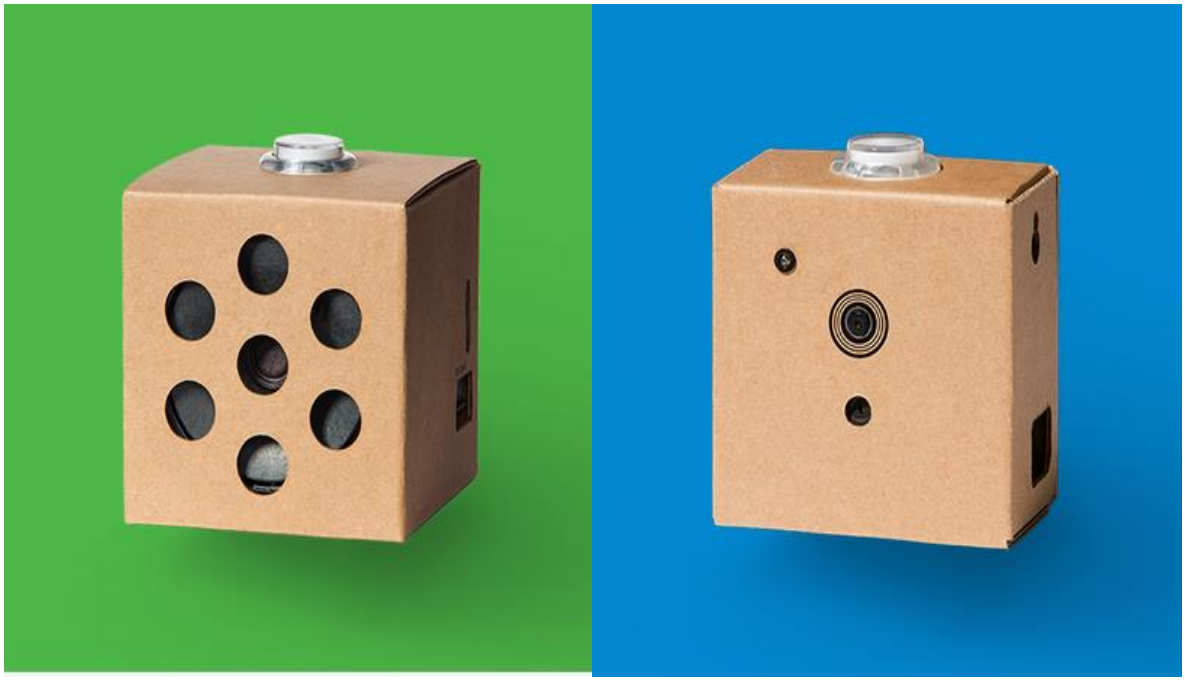
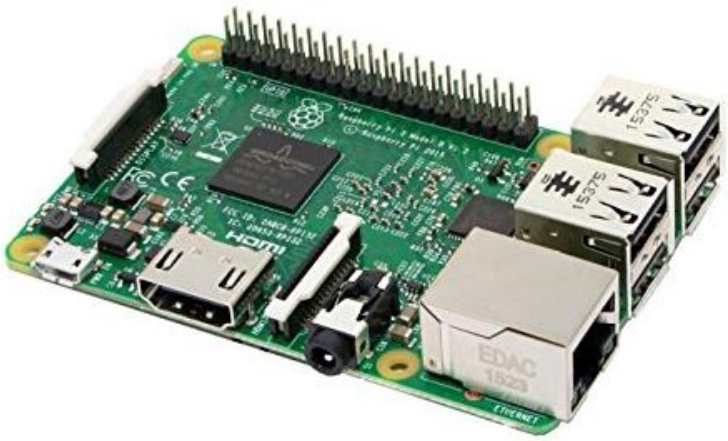
4th Year PROJECT IDEA

Software Development

Intelligent Speaker with Voice Recognition.

Intelligent Camera with Image Recognition Using Neural Networks.





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Description of the Project

The AIY Voice Kit from Google lets you build your own natural language processor and connect it to the Google Assistant. All this fit in a handy little cardboard cube, powered by a Raspberry Pi.

The AIY Vision Kit from Google lets you build your own intelligent camera that can see and recognize objects using machine learning. All this fit in a handy little cardboard cube, powered by a Raspberry Pi.

Our idea is to use Google's API to test how it functions, and upon further investigations we're are planning to implement our own API for the cube bots. Depending on time management and scope of the project one of the final ideas would be to properly train the bots, and possibly merge them to allow for cross functionality.

Technologies Used

Technology	Description
Python	Python is an interpreted high-level programming language for general-purpose programming. Python has a design philosophy that emphasizes code readability, notably using significant whitespace.
TensorFlow	TensorFlow is an open-source software library for dataflow programming across a range of tasks. It is a symbolic math library and is also used for machine learning applications such as neural networks.
GitHub	GitHub Inc. is a web-based hosting service for version control using Git. It is mostly used for computer code. It offers all the distributed version control and source code management functionality of Git as well as adding its own features.
MySQL	MySQL is an open-source relational database management system.
SQLite	SQLite is a relational database management system contained in a C programming library. In contrast to many other database management systems, SQLite is not a client–server database engine. Rather, it is embedded into the end program.
Visual Studio Code	Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded Git control, syntax highlighting, intelligent code completion, snippets, and code refactoring.
Google Sheets	Google Docs, Google Sheets, and Google Slides are a word processor, a spreadsheet and a presentation program respectively, all part of a free, web-based software office suite offered by Google within its Google Drive service.

Raspberry Pi	The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries

Learning Outcomes

Learned	Description
Python	As we've been only introduced to Python this year it's a new experience for us. We decided the best way to get used to it is to use it as a main programming language for our project, as it allows for better AI bot development.
Neural Networks	Neural Networks are widely researched now, so it's a good practice to get familiar with them. It is computer system modelled on the human brain and nervous system
TensorFlow	Once the bot is done we figured we required a way to train it. TensorFlow allows for such as functionality.
SQLite	We have had experience with databases however we have never practiced using SQLite.
Machine Learning	Machine learning is a field of artificial intelligence that uses statistical techniques to give computer systems the ability to "learn" from data.
Artificial Intelligence	Sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals.
Speech Recognition	Speech recognition is the inter-disciplinary sub-field of computational linguistics that develops methodologies and technologies that enables the recognition and translation of spoken language into text by computers.
Pattern Recognition	Pattern recognition is the automated recognition of patterns and regularities in data. Pattern recognition is closely related to artificial intelligence and machine learning, together with applications such as data mining and knowledge discovery in databases and is often used interchangeably with these terms.
Raspberry Pi	As our course was more software programming based we've never had the opportunity to use electronics or chips. It would be a good practice to have such as experience before graduating so we have decided to go with Raspberry Pi as its widely known.

Conclusion

Considering all the information provided in this document, they're a few things that we're already familiar with, however they're more that we're not. While developing our project there will be lots of research required to expand our knowledge about Artificial Intelligence and components connected to it.