



Google IT Automation Professional Certificate

ISSUED TO

Akash Singh



Issued on: 18 AUG 2020 | Issued by: Coursera
Verify: <https://www.youracclaim.com/go/UIZHdydw>



07/21/2020

Akash Singh

has successfully completed

Crash Course on Python

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/GTSK88Z2ML92

Coursera has confirmed the identity of this individual and
their participation in the course.



07/22/2020

Akash Singh

has successfully completed

Using Python to Interact with the Operating System

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/X57DL3TNJP6A

Coursera has confirmed the identity of this individual and
their participation in the course.



07/23/2020

Akash Singh

has successfully completed

Introduction to Git and GitHub

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/JTHLWB53ZHE8

Coursera has confirmed the identity of this individual and
their participation in the course.



07/23/2020

Akash Singh

has successfully completed

Troubleshooting and Debugging Techniques

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/REG8989U97NW

Coursera has confirmed the identity of this individual and
their participation in the course.



07/23/2020

Akash Singh

has successfully completed

Configuration Management and the Cloud

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/MAWKGCM45XGC
Coursera has confirmed the identity of this individual and
their participation in the course.



07/24/2020

Akash Singh

has successfully completed

Automating Real-World Tasks with Python

an online non-credit course authorized by Google and offered through Coursera

Google

Google

COURSE CERTIFICATE



Verify at coursera.org/verify/58ZSXXCFDE89

Coursera has confirmed the identity of this individual and
their participation in the course.



6 Courses

Crash Course on Python

Using Python to Interact with the Operating System

Introduction to Git and GitHub

Troubleshooting and Debugging Techniques

Configuration Management and the Cloud

Automating Real-World Tasks with Python



07/24/2020

Akash Singh

has successfully completed the online, non-credit Professional Certificate

Google IT Automation with Python

This six-course certificate, developed by Google, is designed to provide IT professionals with in-demand skills -- including Python, Git, and IT automation -- that can help them advance their careers. The hands-on curriculum is designed to teach learners how to write code in Python, with a special focus on how this applies to automating tasks in the world of IT support and systems administration. Those who received this certificate passed all graded assessments with a score of 80% or above. They should have a strong foundation in how to use Git and GitHub, troubleshoot and debug complex problems, and apply automation at scale by using configuration management and the Cloud in order to prepare them for more advanced IT Support Specialist or Junior Systems Administrator positions.

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

A small, semi-transparent watermark of the Google logo is located in the upper right corner of the certificate.

Verify this certificate at:
coursera.org/verify/professional-cert/PJJHFX7ERUEW



Google IT Support Professional Certificate

ISSUED TO

Akash Singh



Issued on: 27 JUL 2020 | Issued by: Coursera
Verify: <https://www.youracclaim.com/go/2U6RIBGc>



07/26/2020

Akash Singh

has successfully completed

Technical Support Fundamentals

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/LUS9S7774G73

Coursera has confirmed the identity of this individual and
their participation in the course.



07/27/2020

Akash Singh

has successfully completed

The Bits and Bytes of Computer Networking

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/ANE6CU5XEEUH
Coursera has confirmed the identity of this individual and
their participation in the course.



07/26/2020

Akash Singh

has successfully completed

Operating Systems and You: Becoming a Power User

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/DCSGSPBHLKKN
Coursera has confirmed the identity of this individual and
their participation in the course.



07/27/2020

Akash Singh

has successfully completed

System Administration and IT Infrastructure Services

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/6K26KYRF7VLQ

Coursera has confirmed the identity of this individual and
their participation in the course.



07/26/2020

Akash Singh

has successfully completed

IT Security: Defense against the digital dark arts

an online non-credit course authorized by Google and offered through Coursera



Google

COURSE CERTIFICATE



Verify at coursera.org/verify/6YUL3TKE7S9H

Coursera has confirmed the identity of this individual and
their participation in the course.



5 Courses



07/27/2020

Akash Singh

has successfully completed the online, non-credit Professional Certificate

Technical Support Fundamentals

The Bits and Bytes of Computer Networking

Operating Systems and You: Becoming a Power User

System Administration and IT Infrastructure Services

IT Security: Defense against the digital dark arts

 Google

Google

Google IT Support

Whether you've been tinkering with IT or are completely new to the field, you've come to the right place. This five-course certificate, developed by Googlers, includes industry-relevant curriculum designed to prepare you for an entry-level role in IT support. Think in-person or remote help desk work, either in small shops or at a global company, like Google!

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/professional-cert/66HX2T358RM6



07/28/2020

Akash Singh

has successfully completed

How Google does Machine Learning

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/72HMBV93GRJJ

Coursera has confirmed the identity of this individual and
their participation in the course.



07/28/2020

Akash Singh

has successfully completed

Launching into Machine Learning

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/2SRL3WU59KXJ

Coursera has confirmed the identity of this individual and
their participation in the course.



07/28/2020

Akash Singh

has successfully completed

Intro to TensorFlow

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/45DP6HKP5ZH

Coursera has confirmed the identity of this individual and
their participation in the course.



08/01/2020

Akash Singh

has successfully completed

Feature Engineering

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/P6WPD4HLH3ZS

Coursera has confirmed the identity of this individual and
their participation in the course.



08/01/2020

Akash Singh

has successfully completed

Art and Science of Machine Learning

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/FGLW2QAMZ9HJ

Coursera has confirmed the identity of this individual and
their participation in the course.



5 Courses

How Google does Machine Learning

Launching into Machine Learning

Introduction to TensorFlow

Feature Engineering

Art and Science of Machine Learning

Google Cloud

08/01/2020

Akash Singh

has successfully completed the online, non-credit Specialization

Google Cloud Training

Machine Learning with TensorFlow on Google Cloud Platform

This five-course online specialization teaches course participants how to write distributed machine learning models that scale in Tensorflow, scale out the training of those models, and offer high-performance predictions. Also featured is the conversion of raw data to features in a way that allows ML to learn important characteristics from the data and bring human insight to bear on the problem. It also teaches how to incorporate the right mix of parameters that yields accurate, generalized models and knowledge of the theory to solve specific types of ML problems. Course participants experimented with end-to-end ML, starting from building an ML-focused strategy and progressing into model training, optimization, and productionalization with hands-on labs using Google Cloud Platform.

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/7P4GQCT6PH6G



08/02/2020

Akash Singh

has successfully completed

End-to-End Machine Learning with TensorFlow
on GCP

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/KQS8YE63UZ77

Coursera has confirmed the identity of this individual and
their participation in the course.



08/03/2020

Akash Singh

has successfully completed

Production Machine Learning Systems

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/PRLTYY7GD9MB

Coursera has confirmed the identity of this individual and
their participation in the course.



08/05/2020

Akash Singh

has successfully completed

Image Understanding with TensorFlow on GCP

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/LQ59RHVJ33F3

Coursera has confirmed the identity of this individual and
their participation in the course.



08/06/2020

Akash Singh

has successfully completed

Sequence Models for Time Series and Natural Language Processing

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/WFA6J7WHB3VM

Coursera has confirmed the identity of this individual and their participation in the course.



08/05/2020

Akash Singh

has successfully completed

Recommendation Systems with TensorFlow on
GCP

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/KNXWKNQCJQF3

Coursera has confirmed the identity of this individual and
their participation in the course.



5 Courses

End-to-End Machine Learning
with TensorFlow on GCP

Production Machine Learning
Systems

Image Understanding with
TensorFlow on GCP

Sequence Models for Time
Series and Natural Language
Processing

Recommendation Systems with
TensorFlow on GCP

Google Cloud

08/06/2020

Akash Singh

has successfully completed the online, non-credit Specialization

Advanced Machine Learning with TensorFlow on Google Cloud Platform

This specialization focuses on advanced machine learning topics using Google Cloud Platform where you will get hands-on experience optimizing, deploying, and scaling production ML models of various types in hands-on labs. This specialization picks up where "Machine Learning on GCP" left off and teaches you how to build scalable, accurate, and production-ready models for structured data, image data, time-series, and natural language text. It ends with a course on building recommendation systems. Topics introduced in earlier courses are referenced in later courses, so it is recommended that you take the courses in exactly this order.

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Google Cloud Training

Google Cloud Training

Verify this certificate at:
coursera.org/verify/specialization/E6MWELZB23U2



07/27/2020

Akash Singh

has successfully completed

Google Cloud Platform Big Data and Machine Learning Fundamentals

an online non-credit course authorized by Google Cloud and offered through Coursera

Google Cloud Training

COURSE CERTIFICATE



Verify at coursera.org/verify/QT9RGRGDG7J9

Coursera has confirmed the identity of this individual and their participation in the course.



08/22/2020

Akash Singh

has successfully completed

AWS Fundamentals: Going Cloud-Native

an online non-credit course authorized by Amazon Web Services and offered through Coursera

Allen Goldberg, Morgan Willis, Blaine Sundrud
AWS Training and Certification

COURSE CERTIFICATE



Verify at coursera.org/verify/V6LLJVLKSEWZ

Coursera has confirmed the identity of this individual and
their participation in the course.



08/23/2020

Akash Singh

has successfully completed

AWS Fundamentals: Addressing Security Risk

an online non-credit course authorized by Amazon Web Services and offered through Coursera

A handwritten signature of the name "Akash Singh".

A handwritten signature of the name "Nayan Jha".

COURSE CERTIFICATE



Verify at coursera.org/verify/V2A8P8SRQMT9

Coursera has confirmed the identity of this individual and
their participation in the course.



08/22/2020

Akash Singh

has successfully completed

AWS Fundamentals: Migrating to the Cloud

an online non-credit course authorized by Amazon Web Services and offered through Coursera

Cloud Technologist

Technical Architect

COURSE CERTIFICATE



Verify at coursera.org/verify/Q58UYQPH4E8T

Coursera has confirmed the identity of this individual and
their participation in the course.



08/22/2020

Akash Singh

has successfully completed

AWS Fundamentals: Building Serverless Applications

an online non-credit course authorized by Amazon Web Services and offered through Coursera

Rick Hurst, Jonathan Dion, Adam Becker, Bobbie Aristrain, Wes Gruver

Rick Hurst, Jonathan Dion, Adam Becker, Bobbie Aristrain, Wes Gruver
AWS Training and Certification

COURSE CERTIFICATE



Verify at coursera.org/verify/2YSL6RCAA8CR

Coursera has confirmed the identity of this individual and
their participation in the course.



4 Courses



08/23/2020

Akash Singh

has successfully completed the online, non-credit Specialization

AWS Fundamentals

AWS Fundamentals

In this Specialization, learners gained proficiency in essential concepts, services, and use cases within the Amazon Web Services (AWS) cloud ecosystem, including core AWS services and key AWS security concepts. The Specialization also covered fundamental strategies for planning and migrating existing workloads to AWS and how to build and deploy serverless applications with AWS. Learners are given opportunities to solidify their understanding by engaging in various hands-on labs and exercises throughout the Specialization.

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/VT3G3J4BLHL8



08/22/2020

Akash Singh

has successfully completed

Getting Started with AWS Machine Learning

an online non-credit course authorized by Amazon Web Services and offered through Coursera

Blaine Sundrud
Senior Technical Trainer
AWS Training and Certification

COURSE CERTIFICATE



Verify at coursera.org/verify/SZ3Z53TRT8FZ

Coursera has confirmed the identity of this individual and
their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/23/2020

Akash Singh

has successfully completed

Algorithmic Toolbox

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera

Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Neil Rhodes, Adjunct Faculty; Pavel A. Pevzner, Ronald R. Taylor Distinguished Professor of Computer Science, Director, NIH Center for Computational Mass Spectrometry; Daniel M Kane, Assistant Professor, Computer Science and Engineering at the University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/CBUTJWKWSDKX

Coursera has confirmed the identity of this individual and their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/23/2020

Akash Singh

has successfully completed

Data Structures

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera

Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Neil Rhodes, Adjunct Faculty; Daniel M Kane, Assistant Professor, Computer Science and Engineering at the University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/388WWT5WHKQF
Coursera has confirmed the identity of this individual and
their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/23/2020

Akash Singh

has successfully completed

Algorithms on Graphs

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera

Alexander S. Kulikov, Michael Levin, Neil Rhodes, Daniel M. Kane, Daniel M. Kane

Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Neil Rhodes, Adjunct Faculty; Daniel M. Kane, Assistant Professor, Computer Science and Engineering at the University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/EXP0UZW6M9FYD
Coursera has confirmed the identity of this individual and
their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/24/2020

Akash Singh

has successfully completed

Algorithms on Strings

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera

Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Pavel A. Pevzner, Ronald R. Taylor Distinguished Professor of Computer Science, Director, NIH Center for Computational Mass Spectrometry; Neil Rhodes, Adjunct Faculty
Department of Computer Science and Engineering
University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/7SC2NNV7LNWT

Coursera has confirmed the identity of this individual and their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/23/2020

Akash Singh

has successfully completed

Advanced Algorithms and Complexity

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera

Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Neil Rhodes, Adjunct Faculty; Daniel M Kane, Assistant Professor, Computer Science and Engineering at the University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/XQHMYAHCW7JC
Coursera has confirmed the identity of this individual and
their participation in the course.



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

08/23/2020

Akash Singh

has successfully completed

Genome Assembly Programming Challenge

an online non-credit course authorized by University of California San Diego and National Research University Higher School of Economics and offered through Coursera



Alexander S. Kulikov, Visiting Professor; Michael Levin, Associate Professor; Neil Rhodes, Adjunct Faculty; Daniel M. Kane, Assistant Professor, Computer Science and Engineering at the University of California, San Diego

COURSE CERTIFICATE



Verify at coursera.org/verify/9B4QUTEE2QSC

Coursera has confirmed the identity of this individual and their participation in the course.



6 Courses

Algorithmic Toolbox
Data Structures
Algorithms on Graphs
Algorithms on Strings
Advanced Algorithms and Complexity
Genome Assembly Programming Challenge



08/24/2020

Akash Singh

has successfully completed the online, non-credit Specialization

Data Structures and Algorithms

In this Specialization, learners developed and honed essential skills in developing fast and reliable programs. Learners studied theoretical aspects of basic algorithms as well as solved many programming assignments where the goal is to implement a program solving a given computational problem correctly and quickly. Learners completed a Capstone Project at the end of the Specialization to apply their new knowledge and skills.

A cluster of five handwritten signatures in black ink, including "Paul", "Neil Rhodes", "Alexander S. Kulikov", "Daniel Kane", and "Michael Levin".

Daniel Kane, Ph.D.,
Alexander S. Kulikov,
Ph.D., Neil Rhodes, Pavel
Pevzner, Ph.D., University
of California, San Diego,
Michael Levin, Higher
School of Economics

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/ZZ33VZW4PCYH



08/24/2020

Akash Singh

has successfully completed

Neural Networks and Deep Learning

an online non-credit course authorized by deeplearning.ai and offered through Coursera

A handwritten signature in blue ink that reads "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science

COURSE CERTIFICATE



Verify at coursera.org/verify/FYSUET7NBAAV

Coursera has confirmed the identity of this individual and
their participation in the course.



08/25/2020

Akash Singh

has successfully completed

Improving Deep Neural Networks:
Hyperparameter tuning, Regularization and
Optimization

an online non-credit course authorized by deeplearning.ai and offered through
Coursera

A handwritten signature in blue ink that appears to read "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science

COURSE CERTIFICATE



Verify at coursera.org/verify/4NX6KNL65BVS

Coursera has confirmed the identity of this individual and
their participation in the course.



08/25/2020

Akash Singh

has successfully completed

Structuring Machine Learning Projects

an online non-credit course authorized by deeplearning.ai and offered through Coursera

A handwritten signature in blue ink that reads "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science

COURSE CERTIFICATE



Verify at coursera.org/verify/SRSHH8XTKMN6
Coursera has confirmed the identity of this individual and
their participation in the course.



08/26/2020

Akash Singh

has successfully completed

Convolutional Neural Networks

an online non-credit course authorized by deeplearning.ai and offered through Coursera

A handwritten signature in blue ink that reads "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science

COURSE CERTIFICATE



Verify at coursera.org/verify/QPBKGUZV3TJD

Coursera has confirmed the identity of this individual and
their participation in the course.



08/26/2020

Akash Singh

has successfully completed

Sequence Models

an online non-credit course authorized by deeplearning.ai and offered through
Coursera

A handwritten signature in blue ink that reads "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science

COURSE CERTIFICATE



Verify at coursera.org/verify/JP5Y8VH696RV

Coursera has confirmed the identity of this individual and
their participation in the course.



5 Courses

Neural Networks and Deep Learning

Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization

Structuring Machine Learning Projects

Convolutional Neural Networks

Sequence Models



08/26/2020

Akash Singh

has successfully completed the online, non-credit Specialization

Deep Learning

The Deep Learning Specialization is designed to prepare learners to participate in the development of cutting-edge AI technology, and to understand the capability, the challenges, and the consequences of the rise of deep learning. Through five interconnected courses, learners develop a profound knowledge of the hottest AI algorithms, mastering deep learning from its foundations (neural networks) to its industry applications (Computer Vision, Natural Language Processing, Speech Recognition, etc.).

A handwritten blue ink signature of the name "Andrew Ng".

Adjunct Professor
Andrew Ng
Computer Science

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/QVRRAVTN2JEV



08/25/2020

Akash Singh

has successfully completed

Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning

an online non-credit course authorized by deeplearning.ai and offered through Coursera

Laurence Moroney

Laurence Moroney
Staff AI Advocate
Google Brain

COURSE CERTIFICATE



Verify at coursera.org/verify/6N4X26JFP2LC

Coursera has confirmed the identity of this individual and their participation in the course.



08/24/2020

Akash Singh

has successfully completed

AI For Everyone

an online non-credit course authorized by deeplearning.ai and offered through
Coursera

A handwritten signature in blue ink that reads "Andrew Ng".

Adjunct Professor Andrew Ng
Computer Science Department
Stanford University

COURSE CERTIFICATE



Verify at coursera.org/verify/K5UT54E8S6G7

Coursera has confirmed the identity of this individual and
their participation in the course.



08/21/2020

Akash Singh

has successfully completed

Facial Expression Recognition with Keras

an online non-credit course authorized by Coursera Project Network and offered through Coursera

Snehan Kekre
Instructor
Machine Learning and Data Science

COURSE CERTIFICATE



Verify at coursera.org/verify/XYEPNXGTCPZX
Coursera has confirmed the identity of this individual and
their participation in the course.



08/23/2020

Akash Singh

has successfully completed

Create a Python Application using MySQL

an online non-credit course authorized by Coursera Project Network and offered through Coursera

David Dalsveen

David Dalsveen
Subject Matter Expert
Freedom Learning Group

COURSE CERTIFICATE



Verify at coursera.org/verify/JYGMLXDK9CVS

Coursera has confirmed the identity of this individual and their participation in the course.



08/23/2020

Akash Singh

has successfully completed

Animation for Game Development Using PyGame

an online non-credit course authorized by Coursera Project Network and offered through Coursera

Kerri-Leigh Grady

Kerri-Leigh Grady
Subject Matter Expert
Freedom Learning Group

COURSE CERTIFICATE



Verify at coursera.org/verify/X57MYU7D3UAH

Coursera has confirmed the identity of this individual and their participation in the course.



08/27/2020

Akash Singh

has successfully completed

Mathematics for Machine Learning: Linear Algebra

an online non-credit course authorized by Imperial College London and offered through Coursera

Two handwritten signatures in black ink. The first signature on the left appears to read "David Dye". The second signature on the right appears to read "Samuel J. Cooper".

David Dye and Samuel J. Cooper

COURSE CERTIFICATE



Verify at coursera.org/verify/7Y8QAJECMVCT

Coursera has confirmed the identity of this individual and their participation in the course.



08/27/2020

Akash Singh

has successfully completed

Mathematics for Machine Learning: Multivariate Calculus

an online non-credit course authorized by Imperial College London and offered through Coursera

Two handwritten signatures in black ink. The first signature on the left appears to read "David Dye". The second signature on the right appears to read "Samuel J. Cooper".

David Dye and Samuel J. Cooper

COURSE CERTIFICATE



Verify at coursera.org/verify/W6QYTWTJ25Z9

Coursera has confirmed the identity of this individual and their participation in the course.



08/27/2020

Akash Singh

has successfully completed

Mathematics for Machine Learning: PCA

an online non-credit course authorized by Imperial College London and offered through Coursera

A handwritten signature in blue ink that reads "Marc Deisenroth".

Marc Deisenroth
Lecturer in Statistical Machine Learning
Department of Computing
Imperial College London

COURSE CERTIFICATE



Verify at coursera.org/verify/UY39UXXFWBEC

Coursera has confirmed the identity of this individual and their participation in the course.



3 Courses

Mathematics for Machine Learning: Linear Algebra
Mathematics for Machine Learning: Multivariate Calculus
Mathematics for Machine Learning: PCA

Imperial College London

08/27/2020

Akash Singh

has successfully completed the online, non-credit Specialization

Mathematics for Machine Learning

A sequence of 3 courses on the prerequisite mathematics for applications in data science and machine learning. Successful participants learn how to represent data in a linear algebra context and manipulate these objects mathematically. They are able to summarise properties of data sets and map them onto lower dimensional spaces with principal component analysis. Finally they can solve optimisation problems and use this skill to train models for describing data such as simple neural networks.

Three handwritten signatures are shown in the top right corner. The first signature is "David Dye". Below it is "Samuel J. Cooper" and "Marc Deisenroth".

David Dye
Professor of Metallurgy
Department of Materials
Imperial College London

Samuel J. Cooper
Lecturer
Dyson School of Design
Engineering
Imperial College London

Marc Deisenroth
Senior Lecturer
Department of
Computing
Imperial College London

The online specialization named in this certificate may draw on material from courses taught on-campus, but the included courses are not equivalent to on-campus courses. Participation in this online specialization does not constitute enrollment at this university. This certificate does not confer a University grade, course credit or degree, and it does not verify the identity of the learner.

Verify this certificate at:
coursera.org/verify/specialization/XDC7LMJ6D3MS