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# SUMMARY

**MOVE THE PROCESS or MOVE THE DATA**

With over 20 years of multifaceted experience spanning Software Engineering, Scientific Research, Geo-spatial Analysis, DevOps, and Cloud Engineering. I have contributed to the success of projects in government entities, technology firms, SMEs, universities, scientific institutions, and gaming companies. Coupled with a Bachelor's degree in Computer Science and a proven track record of accomplishments in the industry. I am skilled at system architecture, data structure, and inter-dependencies identification. My expertise lies in designing, building, integrating, and automating complex systems with a unique blend of precision, innovation and creativity.

# KEY SKILLS

4 / 5 20+ yrs Software Development, Software Engineering

5 / 5 15 yrs Python Development

3 / 5 3 yrs Machine Learning - Clustering, Predictive, Modelling e.g. ARIMA

5 / 5 15 yrs Code management git, GitHub, svn, peer review

4 / 5 8 yrs Amazon Web Services (AWS)

4 / 5 6 yrs AWS Cloud-formation Lambda, serverless

5 / 5 12 yrs Geo-spatial analysis ArcGIS, QGIS

4 / 5 3 yrs Statistical analysis linear + geo-spatial

3 / 5 6 yrs Remote Sensing multi-spectral

5 / 5 4 yrs PostgreSQL

5 / 5 12 yrs MySQL

3 / 5 4 yrs Google Compute

4 / 5 5 yrs DevOps - CI/CD pipelines

5 / 5 7 yrs API Development - REST

4 / 5 12 yrs Python NodeJS, JavaScript

3 / 5 4 yrs Apache configuration and Management

4 / 5 6 yrs PHP Development

4 / 5 12 yrs Web development , CSS3, HTML5, jQuery, EcmaScript 6

3 / 5 2 yrs XML + Xslt - presented public lectures

3 / 5 2 yrs Payment gateways Adyen, PayPal, Visa

4 / 5 9 yrs Unix infrastructure management

3 / 5 7 yrs Systems Analysis - constraint recognition

3 / 5 4 yrs AGILE Development methodologies

3 / 5 3 yrs Management & Leadership

3 / 5 5 yrs Mentoring Developers, Masters & PhD students

3 / 5 8 yrs Scientific research co-authored journal papers

# EDUCATION

● 2012 Bachelor of Science (Computer Science, Environmental Science) James Cook Uni

● 1994 Diploma Computing, Newcastle University

# CO-AUTHORED JOURNAL ARTICLES

● Leblanc, M et.al. (2011) Groundwater change in the Murray basin from long-term in situ monitoring and GRACE estimates Climate change effects on groundwater resources

● Leblanc, M. et.al. (2009), Basin-scale, integrated observations of the early 21st century multi-year drought in southeast Australia, Water Resour. Res., 45

● Bohnet, I, et.al. (2008), 'An integrated modelling framework to explore land use change scenarios in collaboration with communities and end-users', in International Conference Impact Assessment of Land Use Changes, Berlin, Germany.

# ROLES

# Senior Software Engineer

**Regrow.ag**, Melbourne Australia,

Dec 2022 – Present,

Engaged in Python Software Engineering tasks, constructing FastAPI and Pydantic-based modules for storing Climate Data sourced from primary producers and third-party data providers.

Led the refactor and re-architecture efforts for our core SaaS product, focusing on enhancing code quality and minimising defects. Introduced SonarCube's Complexity metrics to improve code maintainability.

Developed and implemented Climate model Geo-spatial algorithms and machine learning models in Python, along with utilising QGIS for spatial analysis.

Created Geo-spatial datasets tailored to support producers across the EU, USA, and Australia in managing their crop and farming practices efficiently.

Authored internal Software Engineering guides to facilitate knowledge sharing and standardisation within the team.

## Director of SaaS

**RUBIX**, Melbourne Australia

Nov 2021 - Dec 2022

Budget Management: Successfully managed budgets exceeding $1 million, including meticulous work forecasting to ensure efficient resource allocation.

Data Store: Established a "Data Marketplace" using Shopify for the curated retail sale of Machine Learning ready datasets. Developed all Python-based APIs. Implemented a system where data is initially stored as CSV and dynamically converted to various request formats such as CSV, JSON, and API payloads, store in S3.

Business Proposals: Authored comprehensive proposals for Data System builds, encompassing client requirement alignment, business and use case development, and end-to-end technology and resource cost analysis.

Management and Leadership: Oversaw day-to-day operations and work package assignments for a dynamically sized team, ranging from 4 to 15 members. Managed personnel costs, project funding allocations, and provided executive-level reporting. Notably, established and led the SaaS team and its product portfolio from inception.

Solution Architecture: Designed, developed, and managed the delivery of ReefBuilder, an Environmental data capture and reporting platform. Developed the framework, for a Python code base, and DevOps methodology driven as an Infrastructure as Code (IaC) deployment system, using AWS CDK. Additionally, created a simplified JavaScript to Python interface via API gateway for Lambda or Apache-executed processes.

Data Engineering: Designed and implemented Python-based data extraction, transformation, and loading (ETL) pipelines across Lambda, ECS, and EC2 environments to facilitate periodic download, cleansing, loading, and storage of data.

## Senior Cloud Engineer

**RUBIX (Consulting @ NAB)**, Melbourne Australia

Apr 2019 - Nov 2021

AWS Cloud Engineering: Led the design and development of Python-based data extraction and transformation pipelines tailored for execution in Lambda + Elastic Container Store (ECS) or EC2 environments. Proficiently managed data transport and conversions, operating on terabytes of data.

AWS Cloud DevOps: Engineered robust code generation tooling, facilitating the construction and deployment of Elastic Container Services, Virtual Private Clouds (VPCs), and Virtual Machines (EC2) using Terraform and Cloud-formation.

Code Quality Control: Led the conversion of requirements and implemented code to effectively monitor and rectify real-time data quality issues. Established code quality metrics, ways-of-working and dashboard visualisations in Splunk.

Mentorship and Leadership: Development and delivery of comprehensive training sessions for new team members. Topics covered included the significance of, and methodologies for, conducting Peer Reviews, code readability, code maintainability. and bug minimisation though the use of tools like SonarCube.

## Senior DevOps Engineer

**MYOB**, Melbourne Australia,

Nov 2017 - Mar 2019

Created AWS Cloud-formation templates to build, manage, and monitor data pipelines, integrating with Kinesis, S3, and the Sumo Logic SaaS platform. These pipelines supported ETL processes handling up to 200GB of data.

Designed and delivered training courses on SumoLogic usage, focusing on data acquisition and Observability techniques, titled "How to find your data (problems)"

Developed several applications utilising Python, within Docker containers, running both Kubernetes and AWS Fargate, to bolster fraud detection capabilities.

Offered DevOps expertise and infrastructure support to international teams, providing insights and guidance to enhance operational efficiency.

## Senior Software Engineer + DevOps Engineer

**Tabcorp**, Melbourne Australia

Sep 2015 - Oct 2017

Engineered AWS CloudFormation templates to facilitate the construction of an API gateway paired with Python Lambda ETL functions. These components seamlessly delivered risk and fraud detection data streams to the SalesForce SaaS platform.

Designed and implemented a secure and traceable credit card Payment gateway for sunbets.co.uk. The gateway integrated with anti-money laundering (AML) systems, ensuring robust transactional security. Within six months of operation, the gateway processed over £60 million with an error margin of less than £10,000.

Developed and maintained various features and fixes in PHP for the Luxbet.com.au gaming platform. These enhancements bolstered customer retention, ensured system stability, and facilitated the roll-out of new betting markets.

Leveraged Python & QGIS for geo-spatial data analysis to support retail teams in vendor payments, employing an innovative approach tailored for non-traditional venues.

## Software Engineer -

**SMS Global**, Melbourne Australia

Aug 2014 - Sep 2015

Created PHP integrations linking the SMS delivery platform with various 3rd party REST APIs, such as Xero accounting and the Zapier.com platform.

Designed and implemented multiple Zapier "zaps" to enable customers to seamlessly upload their Google contacts into our platform, send bulk messages using a Google Sheet, and receive reports from our system directly into Google Sheets.

Restructured a client's Linux, Apache, MySQL, PHP (LAMP) application into a multi-tier MVC pattern web application. Hosted on AWS, the redeveloped application incorporated SSL, virtual load balancers, multiple EC2 instances, a MySQL backend, and dynamically attached EBS volumes for enhanced scalability and performance.

## Information Technology Manager

**Victorian Greens Party**, Melbourne Australia

Jun 2013 - Jul 2014

Engineered an ETL adapter using PHP to seamlessly integrate the NationBuilder SaaS platform with the internal Drupal system of the Greens.

Administered Unix servers, overseeing tasks such as local and remote email server management, as well as implementing SPAM and anti-virus detection measures.

Oversaw the transition to the cloud, leading the migration of the Victorian office from an on-site email and shared files service to a hosted VPS. Managed the entire process to minimize costs and ensure backup services were in place.

## Geo-spatial Software Engineer

**Victorian Department of Primary Industries**, Melbourne Australia

Mar 2013 - May 2013 (contract)

Implemented a new Geo-spatial user interface within the Exploration Licensing system, enabling users to visualise licensee locations through map views.

Revamped and translated Oracle stored procedures into PHP, streamlining the process of transforming Excel spreadsheets into Oracle tables.

Adapted MS-Windows specific code, originally utilising ODBC Microsoft SQL Server connections, to run on an Oracle with a Linux back-end.

Developed Python and MySQL scripts to handle ETL processes, validation, and bounds checking, while also performing linear, geo-spatial, and time-series statistical analysis.

Conducted analysis on geographic and satellite remote sensing datasets, generating geographic datasets, cartographic imagery, and figures for publication in journal articles.

## Geo-spatial Analyst

**James Cook University, Human Footprint Project**, Cairns, Australia

Sep 2012 - Jan 2013

Researched, obtained, analysed, and processed geo-spatial datasets for projects focused on Human-Footprint and Human Influence indices.

Created Python-based plugins for QGIS to implement the supervisor's algorithm research.

## Software Engineer

**James Cook University, eResearch**, Cairns, Australia

May 2011 - Oct 2012

Embedded within the eResearch Department, I implemented AGILE and SDLC methodologies to architect and build a web application. Leveraging jQuery, Python, and MySQL, the application facilitated the ingestion and analysis of biological and environmental data, culminating in interactive visualisations of species ranges juxtaposed against diverse Climate Change scenarios (CliMAS: Climate Maps for Australian Species, [Climas on Youtube](https://youtu.be/wt3TOeVvQS0?si=5gs59SPbZv2VrQ5R), [Tropical Data Hub on ANDS](https://projects.ands.org.au/id/AP02).

Additionally, I developed an array of Python, PHP, Bash, and C++ components to interface with High Performance Compute clusters. These components executed computational and geo-statistical models driven by research, employing map-reduce techniques to parallelize execution and streamline payload management.

## Principal investigator

**James Cook University, Hydrology, Ecology Research**, Cairns, Australia

Apr 2010 - May 2011

Led a Queensland Cyber Infrastructure Foundation (QCIF) project as principal investigator to construct a "Smart Water Sensor Network.", involving the development of a proof-of-concept system, primarily using off-the-shelf components complemented by custom-built code. The system was designed for deployment in remote locations to monitor a homogeneous array of sensors and transmit data via satellite link.

Designed and implemented a proof-of-concept sensor communication data exchange system for a range of commercial and in-house sensor platforms.

## Science Researcher

**James Cook University, Hydrology, Ecology Research**, Cairns, Australia

Apr 2009 - Apr 2010

Created a unified database to standardise Australian State groundwater readings, incorporating supplementary environmental data from various global sources including NASA, European Space Agency, and GRACE gravity anomaly data. This project necessitated the development of extensive code-bases utilising Linux, Python, and MySQL.

Conducted analysis on geographic and satellite remote sensing datasets to generate geographic datasets, cartographic imagery, and figures for publication in journal articles

Delivered a public lecture on XML titled "eXciting Markup Language".

**published journals:**

Leblanc, M et.al. (2011) Groundwater change in the Murray basin from long-term in situ monitoring and GRACE estimates Climate change effects on groundwater resources

Leblanc, M. et.al. (2009), Basin-scale, integrated observations of the early 21st century multi-year drought in southeast Australia, Water Resour. Res., 45

## Software Engineer

**CSIRO Sustainable Ecosystems**, Cairns, Australia

Sep 2006 - Apr 2009

Created "The Landscapes Toolkit," a desktop application for MS-Windows using C# and web technologies such as HTML and CSS. This application, developed in C# .NET, supports the integration of models through a Lazy-load software pattern implementation.

Designed and implemented geo-spatial and environmental modelling tools for "The Landscapes Toolkit," a Scientific Model Integration environment. These tools included Python plugins to enhance functionality.

## Senior Developer

**Waste Service NSW**, Sydney, Australia

Apr 2004 - Apr 2006

Developed and revamped Crystal Reports, integrating them with .Net, Lotus Notes, and Microsoft Reporting Services.

Managed Lotus Notes Domino cluster email services administration, which encompassed spam and virus filtering, on Windows 2003 and Citrix servers.

Desktop support for 300+ users across 14 sites, including fault analysis, recording, and repair

## Senior Developer

Salvation Army, Sydney, Australia

Apr 2003 - Apr 2004

Redesigned and redeveloped an existing multi-site Lotus Notes client application into a centralised web-browser application.

Designed a warehousing system to manage the specific physical item storage needs of the Army.

## Senior Developer

IBM Global Services, North Sydney, Australia

Apr 2000 - Apr 2003

Designed and implemented a web-based Investment Management application, replacing numerous intricate financial spreadsheets, while ensuring funds-management quality assurance.

Engineered a back-end system for the Investment Management application to calculate multiple future predictions of managed funds, leveraging actuarial algorithms.

Worked closely with third-party contractors to develop a Lotus Notes password encryption transfer agent, ensuring a seamless user transition to Oracle.

Collaborated with MLC and IBM as a member of the Business Continuity team to devise and execute disaster recovery plans and procedures for mlc.com.au.

Developed a Lotus Notes configuration management and deployment tool for version control, streamlining deployment processes.