“Machine learning platform to predict consumer behaviour in near-real-time using online behaviour as base data”

1. Introduction

Mash Group Plc is a Finnish Fintech company founded in 2007. With over 10 years of experience in credit underwriting and payments, Mash is currently one of the most innovative and performant Fintech in Europe, with special focus in the POS retail market.

Mash is on a mission to enable every customer to checkout in-store via invoice at POS (Point-Of-Sale, payment terminal) or online. As a customer, Mash gives you 15-45 days’ time to repay, giving you freedom of ‘trying it before buying it’, as well as deciding how you wish to repay for the purchase being fully or in parts.

The key selling point of Mash is that we operate at POS with our trusted partners providing our customers a safe checkout environment with as little friction as possible. Contrary to our competitors, Mash is free for the merchant since we believe that payments should be free.

In 2020, Mash will take its products to the next level with a mobile application and many more features offered to consumers and merchants. We also want to enhance our reaction time towards our customers. We know them well, we have accumulated several years of data and we are constantly seeking to improve ourselves.

With an increased amount of regulation and new directives, we aim to help our customers in real time to check out, receive the best deals, merchant offers and take the right decision.

Therefore, we are in need of tools, which can analyse in (near) real time our customer’s online behaviour and predict their next purchase, financial needs, payback reliability etc.

This project is designed as a pilot to scope the feasibility of this target and start development, by using tools available on the market, by developing everything in-house, or by a hybrid approach.

Mash strongly believes that being data-driven, using Machine Learning, data analytics etc. is the key to improve our business. That is why Mash has a strong data science & analytics team that the students will work with. We also want be active in publishing our work in leading business and scientific journals. If this project or the work it helps to start produces significant results, this offers the team members an opportunity for contributing or co-authoring in a possible publication of these results.

Our goal is to start, not a one-off project, but a long-term development process. The aim is to recruit the most motivated Team members to continue the work first as summer workers, than as part-time developers and finally as full-time employees.

2. Project goals

To create a Proof-Of-Concept level machine learning platform to predict consumer behaviour in near-real-time using online behaviour as base data. In the POC a good result would be gaining even low, but still statistically significant predictability in one behavioural trait of the end-user.

You will work hand in hand with Software Developers, Data Scientists and Database Engineers to:

- Assess performance of Machine Learning models currently in production by building scalable and insightful business dashboards
- Help improve performance of the above-mentioned models: application and behavioural scoring, fraud detection and many more. We are always striving to raise the bar when it comes to serving our customers and you’ll have the chance to make a real impact by pushing the boundaries of our decision-making processes as far as you can.

- Help us on the analytics side, building a deep understanding of our clients' lifecycle and making causal inference possible for all the various activities and campaigns we run on our products.
- Get creative on the infrastructural building blocks of the Mash platform. We want to deliver top-notch models at scale in almost real time, and the most appropriate deployment architecture is of paramount importance to achieve that.

3. Technologies

While gathering end-user behavioural data the student team will work on web and mobile UI's that are in development at the moment with little legacy, React on Azure. Data storages and -tools based on Azure Cloud offering, ML tools and programming languages (Azure Functions, Python) to be discussed. Within these boundaries the team, together with Mash Architects, should select the approaches and tools to use.

The team will be provided with all the necessary equipment and working space (Pohjoisesplanadi 37A, Helsinki, Finland) needed in order to carry out the tasks that are given.

The team members will be awarded by keeping the hardware that they used during the course of the project if they manage to reach the demanding, but not impossible, stretch goals that are set together with the team at the beginning of the project.

4. Requirements for the students

We trust and know that Aalto grooms the brightest talents in Finland, the only thing Mash demands is motivation and hard work.

It would be beneficial if the Team has members with experience or strong interest to quickly learn about:

- Relational databases
    - Data modelling
    - SQL
- Azure cloud services, for example
    - Azure Databricks
    - Azure Data Lake
    - Azure Event Hubs
- Data transformation
    - Data pipelines
    - Batch and stream processing concepts
    - Structured, semi-structured and unstructured data

5. Legal Issues

Mash retains all IPRs to the results.

If the project is very successful we may agree to publish the solution or parts of it under Apache license. However, we cannot promise this for the time being.

Signing the NDA included in the Aalto's contract template is required. That way we can share Information and sample data more freely with you.

6. Client representative(s)

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