

# **Internship Report**

submitted in partial fulfillment of the requirement  
for the Award of the Degree of

**Bachelor of Engineering**  
in  
**Electronics Engineering**

by

**Kunal Sanjay Sanghvi**

under the employment of

**i-Wealth Management LLP**



**Department of Electronics Engineering**  
Bharatiya Vidya Bhavan's  
Sardar Patel Institute of Technology  
(Autonomous Institute Affiliated to University of Mumbai)  
Munshi Nagar, Andheri-West, Mumbai-400058  
University of Mumbai  
June 2022

## Certificate

This is to certify that the "Internship Report" submitted by Kunal Sanjay Sanghvi is work done by him/her at i-Wealth Management LLP and submitted during the 2020-2021 academic year, in partial fulfillment of the requirements for the award of Degree of Bachelor of Engineering in Electronics Engineering from University of Mumbai.

Certified by

**Dr Dhananjay Kalbande**  
Dean Industry Relations

**Dr B.N.Chaudhari**  
Principal



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University of Mumbai  
June 2022

# **CERTIFICATE**

THIS IS TO CERTIFY THAT  
**MR. KUNAL S. SANGHVI**  
HAS SATISFACTORILY COMPLETED HIS INTERNSHIP  
FROM 3<sup>RD</sup> JANUARY 2022 TO 2<sup>ND</sup> JUNE 2022  
AT  
**I-WEALTH MANAGEMENT LLP**  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS  
FOR THE AWARD OF  
DEGREE OF BACHELOR OF ENGINEERING IN ELECTRONICS  
ENGINEERING FROM THE UNIVERSITY OF MUMBAI

For I-WEALTH MANAGEMENT LLP  
**I-WEALTH MANAGEMENT LLP**

*B. Jain*

Designated Partner



Mr. Bharat Jain  
(Designated Partner)

Date: 6<sup>th</sup> June, 2022  
Place: Mumbai

Figure 1: Company Certificate on completion of Internship

# Acknowledgments

I am deeply grateful to the Principal, Dean of Industry Relations and the Training and Placement Officer of my Institute for successfully arranging the semester long internship program for me.

I also thank i-Wealth Management LLP, for giving me the opportunity to intern at their prestigious organization.

During my internship, I had the kind association as well as supervision of Mr. Anil Mishra (Senior Manager - Algo Trading) and Mr. Bharat Jain (CIO). Their exemplary guidance, constant mentoring and careful monitoring contributed immensely towards the successful completion of the LITE Application project that I was working on.

All the individuals that worked along with me at i-Wealth Management LLP; their patience and openness created an enjoyable working environment for me. I acknowledge the help of all of these individuals with an immense sense of gratitude.

## **Abstract**

i-Wealth Management LLP is an investment management company, headquartered in Mumbai. It manages SEBI registered category III AIF named as "i-Wealth Fund". Our purpose is to generate higher risk-adjusted returns for clients in the Indian equity market.

The company strongly believes and works on "PFDR":

- P - Process Oriented
- F - Flexible
- D - Data Driven
- R - Risk Management

They have a very strong fundamental analyst team as well as quantitative analyst team. The quantitative analyst team looks on the part of the Algo Trading. Thus, making strategies was not so difficult, but exactly viewing those strategies on real time data and help the analyst to decide which parameter to tweak to produce optimum profit was a challenge. My internship with the company surfaced at this very challenging phase in its quest to expedite the development of a software that could assist the analyst.

At first we took a month or so where we discussed the core requirements of the software along with its future usage and thus, I developed the complete software from scratch which is currently operation ready and used by the quantitative analyst to design better profit making strategies.

The following report discusses the crux of my internship with i-Wealth Management LLP, the value added from my end to the company and learning's I gained so far. Report briefly describes the 6-month journey and all the myriad verticals that I touched upon.

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# List of Abbreviations

|     |                               |
|-----|-------------------------------|
| GUI | Graphical User Interface      |
| UI  | User Interface                |
| ETF | Exchange Traded Fund          |
| LLP | Limited Liability Partnership |
| QA  | Quantitative Analyst          |



# Chapter 1

## Introduction

Algorithmic trading (also called automated trading, black-box trading, or algo-trading) uses a computer program that follows a defined set of instructions (an algorithm) to place a trade. The trade, in theory, can generate profits at a speed and frequency that is impossible for a human trader.

The defined sets of instructions are based on timing, price, quantity, or any mathematical model. Apart from profit opportunities for the trader, algo-trading renders markets more liquid and trading more systematic by ruling out the impact of human emotions on trading activities.

Algorithmic Trading in Practice. Suppose a trader follows these simple trade criteria:

- Buy 50 shares of a stock when its 50-day moving average goes above the 200-day moving average. (A moving average is an average of past data points that smooths out day-to-day price fluctuations and thereby identifies trends.)
- Sell shares of the stock when its 50-day moving average goes below the 200-day moving average.

Using these two simple instructions, a computer program will automatically monitor the stock price (and the moving average indicators) and place the buy and sell orders when the defined conditions are met. The trader no longer needs to monitor live prices and graphs or put in the orders manually. The algorithmic trading system does this automatically by correctly identifying the trading opportunity.

### **Benefits of Algorithmic Trading:**

- Trades are executed at the best possible prices.
- Trade order placement is instant and accurate (there is a high chance of execution at the desired levels).
- Trades are timed correctly and instantly to avoid significant price changes.
- Reduced transaction costs.
- Simultaneous automated checks on multiple market conditions.
- Reduced risk of manual errors when placing trades.

- Algo-trading can be backtested using available historical and real-time data to see if it is a viable trading strategy.
- Reduced the possibility of mistakes by human traders based on emotional and psychological factors.

**Algo-trading is used in many forms of trading and investment activities including:**

- Mid- to long-term investors or buy-side firms—pension funds, mutual funds, insurance companies—use algo-trading to purchase stocks in large quantities when they do not want to influence stock prices with discrete, large-volume investments.
- Short-term traders and sell-side participants—market makers (such as brokerage houses), speculators, and arbitrageurs—benefit from automated trade execution; in addition, algo-trading aids in creating sufficient liquidity for sellers in the market.
- Systematic traders—trend followers, hedge funds, or pairs traders (a market-neutral trading strategy that matches a long position with a short position in a pair of highly correlated instruments such as two stocks, exchange-traded funds (ETFs) or currencies)—find it much more efficient to program their trading rules and let the program trade automatically.

The company focused on Systematic Trading. Thus, I developed a Software that helped the company decide whether the algo-trading strategy is generating profits or incurring losses.

## **1.1 i-Wealth Management LLP**

**i-Wealth Management LLP believes in the following points as follows:**

- Where investments are backed by research, science and technology.
- Where we harness the power of technology, data and research for sustained wealth creation.
- Where we have sustained wealth creation through superior risk-adjusted returns.
- Where we make technology, research and data work for your benefit!
- Where we have cracked the code to better investments.
- Where the unbeatable combination of investments and data technology

## **1.2 Location of Internship**

The company is located at 822, Tulsiani Chambers, Nariman Point, Mumbai-400021

## 1.3 Project Description

The Confidentiality of the agreement needs to be respected by me as per the work-ethics and hence I cannot disclose much about the project here. The aim of the project was to develop a software which could help the analyst pick profitable strategies and tweak various parameter and see its effect on the profitability.

The project indeed the software was divided into three-sub divisions as part of the process flow: Database, Backend and Frontend.

- Database management where all the master data is stored and kept upto date with each trading day passes.
- Backend is a tool which communicates with the database based on the frontend events and collects all the required data asked by the frontend.
- Frontend is the final GUI which is seen by the user and based on different options and buttons, events are generated and communicated to the backend which then collects the data and creates visualization to the user.

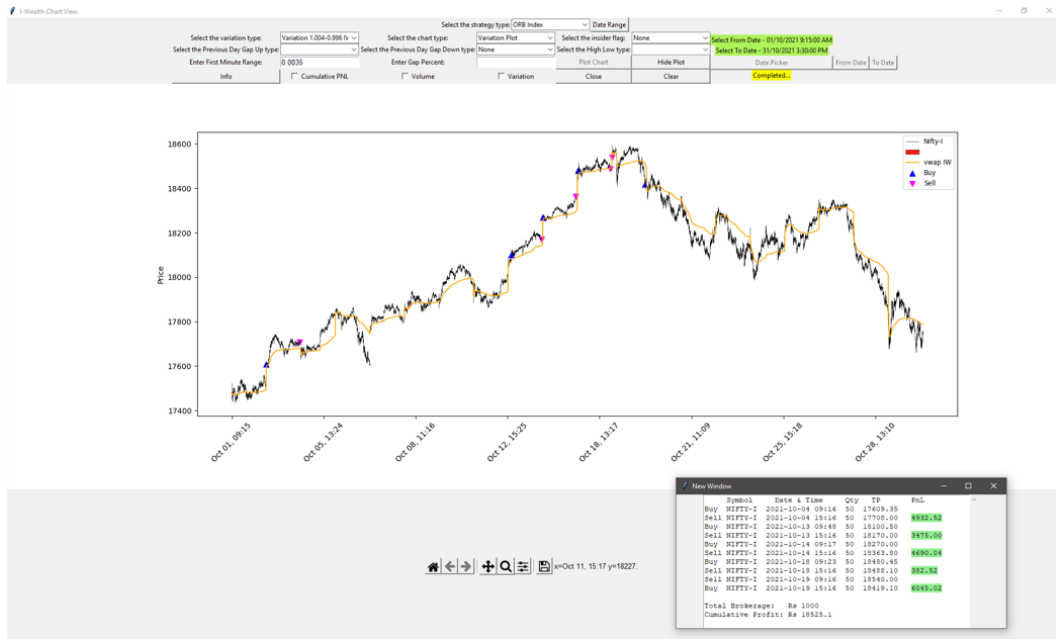


Figure 1.1: Variation Plot of one of the strategies

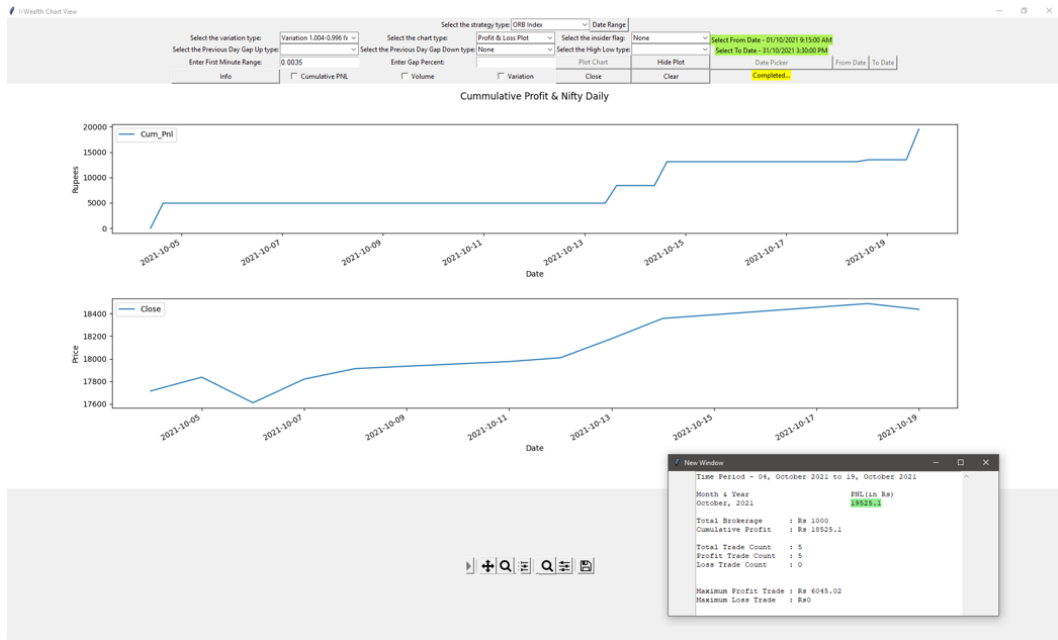


Figure 1.2: Profit and Loss Plot of one of the strategies



Figure 1.3: Custom Index

## 1.4 Contribution

As part of the Quantitative Analyst team, I was assigned to develop the complete three phase of the project on my own and also collaborated with a colleague who managed certain sections of the database. During the later half of the internship I got an opportunity to work with fundamental team, where I developed certain strategies based on financial models created by team.

# Chapter 2

## Internship Objectives

### 2.1 Learning Objectives

Internships are educational and career development opportunities, providing practical experience in a field or discipline. They are structured, short-term, supervised placements often focused around particular tasks or projects with defined timescales. An internship may be compensated, non-compensated or some time may be paid. The internship has to be meaningful and mutually beneficial to the intern and the organization. It is important that the objectives and the activities of the internship program are clearly defined and understood.

Following are the intended objectives of internship training-

- Expose technical students to the industrial environment, which cannot be simulated in the classroom, thereby creating competent professionals for the industry.
- Provide possible opportunities to learn understand and sharpen the real time technical /managerial skills required at the job.
- Expose students to the current technological developments relevant to the subject area of training.
- Utilize the experience gained from the ‘Industrial Internship’ in classroom discussions.
- Create conducive conditions in the quest for knowledge and its applicability on the job.
- Learn to apply their technical knowledge in real industrial situations.
- Gain experience in writing technical reports/projects.
- Expose students to the responsibilities and ethics of the engineering profession.
- Familiarize students with the various materials, processes, products and their applications along with relevant aspects of quality control.
- Promote academic, professional and/or personal development.

- Expose the students to future employers.
- Understand the social, economic and administrative considerations that influence the working environment of industrial organizations
- Understand the psychology of the workers and their habits, attitudes and approach to problem solving.

# Chapter 3

## Monthly Progress

### 3.1 January 2022

First month of the internship mainly involved of getting trained and accustomed with the new things assigned to me. This includes getting ready with the familiarity of VS Code Studio to getting good hands on grip of Python Programming language. Thus, working of the company and its hierarchy along with task objectives were made clear. They assigned me the project of Software Development for their strategy. So mostly the designing and selection of software's and languages to develop it consumed my first month.

### 3.2 February 2022

At the beginning of the second month, the library selected i.e. Trading view started to give problem. As it had various implementation limitation with less support and due to which it made me drop the idea of using it and I started the process of finding another library that could do similar kind of work. At this point I found ChartIQ, which is similar to trading view and started the application implementation using this library on ReactJS. Thus, in the first two months I got to learn new language ReactJS.

### 3.3 March 2022

At the beginning of the third month, the library selected i.e. ChartIQ also had few minimal implementation limitation. The support was good but when we asked the company the cost of the library it costed around 12Lacs per annum. Since, company is at a growing stage and couldnot afford such huge ammount of money get blocked into the development of a software. Thus, we as a team sat again and re-discussed our implementation goals and overall where we could compromise to minimize the cost. Thus, after researching I found a liabrary that could actually help us develop the whole application in-house for free of cost. The only catch was we had to compromise on aesthetics, but in front of costings we as a team had no issues.

### **3.4 April 2022**

From the fourth month, the application started turing out how we wanted. I used tkinter library for GUI development in Python and MPL Finance library for Data Visualization in Python. Then I started developing the landing pages on the GUI for all the different strategies and we thoroughly tested each of them before making it live so that different teams could use the software. I also developed a landing page for the fundamental team where our in-house indicators could be used with live data and ranking would be displayed of different sectors based on the performance within the market.

### **3.5 May 2022**

During my fifth month I was assigned a new project where I had to co-ordinate with the fundamental team and had to upload both annual and quarterly financial models into our master database. There was one issue which I observed was based on sectors the financial models changed and event the names had spelling mistakes and were not common overall. Since this data was going to be used for later purpose, one requirement was to keep this data field constant so that it could be easily accessed later. Therefore, I create a UI which if any discrepancy found in data fields would ask the user to match with the template and thus that data field name would get changed and uploaded in the database as a template. Thus I almost uploaded more than 1250 financial models into the database with the functionality developed.

### **3.6 June 2022**

For my final month, I got another project which had tasks of developing various strategies based on the financial models which were uploaded in the prior month. It had various analysis based on the data-fields thus the functionality developed for the template really helped me here. I tested all my functionalities and GUI's which I developed during the course of my internship, just to insure smooth working of the work done till date.



# Chapter 4

## Results and Discussion

### 4.1 Achievement of Internship Objectives

- Successfully gained knowledgeable insights on Object Oriented Programming.
- Got a good grip on Python Programming Language.
- Operated on several computer science key parameters.
- Was able to get hold on working with libraries and making one.

### 4.2 Procurement of Industry Skills

- Python Programming
- Pure Computer Science Concepts
- Developing Libraries on Python Language
- Threading, Classes, OOPs concept
- Parallel Computing

### 4.3 Project Results

- I successfully developed the software along with all the different requirements and made it live and deployed it for the other team members.
- My project with the fundamental team also got live and is being used by the team members to select different stocks.
- The project helped a lot in increasing the profitability of the strategies.

### 4.4 Challenges Tackled

- Deciding a library which could suffice all our requirements.
- Creating a method of common template to upload the financial models.

# Chapter 5

## Conclusion

The internship journey so far has been a great learning experience. The learning opportunities have helped in acquiring various industry skills which are necessary for a fresher going into a full-time job. From the internship, I acquired skills like work ethics, professional discipline as well as enhanced my communication skills. Working on a live project gave me good exposure to the latest Computer Science Skills. The teams that I worked with allowed me to put my technical as well as non-technical skills to practical use. The hands-on experience with the Python Programming, Fundamental Equity Data and Postgresql was an addition to the entire internship training. Apart from developing and enhancing the skills, the main benefit of the internship has been getting a good understanding of the work culture of the company. This aids a fresher's first job experience when they are on-boarded full time. Overall, the semester-long internship has been a great help to me in terms of the industry exposure I received and i-Wealth Management LLP also ensured that the journey was a smooth one with constant support from HR and my colleagues.

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