – Won $100k Amazon AWS Credits

- Conceived and developed an AI-based lip-reading technology to aid deaf or speech-impaired individuals in hands-free navigation. This project addressed a significant need for 10/11 million deaf/hearing people.

Anthropic London Hackathon – 2nd Place / 60+ teams — 4th November 2023 – 5th November 2023

Project: aGP Chat (Data Sovereignty App) Won $2k / $5k Claude Credits

- LLM-based tool which uses Retrieval Augmented Generation (RAG) to gain personalised insights across NHS data, Deliveroo orders, Google history, etc. Featured in a post on Anthropic's main Linkedin page.

Education

MEng Computer Science – Merit (68%) — September 2022 – June 2023

University of Portsmouth

Modules: Parallel Programming, Scientific Computing and Simulation, Applied Data and Text Analysis, Computer Vision, Industrial Project

Industrial Project: Semantic Identification of Vehicles Through Traffic Junctions. GitHub.

- Lead programmer managing 4 others, and system architect working on the group project, in collaboration with Portsmouth City Council and Colas to identify, count and track vehicles and pedestrians through traffic junctions. Solution used to infer the usage of routes by different vehicle types (incl. HGVs) and pedestrians.
- System runs continuously on an Nvidia Jetson Nano, scraping traffic data for clients to analyse across weeks or months' worth of traffic data to gain insight into vehicle and pedestrian habits.
- Analytics used to assess wear and tear of different roads and pedestrian patterns considered for advertising purposes.

Technologies used: Python, ReactJS, Express, SQLite, PyTorch, Docker, TensorRT, YOLOv8, StrongSORT, HLS Livestreaming, Neptune.ai.

BSc Computer Science - 2:1, 3.42 GPA — September 2018 – June 2022

University of Portsmouth

Dissertation: Surface Electromyography (sEMG) Silent Speech Classification

- Novel training method combining state-of-the-art (SOTA) silent speech transduction and fine tuning of an ASR model to achieve SOTA silent speech classification.
- Final Method reduces required training dataset from 3,817 hours down to 33 hours (x115 dataset reduction) while maintaining similar accuracy (69% WER)

Technologies used: Python, PyTorch, Neptune.ai.

Projects

OpenAI Whisper (CPU) – Dynamic Quantization — September 2022 - November 2022

Machine Learning Optimisation

Benchmarked OpenAI's Whisper model with PyTorch's dynamic quantization optimisation applied.

- Demonstrated up to 2.76x model speedup with almost no model modification required.
- Cloned over 3,000 times and discussed in popular machine learning YouTube channel, Yannic Kilcher. (nearly 200k subscribers).

Technologies used: Python, PyTorch.