Summary of Technical Skills - Joseph Stevens

# Artificial Intelligence

* University course module – Introduction to AI Methods
* Topics include: Heuristic and non-heuristic methods, Prolog, neural networks, decision trees, etc.
* Coursework included a Java problem to solve a 15 square tile problem and C++ program to solve 8 queens’ problem.

# AWS

* Previous experience of this during an internship and in spare time.
* Created a series of asynchronous Lambda functions to locate DICOM files in an S3 bucket, extract data from each file and convert to JSON, then post this to a Dynamo DB table.
* Created a GitLab CI/CD using an Ubuntu EC2 instance.
* Performed end to end testing on a web application making use of API Gateway.

# Computer Vision

* University course module – Computer Vision.
* Image processing methods using MATLAB.
* Topics include: Erosion and dilation, JPEG compression, Segmentation, etc.

# Database Systems

* SQL programming used in several university course modules including a team project to create an eBay type website.

# Data Visualisation

* Knowledge of different 2d and 3d graphs including, line graphs, scatter graphs radar graphs, in addition to more niche types such as quiver plots.
* Used libraries such as Chart.js, Matplotlib, MATLAB, Maple, Rviz, etc.
* Dissertation on 3d data visualization of data captured by a Lidar camera including at loop closures.

# Excel

* Standard Excel spreadsheet formats.
* CSV formats.

# Machine Learning

* University course module – Machine Learning
* Wrote a consultancy report on machine learning algorithms and applications that can be used in the health sector.
* Conducted experiments on health care data using the Weka software platform and wrote a report on these experiments including visualisation of my results.

# Node.js

* Front end development including renovating a website and testing a web app in a previous role.
* Actively used JSON formats and converted other file formats to and from JSON.
* Used libraries such as TensorFlow.js.

# Numerical Methods

* University course module – Numerical Methods
* Numerical solutions as would be calculated by a computer.
* Topics include Runge-Kutta First and 4th order methods, solutions for higher-dimensional problems, interpolation, Jacobi method, etc.
* Created a MATLAB program to solve a higher-dimensional problem using the 4th order Runge-Kutta method and display the solution in several different visualisations including a quiver graph.

# Python

* Used libraries such as Pandas, Matplotlib, SciPy, NumPy and SciKit learn.
* Created Jupyter notebook project to analyse and visualise AIS station data and make predictions based on this data.

# Operational Research

* University course module – Operational Research
* Solutions using tableaux methods for linear programming problems.
* Touched on game theory including the zero-sum game.
* Teamwork project to create a MATLAB program to work out a complex linear programming problem and visualize the results.

# Signal Processing

* University course module – Random Processes and Time Series Analysis
* Learned Fourier transform for both spatial and temporal frequencies.
* Statistical analysis of time series and random processes
* Mean, Variance, Covariance.