

22th September 2020

Dear Ms Wyss,

Re: Thank You – Emma Luk’s telephone interview for Data Analyst at BAE Systems

Thank you so much for speaking with me on 7th August to discuss the Data Analyst position at BAE Systems. I really enjoyed our conversation, and believe my background in data science and computer science makes me a strong match for this position (**Emma Luk’s CV and Appendix 1**).



Last year when I attended open day for Women’s Engineering Society at BAE Systems centre. They did a walkthrough with me. I saw and engaged with equipment, such as a tracking system developed for soldiers.

Figure 1: I (front-centre) with a group of science, technology, engineering and maths (STEM) students standing outside of the building when I visited BAE Systems on 7 February 2019

I like the fact that BAE Systems is a market leader in the global defence market, and that it is seen as a very British company that develops products used to help soldiers, sailors and pilots remain safe and do their jobs more efficiently. I also like that the company provides long term solutions for platforms or the products last 30, 40, or 50 years more, and that it is determined to bridge the historical gender gap in the industry by encouraging more women to apply for roles. Also, it is a unique and good place to work.

As I mentioned in our conversation, in order to drive real transformation and real results, a **customer-centred**, **customer engagement**, and **customer value-based prioritisation** approach is the best way to meet **consumer needs** and deliver positive business outcomes.

An example of product innovation self-driving cars project: control unit when I worked at Massive Analytic Limited (Appendix 1a)

Please see my CV and samples of my data science projects for more information.

Thank you again for the opportunity to speak, and I hope to hear from you soon. Please do not hesitate to get in touch if you have any questions or if I can provide additional information.

Yours Sincerely,

Emma Luk

Address: Guildford, UK **Mobile: 07974 522 805** Email: emma_luk2@hotmail.com

Linkedln: <https://www.linkedin.com/in/emma-luk-6b293524/>

Data Science Projects: https://github.com/emma-luk/pdf-data-science/blob/master/emma_luk_samples_of_Data-Science_work.pdf

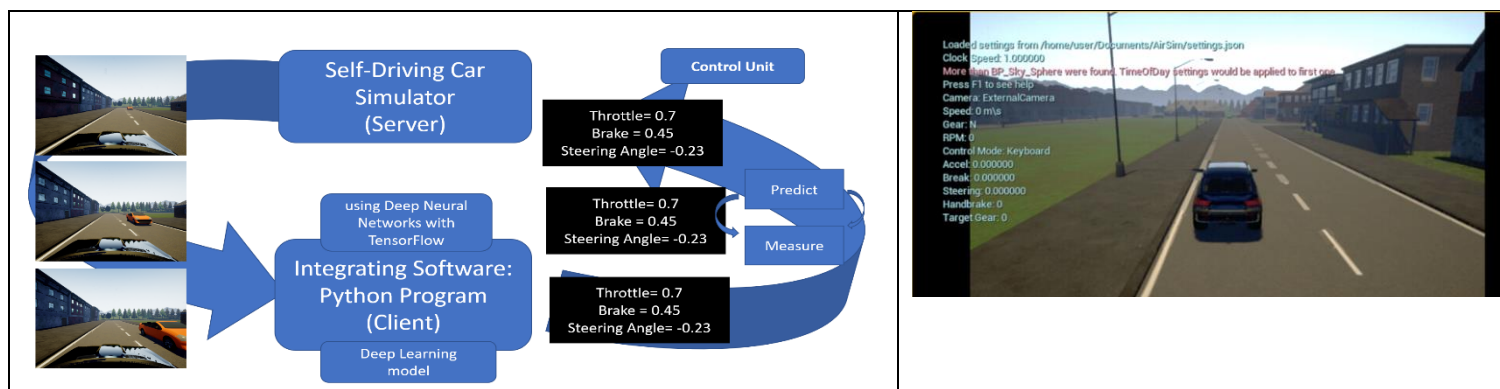
High-Quality Statistical Report: <https://github.com/emma-luk/pdf-data-science/blob/master/Quantitative-Data-Analysis-emma-luk.pdf>

Appendix 1: Skills, competence and experience

I am an experienced senior technology Web Developer, Data Analyst/ Data Scientist with a track record of driving digital transformations and data analysis consultancy in established businesses, including **automotive, financial services, insurance, business information solutions, research and healthcare**. I bring a problem solving and analytical skillset, along with experience of successfully implementing advanced technologies to drive both revenue growth and operational process efficiency, and customer engagement and optimisation. I hold an MSc in **Computer Science** from University of Bristol and an MSc in **Data Science and Analytics** from Brunel University London. Additionally, I am a Certified **Scrum Master**® (Credential ID: 000691196) from Scrum Alliance.

Appendix 1a: An example of product innovation Self-driving cars project: Control Unit from when I worked at Massive Analytic Limited

A collaboration between University College London (UCL) and Massive Analytic Limited to build an autonomous car simulation using autonomous car point-cloud sensor data analysis, where I applied data science and deep learning to build a control unit. A fuzzy time series model is implemented along with a long short-term memory (LSTM) - recurrent neural network (RNN) deep neural network to produce the desired output. I helped develop this whilst supervising the "MEng Capstone Group Design Project" for four Mechanical Engineering 4th Year students at UCL.

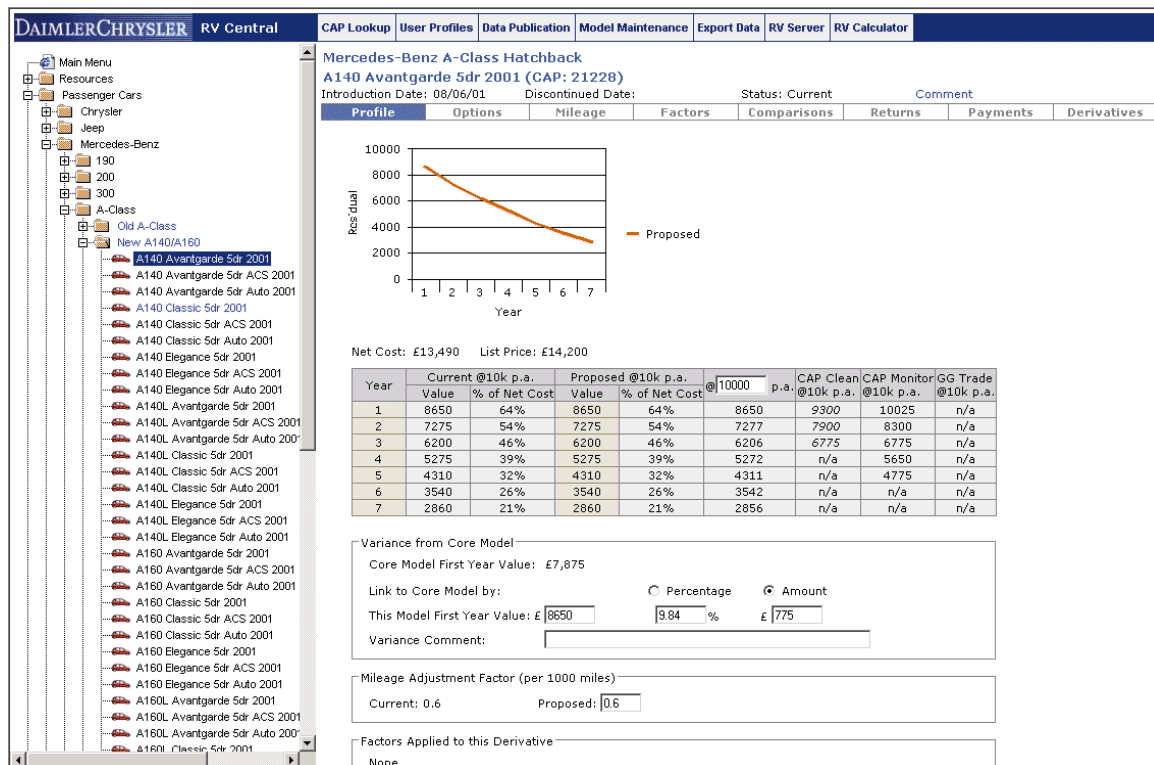


The problem is solved in the following steps:

- The simulator can be used to collect data by driving the car in the training mode using a joystick or keyboard, providing the so called “good-driving” behaviour input data in form of a driving log, JavaScript Object Notation (JSON) and a set of images. The simulator acts as a server and pipes these images and data to the Python client.
- The client (Python program) is the machine learning model built using Deep Neural Networks with TensorFlow. These models are developed on Keras (a high-level API over TensorFlow). Keras provides sequential models to build a linear stack of network layers.
- Once the model is trained, it provides steering angles and throttle to drive in an autonomous mode to the server (simulator).
- Inputs are piped back to the server and are used to drive the car autonomously in the simulator and keep it from falling off the road.

Appendix 1b. An example of process innovation from when I worked at Mercedes-Benz UK:

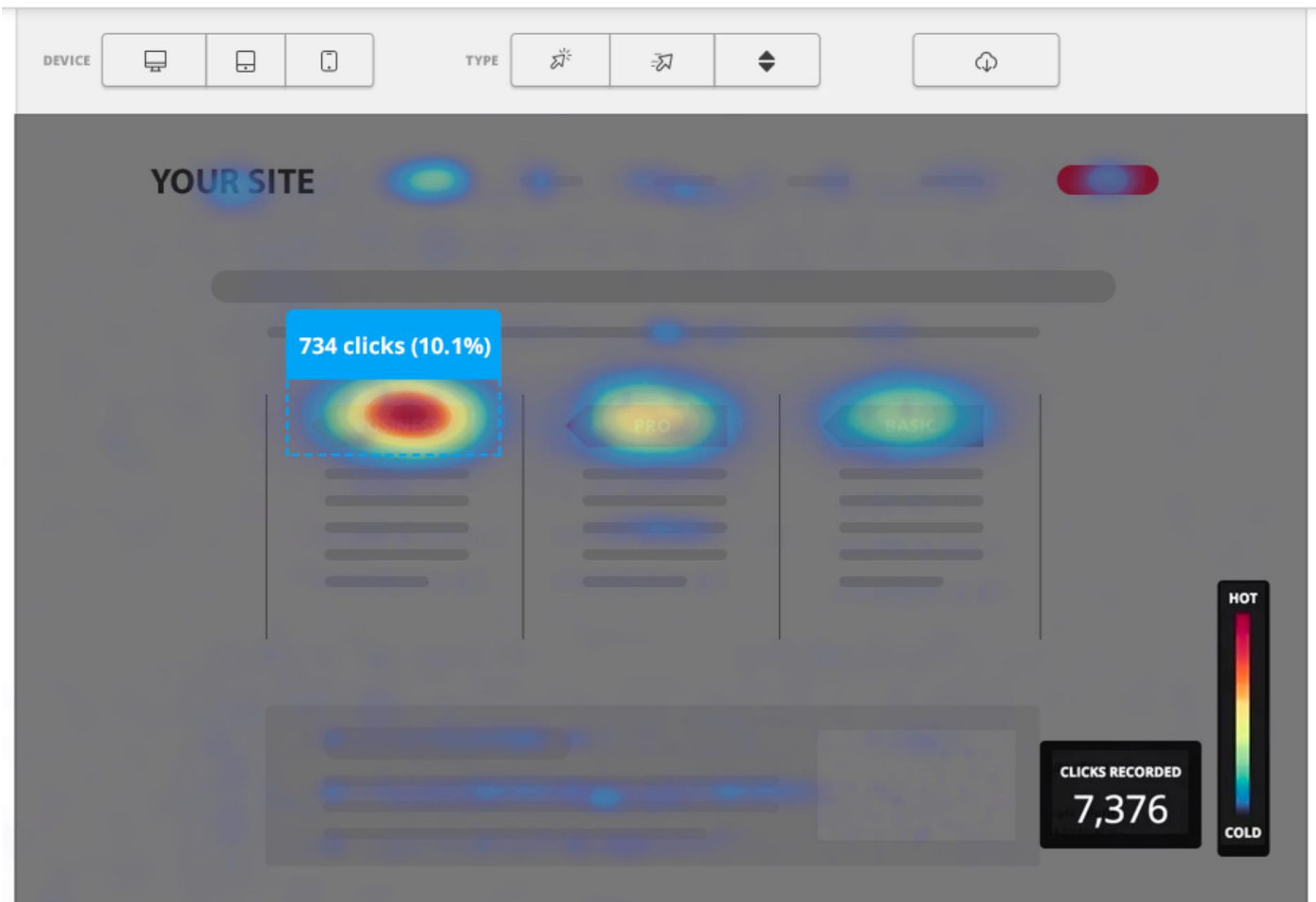
The first 'RV Central' in the UK, which provides the residual value of your used car. This system calculates the residual value for used cars and has since been implemented by Mercedes-Benz throughout all their UK dealerships. I also applied data science skills and new technology to improve business processes and business efficiency and reduced costs; this helped the company implement automated processes that would previously have been paper-based, resulting in increased efficiency and reduced environmental impact.



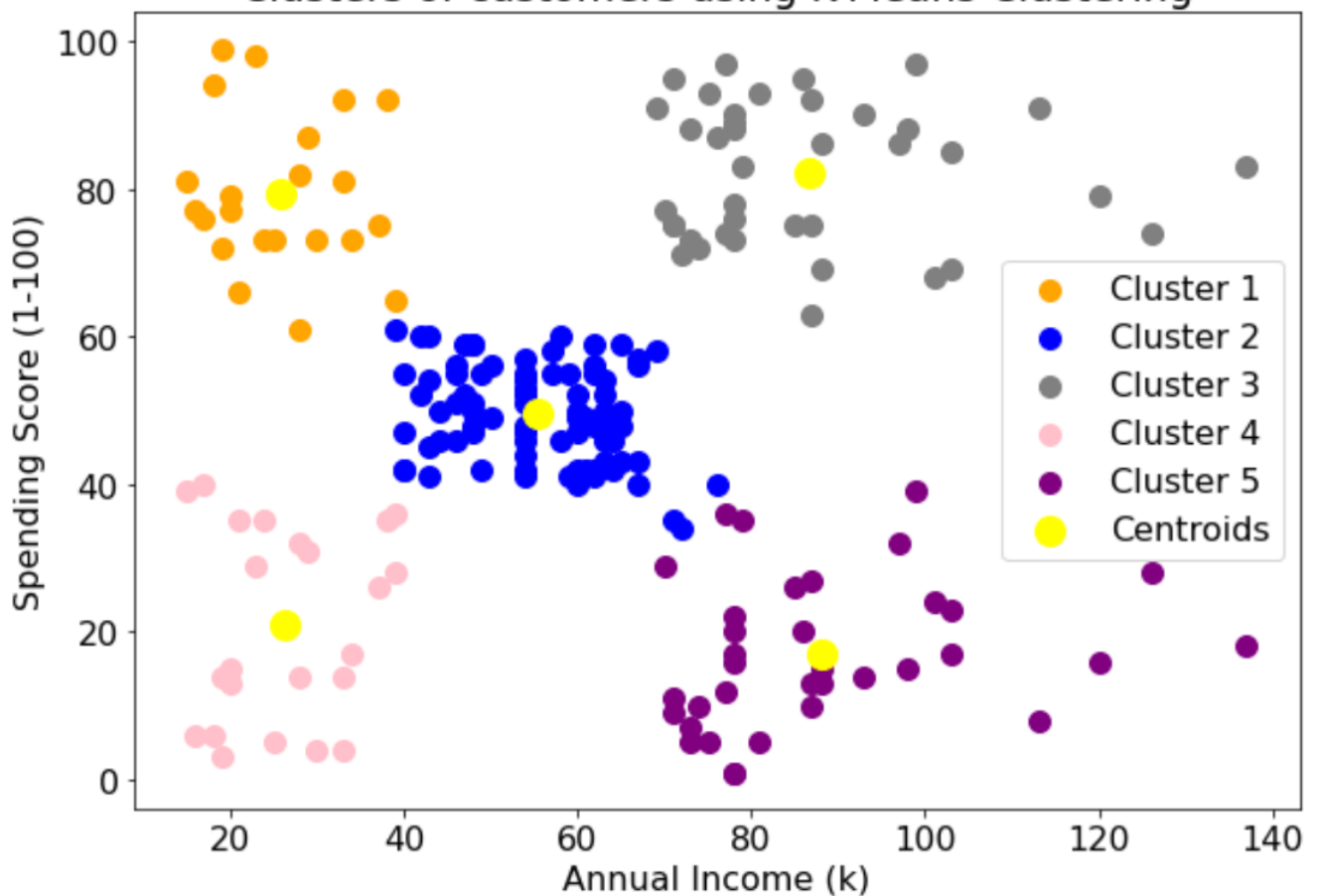
Appendix 1c. Examples of A/B Testing and Multivariate Testing (MVT) from when I worked at AXA.

The two examples below depict different versions of the same webpage, which were used to provide insight to drive future strategies and identify business opportunities and problems.





Clusters of customers using K-Means Clustering



Just looking at the graph tells us about the five different types of customers

- I. Cluster 1: Low income, High spenders

- II. Cluster 2: Average income, average expenditure
- III. Cluster 3: High income, High spenders
- IV. Cluster 4: Low income, Low Spenders
- V. Cluster 5: High income, Low spenders

Machine learning is used to understand customers, drive personalisation, streamline processes and create convenient and memorable customer experiences.

Rather than relying on a marketer's intuition to separate customers into groups for campaigns, data scientists can use clustering and classification algorithms to group customers into personas based on specific variations among them with similar needs and behaviours. These personas account for customer differences across multiple dimensions such as demographics, browsing behavior, and affinity. Connecting these traits to patterns of purchasing behavior allows data-savvy companies to roll out highly personalised marketing campaigns that are more effective at boosting sales than generalised campaigns.