Sanath N U - Certifications

INTRODUCTION

Here is a list of the certifications I have completed from 2019 to 2023. These included a huge domain of technical as well as non-technical topics. I will list my learnings from each of the courses that I have take and what could be the better how I would approach the course again, if learning for the first time again.

Also, will add whatever links to resources and threads to each one of them.

LIST OF CERTIFICATIONS

Coursera

1. Cryptography and Information Theory
2. Symmetric Cryptography
3. Neural Networks and Deep Learning
4. Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
5. Tweet Emotion Recognition with TensorFlow
6. Build a Modern Computer from First Principles: From Nand to Tetris I
7. Algorithms for Searching, Sorting, and Indexing
8. Media Ethics and Governance
9. Introduction to Complex Analysis
10. Welcome to Game Theory
11. Simulation and Modeling of Natural Processes

NPTEL

1. Deep Learning for Visual Computing
2. Blockchain and it's applications
3. Data Science for Engineers
4. Information Security: Secure Systems Engineering
5. Ethical Hacking

Cisco Learning Academy

1. Introduction to Cybersecurity
2. Exploring IoT with Cisco Packet Tracer
3. Introduction to Packet Tracer Exam
4. Exploring Networking with Cisco Packet Tracer
5. Getting Started with Cisco Packet Tracer
6. Networking Basics

Badges Earned

Networking Basics

https://www.credly.com/badges/1ad11c09-bf70-4aa6-9313-8371e5f1df52/public_url

Introduction to Cybersecurity

https://www.credly.com/badges/df69ef22-db36-4062-a2a4-a99c24e2df2e/public_url

Introduction to Packet Tracer

https://www.credly.com/badges/48b85952-15cd-4ab9-be6c-0e7236306a70/public_url

NVIDIA Developer Workshops

Applications of AI for predictive Maintenance

Building Conversational AI Applications

COURSE WISE DESCRIPTION

Non-Technical Courses

Simulation and Modelling of Natural Processes

Course Link: https://www.coursera.org/learn/modeling-simulation-natural-processes

This was a very interesting course. One of my first courses to be completed during the pandemic. The course discusses on various modelling techniques and mathematical models that can be applied to the real world. Mostly I learnt about Monte Carlo Modelling, numerical methods for dynamic systems modelling, etc. I got a very good introduction to cellular automata which led me to learn about Wolfram Rules for cellular automata generation. Also learnt about traffic modelling and fluid dynamics. Simulated a fluid model using python.

The certificate: https://coursera.org/verify/VUTTQG38BSLN

Welcome to Game Theory

Course Link: https://www.coursera.org/learn/game-theory-introduction

A well thought course. It gave a little insight of how mathematical modelling can help in real life. Learnt the basics of Game theory, the Prisoner's Dilemma and many more examples. Learnt about simple Nash Equilibriums and how they are used currently in auctioning. A very informative course.

The certificate: https://coursera.org/verify/JNX2FEQWATS8

Introduction to Complex Analysis

Course Link: https://www.coursera.org/learn/complex-analysis

A mathematics-oriented course, which helped me understand a lot of analysis of complex numbers, functions and other things. Learnt about the Riemann Hypothesis, Complex manifolds, Riemann spheres and many more awesome mathematical structures. I learnt the same in university, but this was a much better precursor to that. The assignments were very informative and useful. Learnt about Chaos theory and fractals. This would be better supplemented with a course on MATLAB where one could learn to visualize these complex domains.

The certificate: https://coursera.org/verify/9FTKWEUSUFMV

Media, Ethics and Governance

Course Link: https://www.coursera.org/learn/media-ethics-governance

A simple philosophical course on the nature of media and how they should behave or be governed. Very creative course, giving a lot of perspectives. Wrote a peer reviewed assignment on the state of media and how they should work unconditionally to the work of spreading truth the public and help spread peacefulness across the world.

The certificate: https://coursera.org/verify/PD8S253Y66KQ

Technical Courses

Cryptography and Information Theory

Course Link: https://www.coursera.org/learn/crypto-info-theory

This course was the first course for Applied Cryptography Specialization. This gave me a brief understanding of encryption and decryption in the modern technological world. A simple history of encryption and cryptography starting from steganography was introduced. Learnt about brute force attacks and other attacks that can be mounted on current algorithms. A good learning experience.

The certificate: https://coursera.org/verify/SY4RTUV73DAR

Symmetric Cryptography

Course Link: https://www.coursera.org/learn/symmetric-crypto

A continuation to the previous course. Learnt the basics of ciphers like Caesar Ciphers, etc. Also, a basic introduction to block ciphers like AES and DES was given. Multiple other topics related to security and encryption in the modern world was explained. Overall an informative course.

The certificate: https://coursera.org/verify/7XV644Y9FKBP

Introduction to Data Science in Python

Course Link: https://www.coursera.org/learn/python-data-analysis

A 4-week heavily technical course involving lots of Mathematics, programming and data analysis. Having a prerequisite in basic statistics and probability is recommended. Also, here I improved my python programming skills. The pandas library was well understood, the assignments really tested ones understanding of the course materials. Of course, if one has previous experience with python, this course is pretty easy to grasp. Very good course.

The certificate: https://coursera.org/verify/8R9ZVF9Z9F63

Neural Networks and Deep Learning

Course Link: https://www.coursera.org/learn/neural-networks-deep-learning

A course by DeepAI, which is renowned for their Deep Learning course. The course instructor was Andrew NG, co-founder of Coursera, who teaches in a very passionate and powerful way. Helped me gain an interest into this huge field that is gaining traction in the past few years. Very good notebooks and in-depth math sessions that will help us understand Neural networks and how they work from scratch. Recommended to any beginner. This is the first course in the Deep Learning specialization offered by the institute. Could be helpful to any curious individual

The certificate: https://coursera.org/verify/A5Y3ZVDXKDVY

Improving Deep Neural Networks

Course Link: https://www.coursera.org/learn/deep-neural-network

This was a 3-week course continuation to the previous course taught by the institute. This delves more into hyperparameter tuning and regularization of the models. Learnt a lot of optimization techniques like Adam, RMSprop etc. A very nice course to get acquainted deeper into neural network models.

The certificate: https://coursera.org/verify/HGJGZ5ABJAZL

Build a Modern Computer from First Principles: From Nand to Tetris I

Course Link: https://www.coursera.org/learn/build-a-computer

This can be a called a Hands-on course on computer architecture. Very beautifully structured course. I was able to understand the basic principles of building a computer, from the digital logic than runs this to the CPU which can be used for programming various topics. Suggest anyone with a curious mind to take it. Awesome assignments that were catered to a learning individual with constant support. Very good course.

The certificate: https://coursera.org/verify/62YNW4CSC548

Algorithms for Searching, Sorting, and Indexing

Course Link: https://www.coursera.org/learn/algorithms-searching-sorting-indexing

Learnt a lot of basics of Data Structures. Many sorting algorithms and how they were generalized were explained. Basic search and sorting from Binary Search to Mergesort and Quicksort were explained. Understood the basics of hashing and HashMap. Other topics like Heaps and heapsort was explained. Learnt a lot about the mathematical theory behind these algorithms. Pretty useful course to get the basics strengthened. Similar to a basic course on data structures and algorithms.

The certificate: https://coursera.org/verify/VNFLG7BKY24L

Tweet Emotion Recognition with TensorFlow

Course Link: https://www.coursera.org/projects/tweet-emotion-tensorflow

A small project based course, where NLP models from TensorFlow was used to categorized certain tweets into many emotions. Gave a lot of understanding to how this could be coded up practically. Though this didn't delve into higher topics, this helped in building practical skills required to build models in real situations.

The certificate: https://coursera.org/verify/2RUH7JNQF5LP

Deep Learning for Visual Computing

Course Link: https://onlinecourses.nptel.ac.in/noc22_ee54/preview

A 12-week intensive course on Deep Learning conducted by IITK which is based on computer vision. Was exposed to various topics from basics SLP and MLP, autoencoders to Convolutional neural networks and advanced forms of them. Read multiple groundbreaking papers and could appreciate the creativity and brilliance of the field engineers. Learnt about AlexNet, VGGNet, GoogLeNet, ResNet and other Dense networks. Learnt about GANs. The course ended by showing the applications of the earlier algorithms in video processing and image processing. A very good course

The certificate: https://archive.nptel.ac.in/noc/Ecertificate/?q=NPTEL22EE54S3319025402180434

Data Science For Engineers

Course Link: https://onlinecourses.nptel.ac.in/noc22_cs28/preview

This course was taught in R. It was a 8 week intensive course taught by faculty from IIT Madras. Lots of basic statistics were gone through. Helped us understand the practicality of these with real world examples. Learnt a lot of using the R language for statistical analysis. Learnt about various machine learning models like Linear Regression, Polynomial Regression, etc. Highly deep in mathematics, and is not for the faint hearted. In the end, I had to do 4*4 matrix calculations by hand during the exam. But a very fun course and could enjoy a lot.

The certificate: https://archive.nptel.ac.in/noc/Ecertificate/?q=NPTEL22CS28S43201363NPTEL2201078270

Ethical Hacking

Course Link: https://onlinecourses.nptel.ac.in/noc22_cs13/preview

Learnt the basics of networking and ethical hacking. Learnt about using tools like NMAP and Nessus. Basic introduction to public, private key cryptography was introduced here. Learnt to use the basic tools of Kali Linux by loading into virtual machine. Very interesting topics. Learnt about social engineering and hardware security. This course had hands on programs that helped solidify my knowledge in this domain.

The certificate: https://archive.nptel.ac.in/noc/Ecertificate/?q=NPTEL22CS13S1319094402180434

Information Theory 5: Secure Systems Engineering

Course Link: https://onlinecourses.nptel.ac.in/noc22_cs23/preview

With the increase in the threat of cyber-security attacks, it is important to develop computer systems that are not only efficient but also secure. With this goal in mind, the course starts. It goes on to show mind-blowing security vulnerability like Stack and Buffer overflows and many models of security such as black box model and La-Biba model. A totally awesome course, that even covered some aspects of hardware security in the ending weeks. A truly awesome course for the curious mind. Highly recommend to anyone interested in security and how it can be used in grand scale system design in large servers and organizations.

The certificate: https://archive.nptel.ac.in/noc/Ecertificate/?q=NPTEL22CS23S33200282NPTEL2201078270

Blockchain and Its Applications

Course Link: https://onlinecourses.nptel.ac.in/noc22_cs44/preview

A very interesting course on the latest technologies. It had very nice content on various cryptographic technologies like Bitcoin, Ethereum, etc. Learnt the basics of decentralized technologies like Proof of Work, Proof of State, Ethereum Virtual Machine, etc. Learnt about the security vulnerabilities in these networks and the attacks that can be mounted against these networks. Very nice course with some hands of programming where we can create Ethereum wallet and trade in it.

The certificate: https://archive.nptel.ac.in/noc/Ecertificate/?q=NPTEL22CS44S2319514002180434

Introduction to Cybersecurity

Course Link: https://skillsforall.com/course/introduction-to-cybersecurity

A good introduction to cybersecurity is given in this course done by Cisco Learning academy. Arduous, yet enlightening. Gives a brief account of how cybersecurity is in the real world using cisco packet tracer. A nice course to get into the basics of cybersecurity.

Networking Basics

Course Link: https://skillsforall.com/course/networking-basics

A 30-hour self-paced course with huge amount of material. It was hard, but very useful to getting a basic introduction to networking. Learnt about IPv4, IPv6, DNS and other topics related to basics of networking. Also, there were several modules on security and encryption in the networks. This was supplemented with training sessions in Cisco Packet Tracer.

Getting Started with Cisco Packet Tracer

Course Link: https://skillsforall.com/course/getting-started-cisco-packet-tracer

A basic course that helps in getting a good understanding of the Cisco Packet Tracer software.

Exploring Networking with Cisco Packet Tracer

Course Link: https://skillsforall.com/course/exploring-networking-cisco-packet-tracer

A continuation of the previous course with lot of networking situations that one has to explore and debug. Gets us a practical perspective on a network systems engineer.

Exploring IoT with Cisco Packet Tracer

Course Link: https://skillsforall.com/course/exploring-iot-cisco-packet-tracer

This course explores basics of IoT Devices with Cisco Packet Tracer.

Introduction to Packet Tracer Exam

Course Link: https://skillsforall.com/exam/introduction-packet-tracer

A Combination of the previous 3 certificates to test the understanding. Very hard for beginners but easy to crack if you follow the lectures from the previous lectures

Applications of AI for predictive Maintenance

Course Link: https://www.nvidia.com/en-us/training/instructor-led-workshops/predictive-maintenance/

This was a pretty deep course, where there were lots of projects and labs and where we interacted with instructors from NVIDIA over a live workshop. It was very interesting with various topics being discussed in detail with examples. This course was meant for professionals who already have worked on high architectures, so it was a little hard to follow. But I learnt a whole lot. In the end, we not only learnt about certain machine learning algorithms like XGBoost, but also used an optimized algorithm to be used on specialized NVIDIA hardware which showed good performance. Overall, a very fruitful venture!

The certificate: https://learn.next.courses.nvidia.com/certificates/d7982169638d496d95d707793f9b688f

Building Conversational AI Applications

Course Link: Link

This was also another instructor lead workshop course, that was 9 hour and was pretty intensive. We were introduced to specialized Nvidia toolkits that are commercially available and also learnt about the architecture about them. Learnt about Nvidia Tao and Nvidia Riva, and we also deployed an end-to-end ASR, NLP and TTS service. A total NLP project which bettered my understanding of the tools. We worked on JupyterLab and also got exposure to Cloud and Docker services. A pretty awesome course! I that sense I would thank my college to provide me this opportunity in pursuing these pretty costly courses!

The certificate: https://learn.next.courses.nvidia.com/certificates/731b41d049a14a8e80fd867d5d7a7361