



INTERNSHIP FINAL REPORT

*COMP8851
Session 1 2022*

Organization: *Intuitive Technology Innovations Pty Ltd*

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ACKNOWLEDGEMENT

I would like to start with acknowledge that support and strength given by Almighty and the opportunities granted by GOD along with health and peace.

As being the final semester student of Masters of Data Science from Macquarie University, the support I have been given from the university in all regards no matter what kind of support required, I've always been welcomed especially in pandemic over these toughest years is been tremendous. I considered myself lucky to belong this department where I get a chance to be under guidance of Dr. Amin Beheshti, who is always available to support students like me and enlighten me about this opportunity.

Furthermore, I would like to give my upmost regards to the Intuitive technology innovations who selected me to be the part of this learning journey and enhance my skills, either it's related to learning, presenting or soft skills, Mr. Praneeth Samuel was being in contact from the start and guide me through to understand all the process and help me to make my decision, Ms. Jennifer Yang who is supervising this session program and I would like to give my sincere regards how manageably she's handling by so far and giving us learning more out of it under her supervision and always supportive to answer all the queries without any hesitation and she make sure we all are having good time during this program and every session serving its purpose along with she make sure of that we get all the required resources in no time so we can start our work without delaying.

Nonetheless, my mentor Mr. Ivan Bakhshayeshi, who has been an amazing mentor in all regards, he provides us the environment to learn and practice without any judgments and this program wouldn't be easier without his efforts and support.

EXECUTIVE SUMMARY

The motive of this report is to shed the light over what I have done over last six weeks of my internship program at Intuitive Technology Innovation Pty Ltd. Which is based in Sydney, Australia.

This report has information about the Intuitive technology innovations Pty Ltd. history, introduction, policies and their competitors and all the details about the internship program, the work I have performed, program timeline, duties, assigned tasks and learned tools.

Additionally, it also holds the information of reflective journal for last six weeks of this internship program which includes student's experience over all these past weeks in detailed. Furthermore, this report also includes some informant analysis that are Critical analysis and SWOT analysis. Basically, the critical analysis has the power to judge the comparison between theoretical knowledge as compare to internship work while SWOT analysis helps to describes strengths, weaknesses, opportunities and threats of the organisation. The last part of this report has conclusion which states the sum of this report, recommendation part holds the suggestions over the highlighted problems mentioned in the SWOT analysis and then we have reference's part where you can find all the resources which helps me through collect the data for this report.

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OVERVIEW OF THE ORGANIZATION

BRIEF HISTORY:

The Intuitive Technology Innovation Pty Ltd found in 2001, It's a group of companies, where ITIC system, research and education support is based in Sydney, NSW. This organisation provides the educational training, support, implementation of projects in all over Australia and New Zealand.

INTRODUCTION OF THE ORGANIZATION:

This organization works with providing support like IT helpdesk for various types of software, solutions and technologies. They build a system to support your infrastructure, servers and for complete support for your technology department, IT Help Desk and can work with you to coordinate inside your hierarchical frameworks and interaction. They also offer consulting services

The ITIC also holds the specialised skills for disaster recovery, ITIC SYSTEMS are experts in disaster recuperation cycles, strategies and techniques connected with planning for recuperation or continuation of innovation foundation basic to an association after a characteristic or human-instigated catastrophe.

The ITIC is also provides solutions for unified communications and unified computing as well. The IP Telephony arrangements that give the establishment to addressing the present requirement for Unified Communications (UC) in the venture. The essential reason of UC is to cultivate moment correspondence between laborers past the customary telephone and email and into voice, video, IM, and remote. On the other hand, The Unified Computing System is intended to work on conventional designs and drastically lessen the quantity of gadgets that should be bought, cabled, arranged, controlled, cooled, and got in the server farm.

The also work with, The System Administration Management Tool (SAMT-T) has been created to furnish framework chairmen with a one stop design entryway for Cisco Unified Communications and Contact Centre frameworks including CUCM, UCXN, UCCX. Using the Cisco gave API, SAM-T permits the framework manager to oversee troublesome or dreary assignments, mechanize process and make a custom dashboard that shows data about their UC frameworks.

ITIC EDUCATION AND RESEARCH:

Apart from all these efforts and work, they have also played a big role in education sector and supporting new students to choose their career path and providing programs to help them grow and flourish in real industry. The ITIC created key organizations with both NSW colleges and industry, to convey learning results for colleges and their understudies, give new open doors to industry experts and fabricate an ability pool zeroed in on regions where government and industry have recognized a current or future abilities lack. The ITIC support both local and international students to fill the gap between their studies to the industry, it

also gives support to universities and their attendees to get the idea of full time work in their related field which helps them to polish their skills and apply their theoretical studies into real life projects and in this regards they offer internship opportunities for the final semester students of related fields like; Data Science, Cyber security, software development, Artificial Intelligence, Machine learning and network security.

ITIC PARTNERS:



ORGANIZATION POLICIES:

The ITIC is a company which provides technology solutions, their policies for workplace behaviour or and online behaviour is in place to delivered better product and services throughout all departments.

Information Technology:

The use of technology facilities should be access for business communication. However, limited personal use does no harm as it's not being use to breach any policy, affect your work performance, overshadowing the rights of fellow employees, taking too much of the significant resources and violating the rights of the healthy, private and safe work environment.

Workplace Behaviour:

To make the workplace safe and productive they have number of policies to the standard of any organization in Australia, discrimination policy, sexual harassment policy, bullying policy, victimisation policy, bystanders and have applicable federal, state and territory legislation.

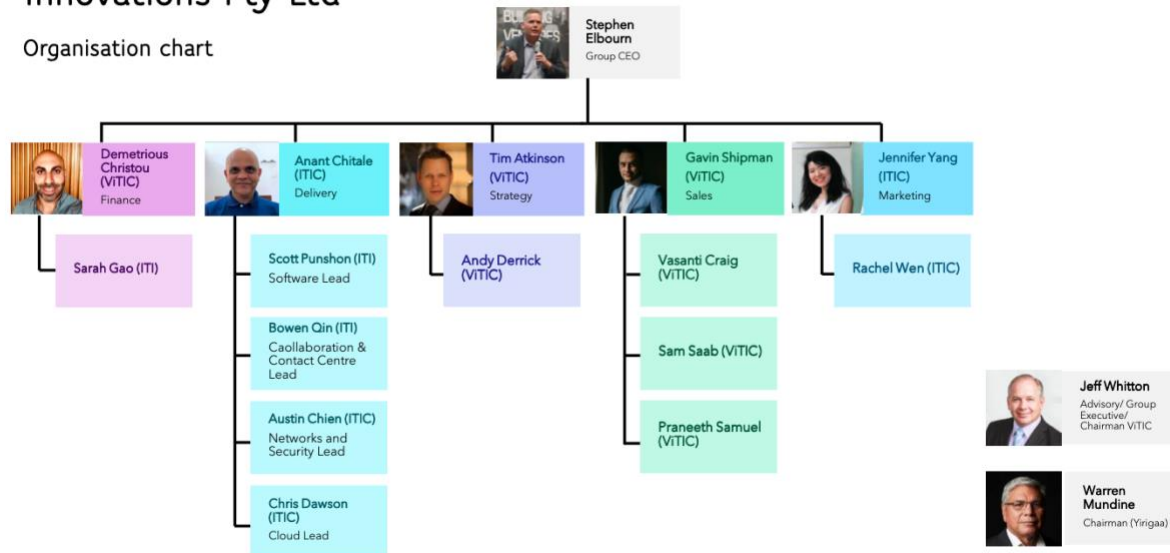
COMPETITORS:

According to our mentor they have many competitors that are capital training institute, riverside university, phoenix TS, neighbourhood services, Steepletown and etc.

ORGANIZATIONAL STRUCTURE

Intuitive Technology Innovations Pty Ltd

Organisation chart



The ITIC office located in the main CBD Sydney at Level 3, 321 Pitt St Sydney, NSW 2000, which is the business hub of the Sydney and it's a prime location to learn how things works in the big city's CBD so the international students get the idea and get opportunity to build better connection. They are based on this address since couple of years which itself is an achievement. The overall environment, location and office decorum is remarkable.

ITIC has a team size of 11-50 employees, but they are expanding on fast pace.

The CEO Mr. Stephen Elbourn is the chief technology officer and below him mentioned all the heads of the department, Mr. Chris Dawson is the cloud lead, Mr. Anant takes care of the delivery of the services provided to the customer and report directly to the CEO. The sale department head is Mr. Gavin Shipman how has a team of three employees under his supervision which includes Mr. Praneeth Samuel who takes part is ITIC education sector as well, Mr. Scott Punshon is the software lead and hold pretty good experience in this regard, on the other hand the Finance department is under supervision of Mr. Demeterious who take care of the finance department of ITIC and reports directly to the Mr. Stephen.

The marketing head is Ms. Jennifer who take care of all the marketing stargates of ITIC and along with these responsibilities she is also the coordinator of taking care all the Internee correspondence and solving queries regarding any help required with in the organization.

The strategy department is responsible of strategies to be impose to get better outcome in and outside of the organization is under Mr. Tim who is hard-working personnel to make this organization stand out.

The ITI group has various different companies and they work in collaborative way, the about mention hierarchal graph shows that they have several departments. The ITI has ITIC, VITIC, Yarnlab, Yirigaa, etc under their roof and they all been managed by the above-mentioned representatives.

Furthermore, The ITIC has recently shake hands and become partner with Yirigaa, indigenous technology company and also the part of Macquarie University centre. The chairman of Mr. Warren Mundine are also become the chairman. This company working on providing the important skills to give engineers to have hand full work in some of the field which are, NOC and CSOC which is located in one of the regional areas of NSW, Orange. The Telestra also came on board with this to provide support for the engineers of the Yirigaa to be trained on Telestra products and provide services across all over Australia.

The structure of this organization is pretty organised and the reporting hierarchy seems quite professional and following all the guidelines of an ideal organizational while the CEO taking keen interest in all the group of organizations which is expanding with time and while we talk about ITIC education it's expanding and introducing various options in multiple fields while collaboration with universities like UTS and Macquarie.

PLAN OF INTERNSHIP PROGRAM

Home Office:

The place of internship program is held on both physically and online but due to COVID-19 situation, we have most of the session online. The home office which located in the CBD Level 3, 321 Pitt St Sydney, NSW 2000 and we have our learning portal set-up with all the resources and updates like iLearn. The online session happens over Microsoft teamwork which is a collaborative environment to share our work with our peers.

Dates of Internship Plan:

The plan of this internship is based on 13 weeks duration from (25th Feb to 3rd of June) which has been started on 25th of February which was an orientation session. This program is consisting of two parts, the first five weeks is based on learning and training program of DATA analyst tool kit which is affiliated with UTS, the other half is based on work experience and working of real professional project for next eight weeks starting from 4th of April.

Part-time or Full-Time:

The enrolled program is part-time internship as by university I have enrolled in COMP8551.

Department:

This program held under ITIC education learning and research department where we are under Data Science research department where my mentor is Mr. Ivan Bakhshayeshi who is a Data Scientist who we have our sessions every week regarding project updates and guidelines of training program as well. The project we are working on is 'Smart Students Attendance Systems' by image recognition which has modules of deep learning, machine learning and hands on experience of python, R and Tableau based on data provided by our mentor.

TRAINING PROGRAM

This course will make the ways for chances to learn new instruments and have modern/proficient outline of use of Data Science, all things considered. It will engage you with the abilities and useful information to venture into the universe of Data Science, Machine Learning and Artificial Intelligence. ITIC is a main defender in creating Data Science in Australia with driving associations with both industry and examination. As mentioned earlier this program has two modules one is training module other is work experience so in the training program which held first five weeks of this program has learning of basic to advance learning of all the important Data science tools, and programming languages which are useful in data science industry.

Furthermore, this training program is been designed to polish data analytics tools, visualization of data, data pre-processing, data presentation and working with real-life problem-solving techniques. The first five weeks or the first half of this program we have discovered and work with six different tools of data analytics which are as follow;

Python:

We have learned basic to advance level of python libraries, how and what tools needed to work with python language, I have discovered various data types of python language while practicing on jupyter notebook and some python functions like making linear modelling, data pre-processing, pandas, NumPy and matplotlib for data visualization. We have been provided few resources material as well to get better and full insight of python language. In this module we have also discovered why python language is better option to work with data analysis because of its vast libraries support and how we can choose better and compatible libraries depending on our desired outcomes and project specifications.

SQL:

As being an data science student, I have an idea of importance of sequential query language, in this module I have come across how we can handle structural data bases and non-structural data bases, how we can use cloud data bases and their specifications, functions and data types of SQL, by which technique we can write efficient queries, connection of SQL data bases with python, how we can compare the scalability of non-structural and structural data bases and quite vast hands on experience of MongoDB and their specification.

Tableau:

This tool was pretty new to me, I haven't come across this tool before this program which was quite an experience for me to learn this interesting tool was best part of this training program, In Tableau we have discovered its fundamental specification, how we can get better insight of our data set, how to do better visualization of our data by using tool. The tableau is an easy and powerful tool for data analytics and the interaction live data graphs which is better to understand and best to deliver our outcomes. In this program we can hands on experience of tableau, exploration of its basic features as well as advance

specification. Along with tableau we have learned the importance of right data visualisation and how it can affect the whole data analysis and what makes it better than simple matplotlib.

Deep Learning:

In this deep learning module, As being an integral part of the data science, we have quite few sessions of deep learning; where we have come across of importance and concept behind deep learning along with hands on experience of how to integrate those concepts in our project. The deep learning libraries which we going to use in our project and have live experience in our department projects are TensorFlow, Keras, chainer, ONNX and pytorch, we have practice keras and TensorFlow and explored its specification and features. In deep learning environment this program has also covered one of the libraries named as FastAI which has specification of AI related problems plus how to visualisation. The deep learning environment is quite vast and while working with how we can manage our compiler we have also discovered that along with natural language tool kit, we have solved few queries related to our project using natural language tool kit. The concept of computational layering how we can manage them while working on our project, the importance of epochs, how does they work, what is transfer learning and what roles it plays in data science society and how it is important in the project we are working with. We have also introduced the concept of maxpooling, google collab, Kaggle and fine-tuning. In this module they have covered almost all the important aspect of deep learning and their tools and we have experience how and what library can be used while working on the project I have assigned.

Machine Learning:

In this learning module, the machine language fundamental concept has been reviewed, which includes all the basic to advance level concept of machine learning which has been used and can help in our project. The concept of pre-processing data has been explored in detailed and how we can do that with the help of machine learning concept, this module gave overview of k-nearest neighbour concept while solving real life professional problem how decision tree works and what to expect from decision tree concept, how we can test and train our data to get required results while working efficiently, the concept of active learning was being introduced too in this module while using the problem related to our project concept where it's going to be an important concept to practice along with how we can visualise the results of machine learning concepts. It also gives the idea of what is confusion metrics and what information it gives and how we can analyse our output by using that information and last, we have learned the detailed concept of random state while using the data set of our project which is related to image recognition.

Power BI:

The power BI module has the learning about how we can make efficient reports of the outcome of our project and make interactive to get better insights of our analysis, the power BI is an advance tool to transforming the data, slicing the data and reporting the data. We have come across the basic features of this tool like importing data, fixing the

column names etc. it was very interesting to get to learn this tool in real professional environment while having hands on experience with the data set of the real project.

In this training program I have come across the demonstration of all the important tools related to data science technologies and get insights of how we can use, enhance, alter, and how to use those tools in my project. This learning module helps me to understand the tools of deep learning and practice of how I can collaborate it with image recognition system how we can play with the specification of our GPU and TPU to make our machine more advance, the second half of this training program is based on work experience and project deliverable which is based on deep learning and machine learning concepts, natural language tool kits to run analysis on image of attendance system.

Overview of the Project:

The project that I have choose is student attendance system, as we have seen since couple of years as everything is being online or virtual either its workshops, lectures, tutorial, exams or work, the attendance system seems pretty important at this point, the face recognition is easy in real life but when it comes to the system it holds pretty complex concept to be integrated. The image recognition is based on reading and interpreting thousands of pixels, layers, and differentiate the categories between the objects where we have to label the data first and pre-process it before running analysis on it. this project will work on academic level where we have to create a face recognition system for online attendance of the students, this project is the subdivision of the visual pattern recognition. The face recognition should find the difference between who's face belongs in the part of the data. This is the problem of power artificial intelligence and have the specifications of the rough classification problem.

The motive of this project is to facilitate the online teaching with artificial technology and make our online system more accurate and secure, it will support the teaching teams in online classes and as well as work attendance but we will stick to the motive of students' data only. By working on this project, we can enhance the class management and teachers can be sure that the student who is present in the class does belongs to the class and limit the defaulter to do the forgery in exams and attending classes.

The purpose of this project is using AI in educational departments and track the student attendances. By using this project, we can identify the faces of the students with the enrolled list so be make sure.

The libraries and concept this project are based on is deep neural network and machine learning concepts which we have learned in our training programs and we have practice all of them on related project and how we can get the idea of all these libraries in professional world projects while using Python and where we have several libraries available like deep face and emotion recognition.

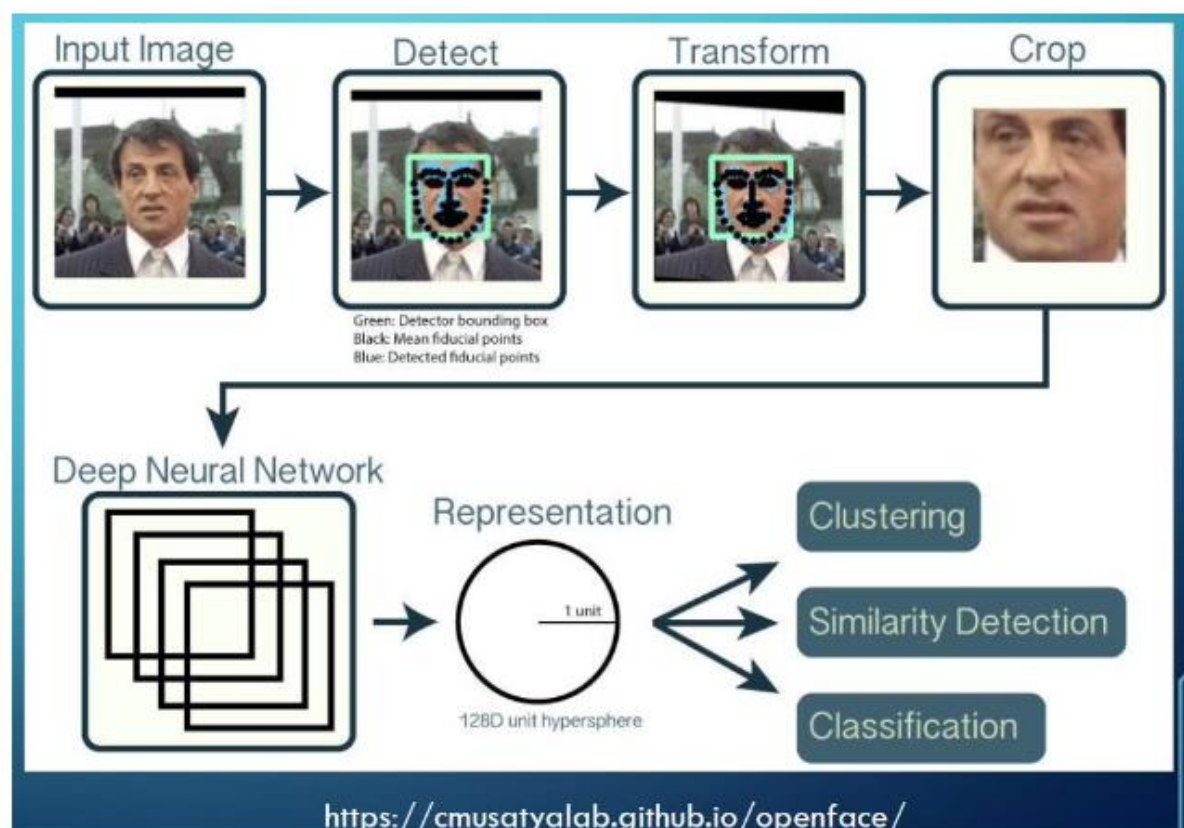
The workflow of this project is goes like this;

We will provide the input images → detect → transform → crop → deep neural network

From this point it will go into representation point where we have three options to work on clustering → similarity detection and classification. It depends on to what extends we will go depends on the mentor. We can run more analysis by using these libraries and make it vaster by running emotion recognition, object detection, classification based on what classes and also it should be representational and create and API for representation of this project where we can see the full potential of this application.

Outcome of the project:

Point of the undertaking is to effectively perceive understudy in a web-based test and can follow understudy's class participation. These days due to Coronavirus pandemic connection among understudy and educator is nearly non-existent and extremely less intelligent. So, when understudy wanted to skirt the class and attempt to hoodwink the instructor to get a free participation for the class, this framework wouldn't allow them to get it done. It will perceive understudy face with it put away data set coordinate with understudy separate id and fill the participation and store it in a succeed sheet with having every one of the individual subtleties of the understudy.



REFLECTIVE JOURNAL ENTRIES

The reflective journal has the information of all the weeks till now which are one to sixth week so far, it includes all the detailed discussion of the activities which are carried forward in this program and the detailed description of the task has been assigned and learning objectives which has been delivered so far from the organization and mentor. This journal helps me to keep track of my performance in all over the period of this program. The approach used to write this journal is pretty informative that is called DIEP approach as given in the template, where the word 'D' stands for describe which hold the objective of what happened? What did I see? What did I read? What did I have heard? And so on while the word 'I' stands for interpretation of the events which occurred during this program and have detailed about new insights, my connection with other attendees presented in this program, my feelings towards them, the team work if there's any involved, my hypothesis followed by conclusion and then we have the word 'E' which sums up the efficiency of what I have observed, my opinion regarding those observations, effectiveness of observation and on what grounds I am making these experiences count, last but not the least we have the word 'P' which stands for planning of how this learning experience is useful in future for my career and what it serves in the long professional run and what are my recommendations. All the fellow activates and task happened under the supervision of the mentor Ivan Bakhshayeshi and the coordinator of this program who is Jennifer Yang.

WEEK#07

In the 7th week we have kick start of the project, in 1st session of the week was all about consultation hour where we discussed the overview of the project and my mentor Mr. Ivan has demonstrated the project's aim and purpose and importance of this deep learning project in the real world.

While discussing the project outcomes, we come across that this is the very vast project and has previously been worked on but still it does have so many features which can be integrated with it, this session we discussed that our mentor has also worked in this kind of project in his professional life and how hard it is to work with big data in cooperation with this kind of application.

Our mentor has also discussed what are the protocols to work on this project where we come across that from now on after easter break we will have two session per week same as past but in the first session we will assign the task related to the project and in the second session we all have present our work to the mentor.

In this meeting we have also discussed the related problems regarding this project and everyone has a say who related to the data science background what we have achieve in our university times and what deep learning projects we have worked with on academic level and in the end, we have been assigned to study related or similar problems of face recognition systems and how deep we can go and what challenges we can face while working on this application. The enthusiasm and support from the mentor were pretty high which gives me motivation to do better.

In the 2nd session we discussed the related problems and challenges which needs to overcome while working on this project. The libraries we have explored related to face recognition system been discussed to and to what extend we should take this project been

highlighted too. In the end, we got our rescheduled for the upcoming sessions and how we will proceed with these in future after easter break.

In conclusion, so we have great learning environment provided by ITIC team and all our queries has been entertained from both our mentor and Ms. Jennifer.

This reflective journal holds the detailed events' entries till week#7 as we will go forward there's going to be new findings, observations and learning experiences will come by time. The project has been kicked in from the last week and as by mentor there's going be one session per week which will be reserved for consultation and the other one would use for presentation of the work we will perform and keeping in loop with Mr. Ivan would help me to get better learning outcomes out of this program, so far this is what I have observed, He also mentioned that in consulting session we all will be provided with different task which we need to practice and present in the second session and these meetings would be really professional where you have to come up with different ideas and professional mindset along with the research work home work so you can answer all the related queries of the attendees.

WEEK#08

The 8th week is started with project initialization.

This week, we have discussed about the objective of the project, where our mentor explained what we are going to working on, which is going to be a student attendance system by using face recognition method. This project will be able to detect the faces of the student through live camera which helps the teachers to mark student attendance in online classes. To start working on this project first we need background knowledge of the objective and the available packages, so Mr. Ivan has shared quite good knowledge and material of how these application works and their specifications.

We have been assigned the task to start creating database by using TensorFlow data augmentation technique and explore all the related like image data generator and create and data base to start working, we all have to create a database of at least 20 images by using keras data augmentation techniques and shared it around so we can go further from there.

To learn and explore about this project is an interesting part and working with the professional mentor helping me to clear my theories which I was shy enough to ask in my class.

WEEK#09

The 9th week is started working on the project.

This week, we have discussed about the how to create the database for the project, our Mentor has shown us how it needs to be done share some resources for the reference as well, we have started making database that consists of images of the student, we are all advised to share our databases with each other so we can test our model and get better and accurate results.

The database should be created by using python library CV2 which will access your live camera take snapshot which should be uploaded on some medium to be shared across the mates, so far, we are successful to create our individual datasets now we need to use keras data augmentation techniques to train our data and get the results. In the first meeting we have presented our datasets and discussed the issues facing while creating them.

We have been assigned the task to start working with the database by using TensorFlow data augmentation technique and do data augmentation by using keras libraries and explore all its face recognition related tools.

WEEK#10

The 10th week is making progress on the project.

This week, we have presented our initial work to our mentor which is created databases, this week while working on project I have explored CV2 libraries which use to classifier as data collected before that was not very much productive so I am improving my data collection process for which I have explored CV2 frontal face classifier and capture 100 more pictures so we can have more data to work with, As presented to Mr. Ivan we have discussed that this is an good approach for collection of data. The next step is augmentation of keras, I have explored few keras applications like VGG16 for classification of data by using VGG16 I have so far successful to train my model which is giving me quite good accuracy but it needs to be mitigated as I believe my model is overfitting on my current data while discussing these points to our mentor, we have tried few things and he suggested to try some other application of kera which are imageDataGenerator and, etc.

We have assigned to go on the next step which is recognition as far we are quite on track and on timeline with the project meanwhile, I am trying to work on how to use facenet and other application available for that I am going through some research and making good use of papers available regarding face recognition.

WEEK#11

The 11th week is resolving discrepancies in the project.

This week, we have discussed about the challenges we are getting while working on the project, in the first session of this week we have presented the updates on your projects which was the one step up in the work of face recognition. I have successfully trained few models over my data but also while discussing the issues facing, I have found out that I need to try to use different approach and our mentor has shown us few different libraries which are available and would be much easier to resolve the accuracy issues I am facing while working on the environment. In the second session we have discussed the market of data science industry and quite few insights of what and how we all can get ready ourselves for the coming chapter of our lives and also while discussing on project we have resolved some important issues related to CV2 libraries, also to go forward we have been assigned a task to try use face recognition library which has C++ features and how we can integrate it with our project to get better results and mark attendance in csv file.

So far, we have done augmentation which is the labelling of the data, then we have done the classification which is comparing and telling us which class the data belongs too now we are working on the marking the attendance by comparing the face from webcam and mark the personnel attendance in the csv file.

WEEK#12

The 12th week is discussing the new findings and work environment.

In the first session we have discussed the issues we are facing in the project by using face recognition library of python which is already been build and to incorporate it with our environment I was getting few errors which I have discussed with the mentor and we found a better solution regarding that issue, in this meeting everyone has discussed what they have learned so far and how it's helping them to get done this project and for the next session we have been asked to have a presentation to show what we have done so far on the project and present it as our final presentation of this internship.

In the second session we have been asked to present our project in form of presentation, I have presented my project in PPT and so far, get succussed to achieve the objective of the project.

This was our last session as an internee and we exchange feedback of the program overall and Mr. Ivan gave us few tips on how we can make our resume better and how to get prepared for the interviews and what resources we can use for job application.

WORK SAMPLES

The work samples include all the work samples in this training module and the assigned task which has been provided during these times. These samples related to deep learning and machine learning.

Sample#01

OpenCV for collection of Data:

```
In [ ]: import cv2
import numpy as np

# Load HAAR face classifier
face_classifier = cv2.CascadeClassifier('/Users/najmi/Documents/Internship_2022/Project/data/haarcascades/haarcascade_f

# Load functions
def face_extractor(img):
    # Function detects faces and returns the cropped face
    # If no face detected, it returns the input image

    #gray = cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
    faces = face_classifier.detectMultiScale(img, 1.3, 5)

    if faces is ():
        return None

    # Crop all faces found
    for (x,y,w,h) in faces:
        x=x-10
        y=y-10
        cropped_face = img[y:y+h+50, x:x+w+50]

    return cropped_face

# Initialize Webcam
cap = cv2.VideoCapture(0)
count = 0

# Collect 100 samples of your face from webcam input
while True:

    ret, frame = cap.read()
    if face_extractor(frame) is not None:
        count += 1
        face = cv2.resize(face_extractor(frame), (400, 400))
        #face = cv2.cvtColor(face, cv2.COLOR_BGR2GRAY)

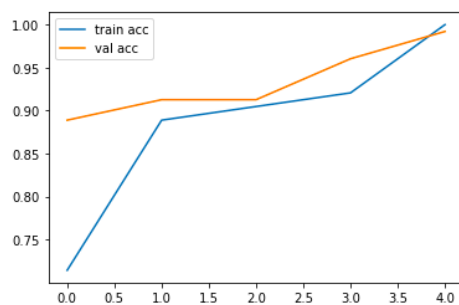
        # Save file in specified directory with unique name
        file_name_path = './Images/' + str(count) + '.jpg'
        cv2.imwrite(file_name_path, face)
```

Fig 1.1. Collection of Data

Sample#02

Training of VGG model.

```
In [5]: plt.plot(r.history['accuracy'], label='train acc')
plt.plot(r.history['val_accuracy'], label='val acc')
plt.legend()
plt.show()
plt.savefig('AccVal_acc')
```



<Figure size 432x288 with 0 Axes>

Fig 1.2. Model Training

Sample#03

Data Classification:

```
In [2]: path = 'Training_images'
images = []
classNames = []
myList = os.listdir(path)
print(myList)
for cl in myList:
    curImg = cv2.imread(f'{path}/{cl}')
    images.append(curImg)
    classNames.append(os.path.splitext(cl)[0])
print(classNames)

['T.jpeg', 'Talha.jpeg', 'Shayan.jpeg']
['T', 'Talha', 'Shayan']
```

Fig 1.3. Data Classification

Sample#04

Project Output:

1st Picture shows the detection and 2nd shows the output result.



Fig 1.4. Project Output

Sample#05

Attendance csv file:

It is the screenshot of the attendance csv file.

Name,Time
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
TALHA,20:12:06
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Fig 1.5. CSV file

CRITICAL ANALYSIS

The critical analysis over this internship program and how it has been benefiting me to expand my knowledge and get idea of professional world of data science industry. This internship helps me to find my career path and get the idea of professional world and working under professional data scientist mentor was the experience to get hands on experience of all the theoretical work in professional environment.

By getting this opportunity I have come across to well written papers of projects related to deep learning and machine learning and how we can label data and tools available like Robocop which I have never experience before this program.

This program has made me realise there's not only one right answer exist for a problem. However, it depends on how you are analysing the problem to get the insight of the data and while working with big data set what challenges we can face and how to tackle them with efficient solutions. There are many research documents available and data science is becoming the vast community with time where you can ask and discussion related issues you are facing while working on any kind of project.

The theoretical knowledge I have learned during this degree was the basic of the data science and to practice those in professional light is what makes me get better insight of those complex concepts where I have discovered they are quite interesting and easy to practice and by working with ITIC I have explored new ways to see the problem and where to look for its solution which always been an hustle for me, while working with ITIC I have learned the ways of communicating, presenting, how to make work relations, how to differentiate between professional roles and how reporting hierarchy works, which was never clear before.

As a case for my temporary position project expresses a totally different thought and an excursion to leave on, so any old strategies or help are not useful in handling those circumstances. So, I have accompanied a genuinely new thing to build my critical thinking capacities and work efficiency. I have concentrated on research papers, utilized a current dataset yet my undertaking has its own new difficulties and arrangements.

Furthermore, the hands-on experience of new tools like tableau, Robocop, google collab is make this program worth a while, as I am more incline towards visualisation of data and reporting part of the analysis and how to control the specification of GPU and TPU was something which I have never come across before this program. The managing of computational layers and actually managing them in practice is way different than theoretical concepts, while working with python on anaconda and making our project looks presentable is an integral part of work in our professional life. The explanation of analysis and making them understand while using interactive tools caught my attention and there are number of new tools available which are enhancing every day.

The part of data visualisation in theory was based on basics of what suitable graphs we can use but while working with ITIC and this program helps me explore more and better options like 3D graphs, interactive reporting tools, which graphs is suitable with what type of analysis and how we can make them visual and understandable.

The session of pre-processing data which I have learned in theoretically before and had a surface level knowledge about it with small data set but while practicing pre-processing of data in professional world and handling of big data is the thing which I always wanted to learn and this program met my expectation regarding that. I have learned how and to what extend we need to pre-process our data set before running analysis on it. It gave me the idea that we have to limit our pre-processing of data set otherwise it can interfere with the outcomes and what basic procedure needs to be in mind while pre-processing of the data. When it comes to work with neural network what procedures we need to take and how labelling of our data can help to what extent.

The optimisation of model accuracy was the concept of machine learning which I have practice in theoretically but applying that concept on real application helps me to understand it's specification better and what and how to design the model while not deviating from the problem was a challenging part for me learn and practice but this program and under the supervision of my mentor I have learned how we can select better model and how can optimize their accuracy with big data sets, the concept of epochs was been taught in the university but to insight of that I have learned in this training program and how we can select the number of epochs required for current type of computation.

The ITIC education is a complete and professional organisation based on their working projects and partners of this organisation we have the idea what standard I am going to learn about the professional environment, the mentor I am working under is quite thoughtful who share his experiences every now and then which gives me idea of working in the data science industry and what roles of data scientist holds. They have provided us learning environment without any judgments and my mentor always appreciate the idea of participation in the session. While reviewing the training program he is enlighten us all the complex concepts of data science in easiest way possible which was remarkable. In this past couple of weeks, we have many discussions about professional life and career counselling and which path I fit better to pursue in the future, on the other hand, Ms. Jennifer always active in all the session along with Mr. Ivan to take closer look of how this program is going and she always welcome suggestions if there's any room for improvement. The overall experience so far is worth it and I would say the ITIC is providing the bridge between university to real professional world which is really helpful especially for the international students like me.

I would like to sum up my analysis by adding that, this program helps me to expand my thinking process and motivated me to think outside of the box and come up with possible solution rather just making sure to get the answer right as this is the learning environment where all types of wrongs are welcome to so we can discuss and get the better results, this program also helping me to learn team work and resource management as by learning under Mr. Ivan it's quite fun and the experience with ITIC is overall remarkable.

SWOT ANALYSIS

Strengths:

The ITIC global is a core IT oriented company which is delivering IT solution all over the Australia since last eleven years. This organisation is quite strong and holds a good reputation among the Information technology industry. The ITIC holds its strength in its board member who are highly experience and courageous. The CEO of ITIC Mr. Stephen holds big list of work experience in his field of work, and being a managing director of ITIC systems and education his vision of taking this organisation on higher level is quite inspiring, there educational and research research centre holds collaboration with big names of NSW university is their strength. ITIC is a worldwide administration IT arranged organization with an exceptionally experienced and regarded in their fields CEO and chiefs, they profoundly objective situated and vocation cantered. Likewise, of the undertaking which are as of now running in the organization are profoundly cutting-edge and reasonable to current need of innovation. Give an extraordinary climate to the clients and to their understudies which is exceptionally looked for in IT world. The team ITIC holds is well experienced and know what they are doing, the expansion and being partner with Yirigaa will open new doors for ITIC as they have introduced Mr. Cr. Jeff who is the chair member of the NSW investment of cyber security hub which will leads ITIC to new level of success, they have also recently set a AI-research centre in the Macquarie university which will open new doors of opportunity for upcoming students. There are as of now three AIP industry streams including, AI-empowered Policing, AI-empowered Banking and AI-empowered instructing and realizing which are driven by the AIP research Centre's industry accomplices including Australian Federal Police (AFP), TATA Consultancy Services (TCS) and ITIC, with additional to come.

Weakness:

As being an freshie and not being able to get the full idea of their office because of COVID-19, I would say the weakness I have found is their way of corresponds as this program took a little while to confirm first which was a hustle in the start and trusting the organisation with time was a little of the worry but still in this time the correspondence from the education department was updated but I would say there is a room of improvement in planning. Furthermore, I would like to highlight the interface of their website which could be improve as being a tech company they should improve the interface of their website as it's not very appealing to me and it does need an update. When we talk about their training program as I have come across it could get more better by adding some more advance learning and if they can provide more material regarding their live project, it can help students to learn more expand their skills. Their Linked in profile seems old which needs new update and should work on it as being an freshie student to check the standard of the organisation, the first thing we look into its organization's LinkedIn profile. I believe these are small issues of weakness which needs to be considered to uplift the busines and standard of their organisation.

Opportunities:

ITIC global as many big names partner under their belt and the deliverable products they are working with has vast concept in upcoming times like cloud services, networking, cyber security, The ITIC is providing great opportunities to the new students of background of data science, cyber security and network engineers as well as it also providing the research centre for artificial intelligence which is remarkable and giving hands on experience of working on Telstra product and services for the students its big opportunity to grab in this crucial times where pandemic has given us big hit in all regards to have the opportunity to explore all these learning from the university was quite a challenge due to past circumstances while ITIC has taken the lead in that learning department and providing the chance to learn in professional environment will open new gates of opportunities for the students. The career consulting you get while getting their training program it should be highlighted here as it's not an easy thing to get in real world. ITIC is doing an great job of creating opportunities in all big tech fields which is going to change the world and having experience to learn on cisco technologies for networking students is a great way of experiencing their theoretical concepts.

Threats:

As technology industry is very vast and expanding everyday so there's competition for every organization exist in this industry and being in market you need to be insightful of all the new products and business strategies introducing every day and night, ITIC does have threat with few companies which could be challenging in coming time but I believe this organization is going in right way, there's always a chance to improve and get better so It won't be hard to say that ITIC should get working with more partners on board and should introduce more products and services in the marketing to beat their competitors. There are not many organizations out there which can move ITIC capacities to set out really collaborating open doors and venture. A portion of the organizations have profoundly capable individuals at their scratch. Additionally, assuming that every one of the tasks are begins all the while at the firm it is difficult to adapt to the undertaking cut off times.

CONCLUSION

In the end I will add that this temporary job opportunity gave me a lot of information and expertise to be better and to succeed in my field, As being and data science student and have background of computer science, I might want to grow my insight and ability in this field to be a superior individual. Likewise, it showed me the significance of using time productively, incredible skill and sheer spotlight on the assignments. It isn't simply my first internship position yet it is a pathway to make my future and be better

This initial multi week has been phenomenal to me and the training program taught me so many aspect of problem solving and clear my theoretical concepts of data science and I am looking forward to work on project by myself under supervision of ITIC well experience team which would I believe will get me learn new and better ways of working with knowledge I have consumed over these past year and helps me to choose right career path for my future which makes me believe to have mentor and working under good leadership helps you improve all over and I like want to show my appreciation towards every one individual who I have been lucky to in touch with. To have the option to acquire critical thinking capacity and mentality has set me up a for a superior future. The task venture for me has recently started I incredibly and eager to invite impending next about a month and a half as I work on my undertaking.

ITIC has me given an extraordinary ability and instruments which are expected in the present specialized world, it has likewise shown me the significance of initiative and to likewise be a colleague. To put my thoughts forward and to pay attention to every other person simultaneously. ITIC can possibly become one of the most incredible information technology organisations in Australia and can extend to worldwide in not-so-distant future.

RECOMMENDATION

I don't have those numerous proposals at this point, yet I will say this that kindly update the UI of the portal and make the material and talk recordings effectively accessible. My anxiety is particularly for address recordings I was unable to have the option to put a quick forward

If I simply have any desire to rapidly filter the learning on the grounds that the player couldn't do that. Additionally, if it's conceivable you can recruit an additional a representative just to take care of our specialized and information issue. I realize the staff cannot have the option to provide regarding student issue promptly once in a while and that can block a learning interaction.

I would also like to recommend they should work on their marketing as not many people know about them while existing in the market for last ten years, they need a big marketing team and few new big in date projects, collaboration with new clients and new services with on board clients as these are big names of Australia which can help them grow as well.

It would be good if I can get a chance to have few sessions in the office which can help the students to learn soft professional skills and helps them to make connection in their field of work which could be helpful in the future and also it will enhance their ability to understand and grab communication skills on professional level.

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