CHARLIE HARLAND

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Software Engineering Experience

Apr 2024 – Present: Software Engineer at Map Impact (Innovative Tech-for-Good Company)

Working in a highly collaborative and agile team environment on various projects. Selected work:

Climate Risk Engine | Product

Python | Poetry | Pandas | GeoPandas | Google Earth Engine | Jupyter Notebooks | GitHub

- Created a command line driven Python engine to produce and validate our climate risk datasets.
- Transformed scientific methodology based in Jupyter Notebooks into memory optimised Python scripts and wrote detailed documentation explaining the methodology and how to use the tool.
- Built a number of assisting scripts for automating data manipulation, including a tool to allow internal users to extract samples from our climate risk datasets formatted for external presentations.

MapView Web Dashboard | External Tool

React | Vite | SCSS | OpenLayers | proj4 | turf/turf | Axios | GitHub

- Led the design process of the dashboard, presenting wireframes and user stories to break down the functionality and describe how it should be implemented to the Engineering team.
- Developed the map-centric dashboard in React, managing API requests allowing users to create layers from our datasets using drawn or uploaded AOIs and wrote client-side functionality for visualising and manipulating the data on the map.

Environmental Monitoring of Welsh Agricultural Catchments | External Project

React | Vite | SCSS | OpenLayers | proj4 | PWAs | Docker | Helm | Kubernetes | GitHub

- Designed and wireframed the User Interface for a dashboard to help people in the agriculture community visualise and track data relating to water quality.
- Developed a map based dashboard prototype with OpenLayers in React as a Progressive Web App, to present to stakeholders and project partners, for feedback and requirements gathering.
- Wrote the development Docker file, Helm Charts and GitHub Actions to automate publishing new tags to the Azure container registry.

BiodiversityView and BiodiversityCheck | Product

Python | Pandas | GeoPandas | Numpy | QGIS | Cartopy | GitHub | Jira | Confluence

- Refactored the existing codebase, particularly in removing the QGIS dependency and improving the Python code. Included running reports for stakeholder meetings and internal research and maintenance of configuration files and other assets across new versions of the code and methodology.

Other selected internal work and R&D

Python | Poetry | Pandas | GeoPandas | Numpy | QGIS | Google Earth Engine | React | Vite | Axios | Typescript | ChartJS
TailwindCSS | SCSS | Rust | GeoServer | PostgreSQL | Swagger | Docker | Helm Charts | Kubernetes | GitHub | Jira

- Developed a command line based QA tool in Python to produce validation reports in our BiodiversityView datasets generation pipeline and maintained this and our Topological Correction tool, including testing, implementing improvements and training team members how to use them.
- Created a simple web-hosted user interface in React to enable internal members to create samples from our datasets to use in investigations and presentations via our API.
- Assisted with Rust API design and implementation for our BiodiversityView Admin Portal and created a number of data visualisation dashboards in React for tracking statistics crucial for admins.
- Contributed to product and R&D documentation in Confluence, sprint planning and management in Jira and code reviews in GitHub.
- Assisted in the deployment of one of our Ecology Team's R Shiny apps to our Azure.
- Trained colleagues on how to use our internal tools and presented new work to stakeholders during company sprint reviews.

Jan 2023 – Apr 2024: Software Developer at Spatial Days (Geospatial Tech Company)

City Explorer Toolkit - UK Centre for Ecology & Hydrology
Django (REST API) | OAuth | React | NodeJS | SCSS | Swagger (API docs) | Trello | Notion | GitHub

- Contributed to the design and development of the Toolkit's production version in React with Django REST API, including creating frontend pages and client-side functionality as well as refactoring the API.

Yemen Economic Tracking Initiative - ACAPS / Mercy Corps
Python | Django (REST API) | PostgreSQL (terminal + pgAdmin) | HTML | CSS | Bootstrap | JS | JQuery | Slack | GitHub

- Developed frontend and backend functionality using the Django framework and contributed to designs that provide data visualisation on economic trends and policy for Yemen.

Spatio-Temporal Asset Catalogue (STAC) Portal - Ordnance Survey
Django | FastAPI | Python | React | SCSS | STAC Standard | Rasterio | Trello | Hoppscotch | Swagger (API docs) | GitHub

- Designed, created and refactored a number of pages and features in React for a STAC management platform to streamline the Ordnance Survey's handling of aerial and satellite imagery data.
- Assisted in the portal's API design in Python with FastAPI, as well as developing two Python microservices for validating OS-specific imagery at different points of the processing pipeline.

Other selected work
WordPress | Liquid | SSL Certificates | Google Calendar API | Python | Snapista | Rasterio | GDAL | PyProj | ESA SNAP
QGIS | GeoServer | PostgreSQL | Docker | Helm | Kubernetes | S3 Proxy | Azure | Postman | Notion | Trello | GitHub

- Maintained multiple Wordpress websites and a Shopify store, including features in custom code.
- Refactored and rebuilt a GeoServer-based Web Map Service for OpenStreetMap data, implementing modern Python techniques, GeoServer REST API, Postgres database configured with PostGIS and aided in the redeployment of the project in Azure with Kubernetes and Helm Charts.
- For the IPP CommonSensing Project with Satellite Applications Catapult: Identified and resolved issues in existing Synthetic Aperture Radar (SAR) processing pipelines using Python and ESA's SNAP GPT, completed bug fixing and testing in the frontend application and assisted in the Dockerization of the project and configuration of GitHub actions and Azure pipelines.
- Created a company handbook comparing S1 ARD processing steps for various environmental applications, which I used as part of onboarding our Earth Observation Scientist.

Sep 2021 – Sep 2022: Full Stack Diploma & Personal Programming Projects Python | Django | HTML | CSS | JS

Midi Dragon – *Music Products and Services*
Cook eBook – *Recipe Making Community*
Blosh – *Blog Website for a Student*
Python Minigames – *For the Python Console*
Fretboard Trainer – *Multichoice Quiz Game*
Rock Climbing – *Informational Website*

Other Selected Experience

Nov 2021 – Dec 2022: Kitchen Member *(4mo)* **Kitchen Team Leader** *(9mo)* **- Toby Carvery**
Sep 2020 – Aug 2021: Police Constable - Metropolitan Police Service
Oct 2019 – Aug 2020: Quality and Compliance Officer / Team Leader - DHL
Feb 2018 – May 2018: University of Hertfordshire – Python Programmer (contract) Python | MS Excel

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Education

Sep 2021 – Sep 2022: Code Institute – Diploma in Full Stack Software Development
Django | Python | Flask | JavaScript | HTML | CSS | Google Sheets API | PostgreSQL | GitHub | Heroku | Slack | Balsamiq

- Developed five distinct projects to demonstrate proficiency in various full-stack development technologies, utilising Git and Heroku for version control and Github Projects for project management.

Sep 2016 – Sep 2019: University of Hertfordshire – BSc (Hons) Physics (1st Class)
Awards: University Prize for Outstanding Performance on the Physics Program

- **Dissertation** – Investigating Cloud-Cluster Collisions: Can a Molecular Cloud Capture Stars from a Star Cluster During a Cloud-Cluster Collision?
- **Selected modules** – Applications of Computing (MATLAB) | Programming (Python) | (Partial) Differential Equations | Computational Physics (MATLAB / Python) | Contemporary Quantum Physics (Maple)

Interests

Music (guitar, piano, drums and production) | Rock Climbing | Hiking | Video/Photo Editing | Reading | Travel