Expression of Interest

Project Title	Smart Receipt Spending Analyser
Organisation or Supervisor	Capital One
Contact person (sponsor)	Craig Burton
Contact email	craig.burton@capitalone.com
Team Number:	29

Team Members

Name	**Email Address**
Vishal Pittala	psyvp2@nottingham.ac.uk
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Description of Team Skills (You must provide clear evidence of to what extent the team has the Highly Desirable and where possible the Desirable Skills detailed on the Original Project form)

(750 words Max)

Our team aims to minimise money spent on impulsive/non-essential shopping, especially for people with bad spending habits. According to Creditfix, an average British person spends £1,093.90 (Spending Report) a month on non-essential items, despite typically having only £371 disposable income. From these poor spending habits shown, we see that developing a tool that categorises the spending habits of users may offer a great aid in helping re-evaluate the way they manage their money.

Grocery receipts are a way to record a large portion of someone's spending, and there are many apps on the market that can group and save receipts such as "Smart Receipts by SmartReceiptsLLC". This app, however, does not categorise essential items, nor even list out the items in the receipt.

The act of scanning a receipt is itself a major challenge, but a step further would be to show a realistic saving method through the retrieved data. Those with issues in spending will have to slowly break that habit, and this will involve some sort of plan that can be awarded (via either 'cheat days' or achievements) and extended over a period, using a calendar of some form. Without this, it would be like telling a smoker that smoking is bad for them.

This can be part of improving their credit score as they will develop better spending habits. We know how hard it can be for people to get their credit score back up and believe that it is important to develop software that can facilitate this process as much as possible. Capital One cares about improving the credit score of users, and we hope that this shared interest

will motivate us to develop the software to a high standard. We also appreciate the simple solution Capital One adopts to help the vulnerable, and plan to make the app as interactive and user-friendly as we can.

Our team has experience working with PHP to interface a dynamic website with MySQL, meaning we have a general understanding of website frameworks, including JavaScript. We have used Material UI to design front ends.

We have used python, including libraries such as pandas and NumPy for Data and scikit-learn for training predictive AI models, like neural networks and decision trees. Alan has further experience with AI, writing an essay and building a neural network in C++. Most of the team is undertaking the 2nd year AI module, so we are prepared to learn.

The team has experience in UI design in Java and Alfie in Lua, also hosting web servers in Linux, such as WordPress and PHP, which is a useful facet in managing backends.

For our approach, we will build a web app to achieve the system. We chose this initial approach as, due to the limited time, it would be implausible to develop two apps for both IOS and Android. Web apps themselves can be moulded to Progressive Web Apps for more seamless use in phones whilst being cross-platform to desktops. Many companies already do this to streamline development, like Spotify.

We chose Svelte as our web framework. Of course, there are more conventional frameworks, like React or Vue, but Svelte has been built as a pre-compiled system that removes slowdown. The obvious challenge with Svelte is that its low-adoption results in less resources to learn from, but its high (Stack Overflow Developer Survey 2022) approval (being the top frontend framework) shows that it has well-liked systems for those experienced in web development.

Svelte works well with node.js as its backend, and a possible framework can be express.js. For the history saving, an implementation of MySQL can be used.

The difficult part will be finding/training a model to perform OCR on receipts. This will involve first text detection to find the text on the receipt, and then performing OCR on these sections. PyTorch is a useful framework to apply machine learning for this and leveraging the open-source community.

We will use the agile process of Scrum with a Kanban board. The project can be divided into the milestones of:

- Creating a Front-End to display spending habits.
- Producing an accurate OCR python model for receipts.

- Creating a backend that integrates with MySQL to save spending habits.
- Some form of authentication.
- Categorise spending to non-essential/essential.

We aim to have each facet of the project managed by sub teams, such that each sub team will share their knowledge. This will prevent slowdown if team members get ill or have troubles.

(Max 750 words)

Date of Submission of EoI	19th of October 2022
Date of Pitch	26th of October 2022
Notification of award	

Please make sure to submit a CV for each member of the team together with the EoI using the submission format available on Moodle.