Marcus Oates

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Profile

- For projects and additional information visit my website
- Bachelor of Engineering (First Class Honours) / Computer Science (AI) at UNSW
- Creator of Gym Junkie fitness app (pre-alpha)
- Software engineer at Downer, implementing automated microservices with ML/AI, Azure resource management and spearheading IaC adoption (GitHub actions)
- Short term consultancy internship at Incat Crowther for a naval engineering and architecture in 2023

Education

Bachelor of Engineering (Honours) / Computer Science (AI) 2019 – 2023

UNSW Sydney

- Honours WAM: 84 (13 High Distinctions, 7 Distinctions)
- Notable marks: MTRN2500 Comp for MTRN = 98, COMP3331 Database Systems = 97, COMP3121 Algorithms and Programming Techniques = 96, MMAN3200 Linear Systems and Control = 95

Higher School Certificate 2018

St Augustine's College Sydney

- ATAR 97.30, Aggregate Cup Recipient (2018), Represented the College in the First XI Football team (2018), Stan Arneil Memorial Award Recipient (2017)

Projects

Gym Junkie

- Free, powerful workout tool and data tracker. React Native frontend (Expo), FastAPI (Python) backend with Postgres and Redis
- Currently provisioning AWS services for production beta release on Android
- Lightweight frontend with a focus on increased functionality over existing paid apps
- Enables users to track their workout progression over time with graph displays
- Leaderboards, exercise history and muscle maps help user gain their progression

Other

- Finska: lightweight game tracker for the popular game
- DownerHelper: PyPi package that is a collection of wrappers to eliminate code debt across projects
- Cell Tracking: segmented cells in a sequence and tracked their positions over time
- Postgres Deploy: deploy and mirror db schemas from a json configuration

Experience

Automation Software Engineer: Downer Group May 2023 - ongoing

- Automate data extraction from spreadsheets using Azure function apps, stored in database with PowerBI connection, saving ~$175k a year per business unit implementation and eliminating manual transcribing errors

- Created a custom internal Azure dashboard for monitoring project resources across subscriptions, with resource actions and deployment monitoring
- Reduce operating costs of Azure resources by ~60% by scheduling startup and shutdown events with a centralised tagging policy enacted through dashboard
- Extract text with OCR from CAD drawing PDFs and generating project report spreadsheets with a time saving of ~95%
- Custom sFTP file routing to applications by allowing remote configuration from trusted actors, removing the need for developer intervention on config updates
- Wrote project setup shell scripts that deploy environments and resources in Azure, linked to custom GitHub branch environments with rules and protections to enable consistent IaC deployments using Bicep
- Automatic Konect API queries for critical field work, notifying requisite authorities to consistently meet SLAs and avoid total penalties of ~$450k
- Identified and designed automation solutions between existing cloud and on-prem systems, leveraging Azure microservices to eliminate manual workflows
- Enhanced security through daily storage account key rotation and SAS generation through Azure Key Vault, reducing 80-100 points of failure to a centralised point
- Created a custom PyPI module) that wraps the Azure SDK with common commands to reduce code replication across projects, reducing technical debt by ~200 lines per project
- Developed a simple React frontend application so internal non-technical staff can easily submit data and run automated jobs
- Implemented bespoke deep learning and computer vision solutions for real time artefact recognition with ~94% accuracy
- Combine ML and classical analysis methods to read a variety of analogue meters with a limited dataset, approximately 85% accuracy
- Deploy and monitor new Esri ArcGIS Enterprise servers
- Configure Azure DevOps environment for integration with an external tracking
- Liaise with management, determine opportunities for automation adoption in the business across divisions

Engineering Intern: Incat Crowther Feb 2023 – May 2023

- Highly proficient in producing accurate technical drawings with AutoCAD LT, focusing on double hull commercial vessels of 30-120 ft
- Quickly ascertained how boats are constructed and outfitted for service by creating and modifying technical frame and construction drawings for 3 vessels
- Complied with relevant classing authorities engineering standards such that vessels were safe to operate under varying oceanic conditions
- Efficiently produced precise cut parts, engine and rudder modification and machinery arrangement drawings for clients within a dynamic environment

Technical Skills

Azure

- Extensive use of Function Apps, standard and durable (Python), Container Registry + Instances, integrated with Managed Identity, Key Vault, Storage Accounts (+ queues), EventGrid and Postgres database
- IaC using Bicep, mainly with GitHub workflow integrations, az cli
- Business automation integration with SharePoint and Logic Apps
- Azure VM deployment and monitoring
- Containerised Streamlit applications for ML/AI demonstrations

AWS

- ECS, Secrets Manager, Lambda (zip/contarised), NLB, ElastiCache (Redis), RDS Postgres, CloudFormation, aws cli

Python

- Extensive knowledge of ML/AI: Tensorflow, OpenCV, scikit-learn, pandas, pillow
- FastAPI for RESTful interfaces
- Psycopg2 and AsyncPg

Web/Mobile

- React TS, React Native TS, Express, Jotai

Other

- SQL, PLpgSQL, Bicep, Docker, C/C++, Shell, HTML, CSS, Java, Cloudflare

Other skills

- SolidWorks, AutoCAD LT, Rhino
- Composed complex naval mechanical designs, accompanying schematics and visual demonstrations

Extracurricular

Triathlon, Mountain Biking, Bouldering, Gym

Referees

Mark Volz

Andrew Tuite

Paul Humphris

Heidi Livingston

Greg Yeates — Contact details available upon request