**KIET Group of Institutions, Ghaziabad**

**Computer Science**

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**Internship Report**

**on**

**IBM Skill Build Internship Program**

**Summer Internship at AMERICAN INDIA FOUNDATION**

**July**

**(2021)**

**Submitted By:**

**Taz khan**

**Computer Science(Sem- IV)**

**Class Roll No.- 48**

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**ACKNOWLEDGEMENT**

I’ve got this golden opportunity to express my kind gratitude and sincere thanks to my Head of Institution, KIET Group of Institutions of Engineering and Technology, and Head of Department of “**Computer Science”** for their kind support and necessary counselling in the preparation of this project report. I’m also indebted to each and every person responsible for the making up of this project directly or indirectly.

I must also acknowledge or deep debt of gratitude each one of my colleague who led this project come out in the way it is. It’s my hard work and untiring sincere efforts and cooperation to bring out the project work. Last but not the least, I would like to thank my parents for their sound counselling and cheerful support. They have always inspired us and kept our spirit up.

**Taz Khan**

**B.Tech**

**Semester- IV**

**University Roll No: 1900290120119**

**CERTIFICATE**

This is to certify that the internship project report entitled **"IBM Skill Build Internship Program"** submitted by **Mr. Taz khan** in the Department of **Computer Science** of KIET Group of Institutions, Ghaziabad, affiliated to Dr. A. P. J. Abdul Kalam Technical University, Lucknow, Uttar Pradesh, India, is a record of candidate summer internship. He has successfully completed his/her internship under my supervision and guidance and is worthy of consideration for the same.

**Signature of Supervisor: A picture containing text, whiteboard

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**Supervisor’s Name: Prof. Manish Bhardwaj**

**Date: 21/09/2021**

**INDUSTRY PROFILE**

The **American India Foundation** (AIF, founded 2001) is a non-profit American organization working in India. It is one of the largest secular, non-partisan American organizations supporting development work in India.

American India Foundation collaborated with IBM to provide free communication skills training on IBM skill build learning platform.

On this platform students can learn various skills related to communication as well as technical skills.

**Overview of Project**

Project was based on communication skills like How to make resume, how to behave in interviews , how to make LinkedIn profile and many more soft skills.

It started in first week of July and lasted for 2 weeks.

In this internship we were assigned to complete some skill based courses on IBM Skill build platform like Personality Dynamics , How to Dress up for Interview, How to Make LinkedIn Profile , and many more.

We were also introduced with basics of web development like how web works and structure of website and basic components of websites and languages used to make the website i.e. Html, CSS, Javascript.

One session was also conducted for basics for machine learning where different frameworks and modules related to machine learning were introduced to us.

**Introduction of Project Internship**

American India Foundation collaborated with IBM to provide free communication skills training on IBM skill build learning platform.

Project was based on communication skills like How to make resume, how to behave in interviews, how to make LinkedIn profile and many more soft skills.

In first week we are taught about the need of the communication skills, why it is important in our professional career and in future education.

We were also taught about LinkedIn how to prepare profile on LinkedIn and how to prepare for interview.

We were taught about different aspects of personality development as well as technical skills and how its going to be beneficial for us in future.

We were also taught about video resume how it will give an edge to us compared to the other candidates.

We were also introduced with basics of web development and machine learning.

**Outcome of Internship**

Through this internship I have learnt a lot about personality development, communication skill, soft skills and basics of web development.

Through this internship I learnt about LinkedIn, how to make our profile better for better showcase of my technical as well as soft skills and to connect with the peoples with same interest.

I also learnt about Job essential skills like how to dress up for interview, how to talk to the interviewer and responds to interview question and how to tackle different scenarios and problems.

I have learned about time management skills how we can manage our time for better productivity during work and study.

**Internship Certificate**

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**MOOC Certificate**

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**Literature Review Report**

***Paper 1: - Web Design: A key factor for the Website Success***

Summary: In a market with a target of more than 1400 million people and more than 70 thousand million dot-com websites in the world, the opportunities of trading are almost infinite. This research is focused on the main analysis of the perspectives within the marketing discipline. These research lines are motivated by the consecution of successful interfaces which generate positive responses on users. Thus, the web design is important in order to obtain high levels of satisfaction with the website or to increase the online purchase intention of the consumer. In spite of the importance that web design has for the development of successful virtual stores, it seems remarkable the relative lack of consensus in the literature about how the factors that compose the design of the website have to be managed. Taking these objectives as a reference, in the two following sections we point out a literature review regarding the key factors of a successful website, analyzing especially the relevance of the website design. In the last years, a great number of researchers have made efforts in order to establish which factors may lead to the success of a website. In this sense, the marketing literature has stressed the users’ point of view to define how an e-commerce website must be for being successful. In general terms, and in the context of electronic commerce, a successful website «is one that attracts customers, makes them feel the site is trustworthy, dependable, and reliable and generates customer satisfaction». This study captured objective measures as well as consumer perceptions related to the commercial and noncommercial information, transaction information, navigation structure, search functions or perceptions about the quality of the structure, image and presentation .

**Paper 2: Advanced memory—Materials for a new era of information technology.**

In summary, we hope that this issue will be a useful guide to researchers in the field and a trigger of novel ideas for future memories to support the flourish of data for the next generation of information technology.

In the design of electronic systems, both storage memory and working memory need to be considered. For the storage memory, “higher density” is more important than “higher performance.” Here, “higher performance” mainly refers to many write–read cycles. In the extreme case, a write-once-read-many-type device would be a feasible option for several applications if almost unlimited memory density is available. However, this is not applicable to the working memory, such as DRAM, given the von Neumann architecture. MRAM seems to be the only feasible option for this application. Besides long write endurance, speed, low power consumption, and a wide operating temperature range are also important. Such non-volatile working memory can help to drastically lower the

power consumption of electronic circuits. Device development should therefore be aligned with the system development direction and requirements.

***Paper 3: - A Research Paper on Website Development Optimization Using XAMPP/PHP***

Summary: Website Development is like house building, before house building process, we ask to an architect about plan, building permit, oversee a survey of geological and license from city. All things must have to see in the website development requirement, designing, documentation, appropriate server and programming language etc. This research paper discussing the various useful tools and techniques that are used in a development of a website. Invention and Development is a significant role plays in Web Development. Graphical looks and feel according to most impressive and efficient way, Graphical elements required for design are appearing more impressive, for this use color and image. Design of web pages, computer graphic includes navigation mock-up, template content and placeholders. Content Writing: Writing of contents is a significant part of development of web pages and plays an important and necessary step in optimization Engine, a well-defined or easy content is utterly necessary to fall in internet site users. Content written by a more professional requires more pure, easy and accurate content. Coding: Coding start of a Web Pages in CSS, HTML, PHP, Java scripts and other technologies of WWW, for drawing of the graphic and text contents, we look code of web page consistently like as webpage design. Coding of a web page is loading fastly search engine and index give us rank very quickly. Every web page of a website takes a unique title, unique meta tags as keywords and descriptions.

***Paper 4: - Overview of Massive Open Online Course Platforms (MOOC): Personalization and Semantic Web Technologies and Standards***

Summary: Massive Open Online Courses arose about 9 years ago and eventually transformed modern online education. Due to the large number of participants with different levels of education and learning styles, it is very difficult to provide a course that meets the individual needs of every student. To address this problem MOOC platforms, use different personalization mechanisms. Recently, we have moved to the domain field of MOOC platforms. We are interested in applying our experience using Semantic Web to the MOOC field. There is an opinion in the literature that Semantic Web technologies are well suited to serve as a mechanism for personalization in MOOC. The aim of this paper is to find out how Semantic Web technologies and standards are used to facilitate personalization in modern MOOC platforms. This paper details state-of-the-art MOOC platforms regarding the selected criteria. We define a list of MOOC and MOOC platform to limit the evaluation scope. Using these definitions, we choose the MOOC platforms that are suitable for the overview. Personalization is used to adopt learning process to the needs of a student. Semantic Web Technologies and Standards Semantic Web technologies and standards are intended to present information in the internet in a structured form. It allows automatic processing, exchange, and reuse of data by software agents. Ontology is used to describe domain field in a formal way to reuse and share information in a structured way.

***Paper 5: - Data Security Over Internet: Value of Data & Platform at which Data Privacy is Risked or Stolen***

Summary: “Data security over internet” is a raised concern long after people and agencies have identified internet beyond as a boon of technology which connects, communicates, researches, identifies and makes our tasks do in instant. With the rise of a new era of crime- cybercrime, internet has now been detected with various loopholes of which miscreant’s tale advantage with advantageous fact that cybercrime is difficult to trace. Here, I discuss such platforms or loopholes which the internet users identify it to be unnecessary to be protected. How their data over internet, over which they work, manipulate or use is in the spy eyes of someone and how do the tech giants and hijackers of our data misuse it for their profits. Most of the social media platforms like Facebook, Instagram uses the customer’s data as a tool of their marketing. This common marketing tool strategy has resulted in making profits worth of billions against the few countable dollars’ worth of our data. Below is a basic screenshot of basic applications provided by Google to its android users. Various applications serve their definite purposes. These applications when installed on our devices require various applications permissions and from their store our data on their database. So, when we use these Google products, the respective Search Engine has got a lot of potential to steal our data. In fact, Google has almost 1.74 billion registered websites and 4.2 billion webpages total over internet, out of which Google has its trackers on almost 75%websites. This means, Google keeps account of kind of searches, frequency, history of its users for each and every website on its database. As of now, Google has now become more of a tracking and spying company rather than a search engine company. Every time when we use Google products, its trackers are always spying over our searches and needs. But by deliberate allowance to Google to collect all this information, we get compelled to be bid on serving us ads based on your sensitive personal data. Given below is the statistic of Google’s ad revenue made by company over years. With the advancement in the technology of internet, now every impossibility of connection with people; research; computer tasks; communication; utility of resources is bridging to a possible future, yet there have then erupted the stakes and crimes which have been highlighted as the backdrops of internet dependence. Living today’s world without internet is an impossibility or a possibility with efficiency, energy, time, money on no guarantee. However, our aid of internet is now a concerned question of self-privacy and security.

***Paper 6: - Data Security Protocol: Misuse of Breached Data or at Risk***

Summary: With internet gradually becoming the new kind of dark world where daily many people are being exposed with their personal data, it is the risk of foolishly getting trapped by our own unconscious use of internet. Whatever we do today over internet, it is getting stored and tracked by some company, hijackers, platforms which use our personal data and harm us. Therefore it is the time we know what kind of these platforms are, how are they getting own profit out of our valuable data and what wise steps we can afford to prevent privacy breaches. The data security protocols are like any other laws laid for scrutiny of any misleading actions or proceedings regarding data breaches or misuse of any identity’s information. It is recognized by various bodies for various countries, such as GDPR in European Union. Advantage that users will be given will be such as

• Business firms won’t have total authority over user’s data collection and would need to seek user’s consent for actions over it. They would have to proof that any action taken would be as per consent given by the user. Since the bill will also give the user rights to withdraw from the deal, the companies would also have to work over that too.

• The bill, primarily strategic for user’s to know every action taken against their data, keeps them notified about the collection; manipulation; access; and erase of their data, to which the business firms have to abide with. Personal data is a risky key of identity exploitation. Severe mishandling of data can lead to varied losses with no acknowledgement to the true individual. • Financial thefts: card cloning, duping bank accounts, credit cards or being sold to another party.

**Paper 7: TOWARDS RUN-TIME PARTITIONING OF A REAL TIME OPERATING SYSTEM FOR RECONFIGURABLE SYSTEMS ON**

**CHIP.**

Summary.

In this paper author have presented our investigation towards a run-time recon figurable RTOS running over a hybrid platform, focusing in the OS service assignment and system reconfiguration. Looking at the related work, we are quite convinced that this is a novel approach for a self-optimized RTOS. A shortly presentation of the hardware architecture based on a Virtex-II Pro MFPGA was also presented. The 0-1 Integer Programming model of the system and the reconfiguration cost evaluation have been presented. Addition ally,

considerations of a run-time execution of this technic, in order to support real-time applications have been discussed.

As a future work, the investigation of a proper OS components assignment algorithm which takes into consideration the application time constraints and the integration of the communication costs among the components are going to be made. Technics to able the run-time reallocation of the components over an hybrid architecture will be investigated. Moreover, a reconfiguration scheduling of the components, necessary to bring the system to a new configuration (II)

are going to be made.

**Paper 8: Machine learning for nanophotonics.**

Recent advances in DNNs applied to the inverse design problem of nanophotonic devices. Recently,we introduced the bidirectional neural network for the design of nanostructures (Figure 4).5,8 The bidirectional model, which proceeds from the optical response spectrum to the nanoparticle geometry and then back, solves both the inverse problem of designing a nanostructure and the direct problem of inferring the optical characteristics of the designed geometry. The advantages of the bidirectional model are twofold. First,

this model is able to streamline the design process by retrieving an

immediate prediction for the optical properties of the designed nanostructure. In this model, the designer can match the desired spectra (as depicted in Figure 1a) with the recovered spectra, which can also be used in understanding the confidence level of the model for the specific design. Second, a bidirectional model allows co-adaptation between both directions, leading to better robustness and higher stability for the predictions.

The use of machine learning techniques, and deep learning in particular, has spawned huge interest over the past few years in the nanophotonics communities, due to the great promise these techniques offer for the inverse design of novel nanophotonic devices and functionalities.

In this article, we have reviewed the main advances that have occurred in the past four years.

We discussed the advantages and weaknesses of the different approaches

presented so far, and introduced our spectra2pix network, a model composed of ultimate degrees of freedom, which conceptually allows the design of any 2D geometry. In addition, we presented the ability of spectra2pix to successfully generalize the set design of a completely unseen subfamily of geometries. Our results highlight the importance and the generalization ability of DNNs toward the goal of inverse design of any nanostructure with at-will spectral response.

**Paper 9: Machine Learning Powered Image Segmentation.**

**Today it is often no longer sufficient to just acquire images of materials.**

Instead, researchers are interested in gaining real insight into their specimens. In order to turn images into information it is necessary to run automated image analysis or evaluations on the data. However, the evaluation algorithms in most cases need segmented image data as input. Achieving a segmented dataset to enable the subsequent analysis is the new challenge today’s microscopists face.

Different techniques and algorithms exist to provide segmentation of

microscopic images. The most common ones are probably simple thresholding and watershed, which work well on clean data.

Unfortunately, microscopic images are prone to noise and image artefacts.

Machine learning based approaches have shown huge potential to overcome these issues. They can be trained to have certain tolerance against variance of the input data. However, these approaches are not easy to use and afford to be an image analysis expert to apply them correctly.

In this contribution, we present a new software module for machine learning powered image segmentation that is robust, fast and easy-to-use. It is seamlessly integrated in the microscope’s acquisition and analysis software framework for direct access. Operators of any skill level can be trained to use the software and perform advanced image segmentation within minutes.

The solution works with any kind of image data covering 2D and 3D datasets from light-, electron-, ion or x-ray-microscopes and can even deal with 6D datasets by high-end light microscopy. It reads all important file formats, covering tiff, jpg, png, czi and txm.

For creating and training a model, the new software module features an intuitive training user interface.

No parameters must be known and set, except for just one. The user can decide to use a handpicked 33-dimensional feature vector or use a separate deep-trained neural network to determine the feature vector based on the input data. After defining the classes, the user labels them with a simple painting tool directly in the training images. The amount of labeling that has to be done depends on the targeted accuracy of the model. The user can check the segmentation result any time during the training and decide on further refining the model in an iterative manner. In the end, the model is ready and can be used for segmenting the same kind of data repeatedly.

Further application examples of this software module will be shown in the presentation, covering 2D and 3D datasets. The presentation will focus especially on the aspect of ease-of-use, but also provide information about the segmentation speed and quality of the presented solution.

**Paper 10: Why scientists should learn to program in Python.**

When scientists realized the ability for computers to facil itate their work, they were perhaps the most enthusiastic early adopters of the technology. As computers became increasing ly available in the 1950s, 1960s, and 1970s, scientists braced them further and developed software to perform lengthy computations and to automate tedious data collection activities. Few fields were transformed as greatly as crystallography, through programs for direct-methods phasing and least-squares refinements and through computerized instruments.

Fifty years later, the thought of recording measure ments on a strip chart recorder seems as quaint as a commuting to work in a horse-drawn carriage.

There is now a plethora of highly specialized software programs for powder diffraction and practitioners also draw upon many general-purpose tools, such as spreadsheets and word processing packages. While use of computers and their power have grown in science, there is an irony that far fewer scientists are learning software development skills. This is a loss. While existing applications can accomplish quite a bit, there are always simple tasks in science that no one has programmed in a convenient way. Additionally, there are always new ideas that should be tried. Also of concern is the question of who will write the next generation of scientific software? Even when scientists team with computer specialists for software development, it is still very helpful when the scientists have a good understanding of the programming pro cess. Hence, we recommend that more scientists learn to program. Fortunately, not only have computers become ubiquitous, but also the skills needed to learn programming have been simplified, at least with some high-level computer: languages,

As we have discussed and demonstrated here, Python is a powerful

programming language, although simple enough to be taught in introductory high school courses. It can be learned easily, but still offers tremendous power for professional soft ware development. The large wealth of scientific packages, of which only a few were presented here, shows the high value that Python has in the hands of scientists. The authors encourage scientists to learn and use Python in their own work.

**Daily Log**

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| **Name of Student** | Taz Khan |
| **Roll No.** | 1900290120119 |
| **Name of Course** | B. Tech |
| **Date of Commencement of Training:** | 05/07/21 |
| **Date of Completion of Training:** | 18/07/21 |

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| **Date of Month** | **Please specify the learnings of the day** | **Time of**  **Arrival** | **Time of Departur e** | **Dept**  **.** | **Supervisor' s Sign** |
| 5/07/21 | Why communication is important. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 6/07/21 | Types of communication. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 7/07/21 | How to dress up for interview. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 8/07/21 | How to build resume. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 09/7/21 | Personality Dynamics. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 10/7/21 | How will you tell your story. | 6:00pm | 7:00pm | Industry(IBM) |  |
| 11/7/21 | Time management skills | 6:00pm | 7:00pm | Industry(IBM) |  |
| 13/7/21 | Job Essential skills | 6:00pm | 7:00pm | Industry(IBM) |  |
| 14/7/21 | Show what you know | 6:00pm | 7:00pm | Industry(IBM) |  |
| 15/7/21 | The Importance of Positive Feedback and How Deliver It to Others | 6:00pm | 7:00pm | Industry(IBM) |  |
| 16/7/21 | Tips to Demonstrate Work Ethic | 6:00pm | 7:00pm | Industry(IBM) |  |
| 17/7/21 | How to make video resume | 6:00pm | 7:00pm | Industry(IBM) |  |

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| 18/7/21 | Web Development Basics | 6:00 pm | 7:00pm | Industry(IBM) |  |
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**Signature of Company internship supervisor with Company stamp/ seal**A picture containing text, whiteboard

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**(Name- Manish Bhardwaj)**

**Contact No.- 870060273**