Student Name -- Christopher Grant

Student ID -- s3879459

GitHub Public Repository URL -- <https://github.com/Christopher-Grant/IIT>

GitHub Pages URL -- <https://christopher-grant.github.io/IIT/>

Christopher Grant



Personal Information

Hi, this is the website of Chris Grant. Student id, s3879459, contact me at [s3879459@student.rmit.edu.au](mailto:s3879459@student.rmit.edu.au). I am a 38-year-old male born in Melbourne, Australia. I left high school after year-10 to work full time in the retail industry. I have a cert. II in retail operations and have completed a few introductory short courses in programing including Python & SQL. I am currently an Operations Manager in a printing & point of sale company in Melbourne’s SE. In my spare time, I like to get outside and go for a hike, snowboard or even just take my dogs for a walk.

Interest in IT

The interest I have in IT comes from my childhood, specifically my father. For many years my father would show me the basics of tinkering with electronics, how to read wiring diagrams, and we would often design, create and build small projects using components like 555 timers, etc. This led to eventually building my first PC, the next logical step was programing and automation, however, this came a few years later. Over the past 5~ years I have been designing, setting up and maintaining a scheduling system at my current workplace to improve efficiency and visibility from the production floor to larger business group. During this time, I have needed to learn a few languages suited to whatever my required function involves. This has driven me to enroll in my Bachelor of IT at RMIT. Honestly, I have chosen RMIT to complete this course because it was recommended by OUA. The past few weeks have proved OUA have a good rapport with RMIT. The lecturers, students, content and portals are second to none.

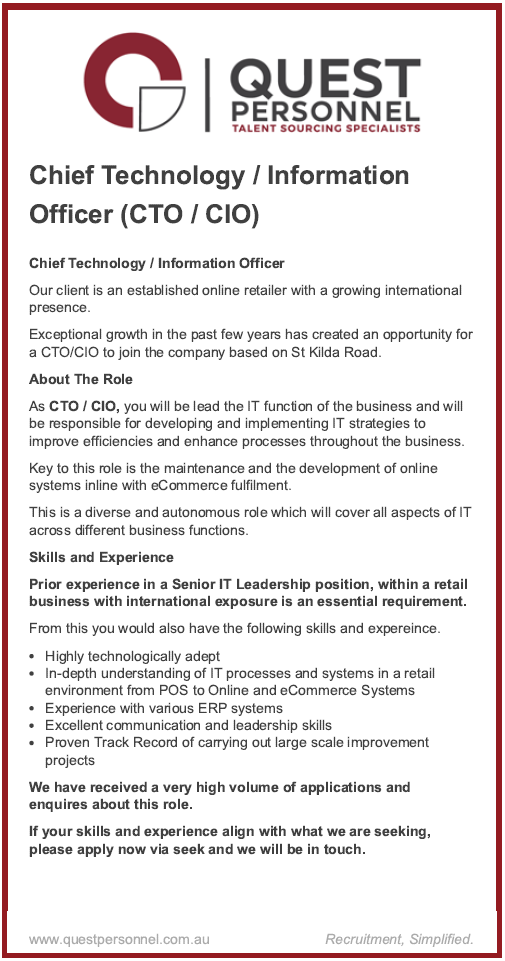
During my studies at RMIT, I expect to learn how to undertake tasks like web design, data management and analyses, software development and cloud computing to help further my career.

Ideal Job

My ideal job would be CIO/CTO. The CIO/CTO focus’ on internal and customer facing IT systems, CRM & ERP’s. Having this roll would tick all the boxes, the roll includes – leading a team, rolling out leading edge technologies, partnering with other company C-level executives and influencing positive change to name a few. Many aspects of this roll are appealing to me. This position needs to stay in touch with current technology trends and developments, specifically to the chosen industry, strategize broad IT rollouts company wide and ensure data centers are running effectively & efficiently. The skills required for this roll include a Bachelor of Computer Science (or equivalent), be leadership proficient, be Innovative and creative and possess problem-solving experience.

Whilst I’m a while away from this roll, I believe that the experiences and skills gained so far through my career have been very beneficial. Skills like working in a team to roll out IT based projects, leading a team of direct and indirect staff members, writing custom software and collaborating with the leadership team. With on-line universities and learning platforms like OUA or Coursera the access to extracurricular content has never been easier. Coupling this with flexible study hours means achieving this Bachelor of IT, and other skillsets required is now possible while working full-time. Plus the benefit of learning from my superiors will go a long way. The link and image for my ideal job is below:

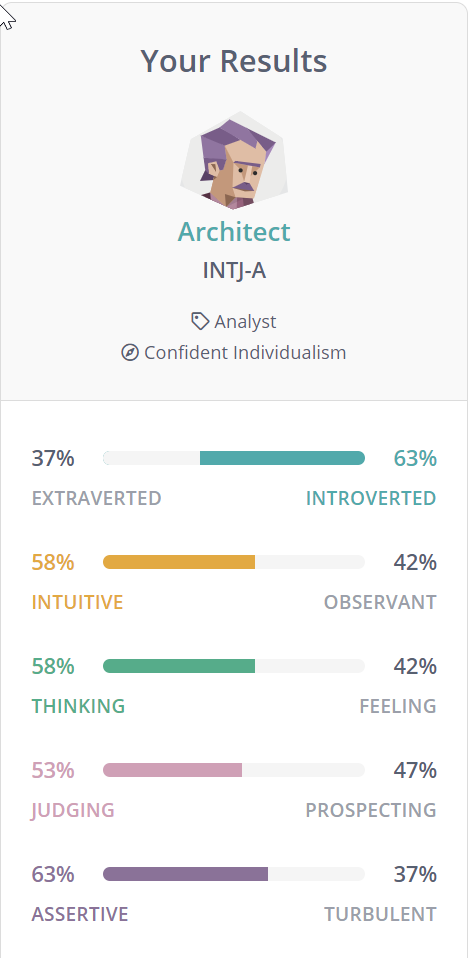
<https://www.seek.com.au/job/50544224?type=standard#searchRequestToken=5694a846-dba3-4e6a-986e-80b0813ac8b8>



Profile

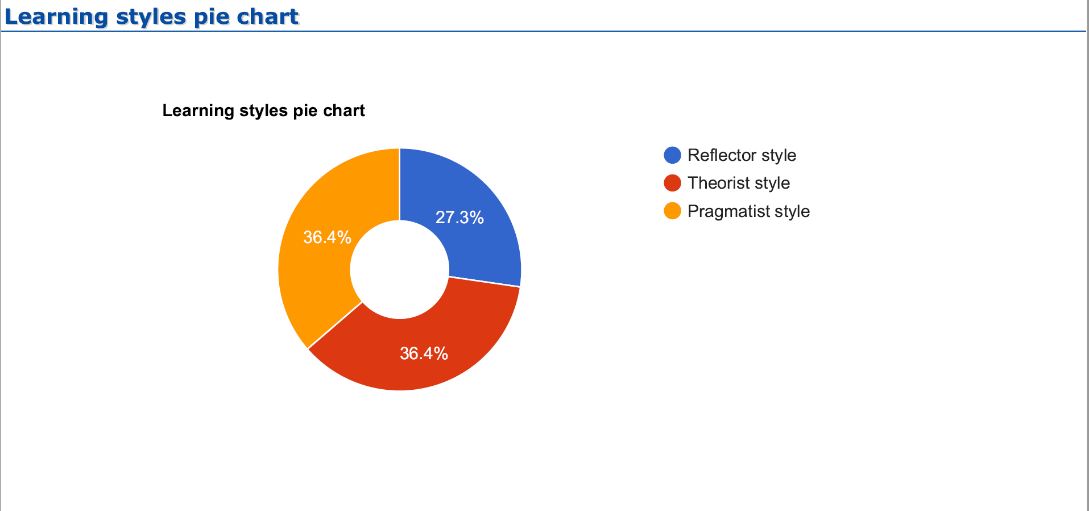
16personalities -- https://www.16personalities.com/

This test seems to surprisingly accurate and described quite a few personality traits that apply to me. Using this information as a tool and reading further into my personality type I can learn to collaborate better with other team members and be more open to new ideas. Working to deadlines and being transparent with plans are few skills to work on. Assembling a team would require looking at potential clashing personalities and ensuring a plan can be achieved/issues resolved if anything arises.



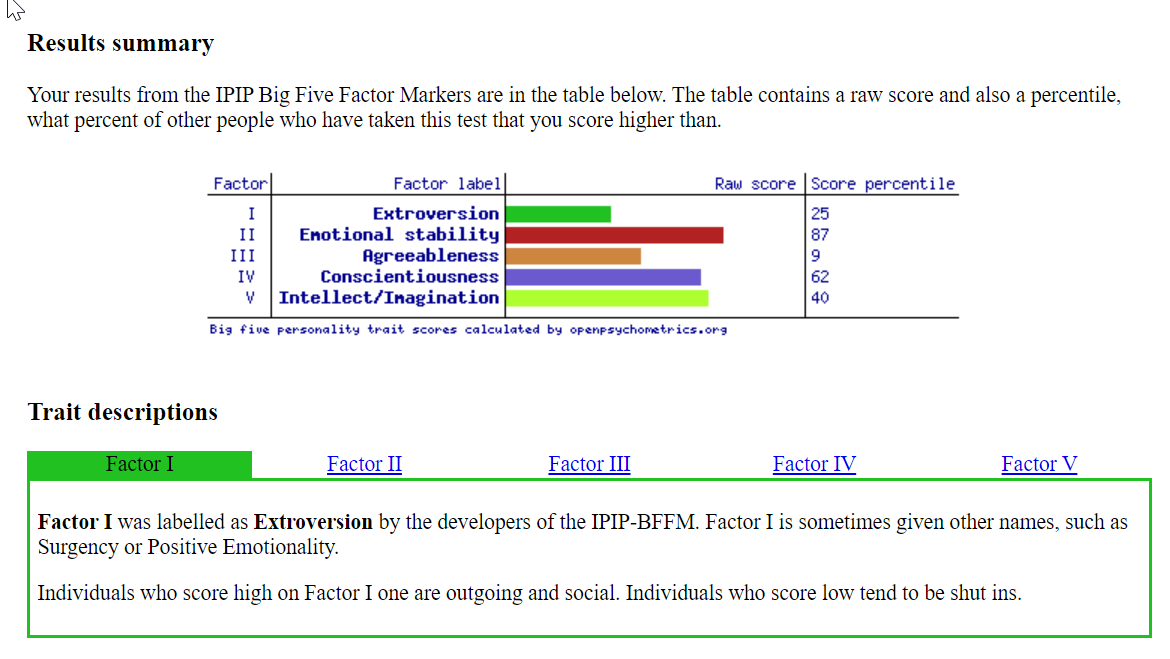
Learning style -- <http://www.emtrain.eu/learning-styles/>

The learning style test yielded a very interesting result. This test indicates that I do not learn at all using the Activist approach. The Activist approach are people who learn by doing, which I always thought I was suited to. The below pie chart advises that I take on an even Theorist and Pragmatist style approach with a background Reflector style approach. Using this data, I can modify my teaching/explaining behavior to help the recipient(s) better understand the conveyed message. Pulling a team together on the use this information would be helpful in how the project could/would be designed to ensure every team member has clear communication on whet the end goal is and how to get there.



Big 5 Factors-- https://openpsychometrics.org/tests/IPIP-BFFM/

Big 5 Factor testing runs similarly to the 16personalites regarding returning of personality traits. Like the 16personalites results, it’s good to see similar trends in the data. Working in teams, with my peers, will be a good experience to try new social interaction while working towards a common goal. Assessing team members Big 5 Factor results while assembling a team can determine each members potential contribution and intern the effectiveness of the team in its entirety.



Project Ideas

Overview

My project idea is a simple, create a home automation service that can be modified and is expandable. To start this project will recognize when a registered vehicle pulls into their home driveway and boil a kettle inside the home. The architecture of this project will need to be planned in such a way to make it expandable to further additions, automations or modifications. The Idea itself is to start small with one component (the kettle) and add more components/modules as projects arise, and eventually integrate mobile app support (big picture). Hardware and customizable software should be easy to come by locally.

Motivation

Motivation for this project comes from a 2-pronged point of view. 1) Everyone likes enjoying a nice cup of tea or coffee (or Coco) when coming home from work. Coming home to a kettle already on the boil would be a nice and convenient thing to walk in to. While there are many companies around that specializes in home automation, and it is easy to just ‘buy’ a setup, motivation is also spurred on by 2) the DYI factor. Having the hardware and software at our fingertips, it is a good challenge to see if I can achieve this successfully.

Description

This project would be beginning of my customized home automation setup. The first module on this setup is the boiling a kettle when a system registered vehicle pulls up in the driveway. The plan is to use a Raspberry PI running Raspbian, Jessie or NOOBS as the core of the project. I have chosen the raspberry PI because of its versatility and it’s easy to use GPIO (General Purpose Input/Output) functionality. Couple this with the many scripting languages available on the platform, I believe this project will be achievable in a timely and cost-effective manner. For the beta of this project I’m going to use a 1080p 5MP camera (available from any good electronics shop or eBay), python logic and an optical reader software from OpenCV to capture a picture of my number plate, or any number plate that pulls up in the driveway and the use the operator logic to activate the 5v relay HAT (Hardware Attached on Top, again available from any good electronics shop or eBay) to turn on the kettle. In this first stage the kettle will need to be left in ‘on’ position for this project to work, however the 240v power will be isolated by the relay for safety and to stop the kettle boiling prematurely. I estimate there will need to be a considerable amount of work written into the logic of this program to accommodate the currently planned functionality without limiting future developments of the code. Everything from number plate lookup, number plate not registered, blank picture or plate not detected, plate detected 2 pictures in a row & logging of data. Going back to future functionality (whilst not part of this project), we need to think about how this will impact this current module. Will a mobile app integration module be possible and what will the effects be? I preempt a few issues to arise during the development of this project which will need to be thought out before release. A few things like; If 2+ cars belonging to the one household, what extra hardware and logic will be required (if any). While we be able to define both number plates in the database, what if only one car is in use on any given day. Power to the kettle needs to have an alternate route, not just through the relay. Or power only though the relay but have an override switch for occupants that want to use the kettle without using this module (car is out but partner/housemate is home). These are just a few of the scenarios to factor in when designing the logic. Looking at the project from a high-leveled approach, I believe it has a lot of potential and is scalable to suit many homes (starting with my own).

Tools and Technologies

Hardware; The core of the setup will be a Raspberry PI 3b+, 1080p camera 5MP Module OV5647 Mini Camera F7F1, awm 20624 cable 80c 60v 15pin 5-meter extension. 5v relay with 240v through-put & standard 240v kettle. From a software side; looking at either Raspbian, Jessie or NOOBS as the OS on the Raspberry PI 3b+, Python will be the scripting interpreter, including libraries such as RPi.GPIO & picamera and SQLite3 for data retention. For the optical reader aspect, I’m looking at OpenCV to give me the number plate output. As far as tools go, this shouldn’t require any specialized tools. Tools like screwdrivers, soldering iron and mounting brackets will be enough.

Skills Required

Skills required for this project will include a good understanding in electronic components as there will be an aspect of 240v. The knowhow to read & create wiring schematics and put into practice. There will be quite a bit of back and forth communication between the Raspberry PI and various components, so a good place to start is <https://learn.sparkfun.com/tutorials/how-to-read-a-schematic/all>. An understanding in the python computing language (<https://www.python.org/about/gettingstarted/>) as this will be the base program and an understanding of operator logic, check out <https://www.guru99.com/python-operators-complete-tutorial.html>. A basic understanding in linux operating system to be able to install various applications, check out <https://www.youtube.com/watch?v=zcu0gXuSsZY>.

Outcome

If everything is successful, falls into place and functions as expected, we will end up with the start of a customizable home automation system built from scratch. The benefits of this is more aimed towards the tech minded community who, I believe, will appreciate a custom setup over an ‘off the shelf’ version. Hosting the repository on GitHub means the community can access the code and project updates as they are released. At the end of the project, after everything is complete, it will be great to have achieved the original idea of coming home, to a warming kettle, for a nice cup of tea.