Luke Howlett

Data Analyst | Expert in Satellite Navigation and Data Science

LINKEDIN GITHUB EMAIL WEBSITE

Professional Summary

I am a versatile Data Analyst who prides himself on resourcefulness and a strong ability to get things done. With a background in the complex technical field of GNSS, I have honed my skills in applying mathematical, statistical, and machine learning techniques to solve real-world problems. I excel at converting complex data into actionable insights and am highly proficient in Python, leveraging its powerful libraries to analyse, visualise, and interpret large datasets. Driven by a problem-solving mindset and strong analytical skills, I support data-driven decision-making and strategy development.

Current Job

CHC Tech LTD *2020 - Present*

- **Lead Member of a small R&D Team:** Took charge of a multitude of diverse tasks within a small R&D team, demonstrating exceptional flexibility and resourcefulness when it comes to getting things done.
- **Data Engineering and System Deployment:** Designed, built, automated, and deployed sophisticated data pipelines and systems, significantly improving efficiency and optimising processes.
- **Comprehensive Data and Scientific Analysis:** Utilised statistical analysis and machine learning techniques to model and interpret GNSS data. Helping to better understand satellite dynamics and improve our companies' services.
- **Competency in a Technical Field**: GNSS is complex. You have to understand satellite orbit dynamics, wave propagation, coordinate transformations and other advanced concepts. I studied these and then successfully applied this knowledge to solve real world problems. I am more than capable of doing this in another field.
- **Research Implementation and Innovation:** Translated cutting-edge techniques from research papers into functional code, bridging the gap between theoretical research and practical application to drive innovation.
- **A Great Team Member:** Collaborated with prestigious organisations such as NASA and Imperial College London, contributing to significant projects and research initiatives. Participated in European business trips, networked at industry conventions, and engaged in critical collaborative meetings with key companies in the field.

Technical Skills

Core Competencies:

- **Data Engineering**: Building automated data processes. Sourcing data from SQL or real-time data streams and processing it on cloud platforms.
- **Data Analysis**: Applying a wide range of analytical methods to extract deep insights and solve real-world problems.
- **Data Visualisation**: Expert in creating diverse visualisations, from simple, intuitive charts to advanced, highly informative plots, tailored to the audience.
- **Interactive Dashboards:** Developing accessible and user-friendly tools that enable clients and team members to explore the data themselves. (Dash, Streamlit, ChartJS)

Development Tools:

- **Programming languages**: Expert in Python and utilising its' open source packages, skilled in front-end web technologies.
- **SQL**: Proficient in SQL for querying, managing, and optimising relational databases like MySQL and PostgreSQL.
- **Docker**: Experienced in containerising applications with Docker, enabling consistent and scalable deployments.

- **Linux**: Knowledgeable in Linux, using its open-source capabilities to optimise server performance and reduce hardware and operational costs.
- **AWS/ GCP**: Experience deploying cloud solutions on services like EC2, S3 and Cloud Run.
- **Version Control**: Proficient in Git for version control and collaboration.

Domain Knowledge:

- **Mathematics (BSc.) & Statistics**: Strong foundation in advanced mathematical and statistical principles. Linear Algebra, probability theory.
- **GNSS/ PNT**: In-depth understanding of satellite navigation and positioning technologies.
- **Data Streaming and IoT**: Handling real-time data processing and integration of IoT systems.

Soft Skills:

- **Project Management**: Experienced leading technical projects, understanding the requirements, creating detailed plans, and delivering before the deadline.
- **Team Collaboration**: I pride myself on my value as a team member, a great communicator who has experience working with many different kinds of people internationally.
- **Problem Solving**: A curious mind and a logical thinker, I enjoy solving problems in and out of work.
- **Leadership**: Capable of guiding teams to success, a great teacher and someone you can rely on.

About Me

- Voted the happiest and most charming member of the office.
- Dedicated to continuous learning and professional development.
- Passionate about emerging technologies and their applications.
- Eager to create a positive global impact through my work.
- An engineer at heart, taking a systematic approach to everyday life.
- Very motivated to work hard and build a promising future for myself.

What I am looking for

- I am seeking my next challenge, a role that will push me to grow both as an engineer and as a person.
- I want to work with a team of people that enjoy their work and are driven to build great things.
- I am eager to engage in interesting projects that are going to have a positive impact in the world.
- Aspiring to eventually transition into a technical project management role, where I can leverage my creative-generalist ideas to lead innovative projects and drive strategic success.

Projects

GNSS Library

- Developed a comprehensive code library of plotting tools, algorithms, and reusable functions accumulated over the years.
- Significantly reduces development time by avoiding the need to rewrite code for common GNSS data processing tasks.

ICHC Data Platform

- Engineered a 24/7 data transfer system that records, formats, and processes data from antennas at Imperial College, pushing it to IGS Data Archives.
- Deployed on an AWS EC2 instance, this project was key in our company becoming a member of the International GNSS Service (IGS).

Find SV (Satellite Vehicle)

- Created a tool to calculate the historical positions of GPS satellites by applying Kepler's laws of orbital motion and transforming data from XYZ space to topocentric lat-lon coordinates.
- This tool is versatile and has been utilized in multiple GNSS-related projects.

Find SV Webapp

- Built a web interface using Streamlit that allows users to view satellite positions on an interactive map in real-time.
- This tool enhances accessibility by providing an intuitive, user-friendly interface for complex satellite data.

LAMBDA Optimisation Algorithm

- Developed a tool to solve integer least squares problems. Based on the Least Squares Ambiguity Decorrelation Adjustment (LAMBDA) method, after in-depth study of research papers.
- This advanced algorithm estimates the number of electromagnetic cycles between a satellite and receiver, enabling high-precision GNSS positioning. It involves complex linear algebra (decorrelation, vector spaces) and statistical testing.

Satellite Angle Calculator

- Optimized an open-source tool to calculate the azimuth and elevation between a ground position and a celestial object using matrix operations and Numpy.
- Enhanced the tool’s performance by implementing parallel processing, resulting in significantly faster computation times.

Group Chat Dashboard

- Created a web application for analyzing group chat data, offering insights into chat behavior through statistical analysis and a guessing game that involves a Markov chain tool that imitates chat members' message patterns.
- This project, hosted on GCP using Docker, demonstrates my ability to apply data science techniques to both professional and personal projects in a fun and engaging way.