



5 Courses

How Google does Machine Learning

Launching into Machine Learning

Introduction to TensorFlow

Feature Engineering

Art and Science of Machine Learning

Google Cloud

6 Jul, 2020

Vatsal Patel

has successfully completed the online, non-credit Specialization

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.

Google Cloud Training

Verify this certificate at:
coursera.org/verify/specialization/86T9YGQDCEPX



3 Courses

Mathematics for Machine Learning: Linear Algebra

Mathematics for Machine Learning: Multivariate Calculus

Mathematics for Machine Learning: PCA

Imperial College London

30 Sep, 2020

Vatsal Patel

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 stacked vertically. The top signature is "David Dye", the middle is "Samuel J. Cooper", and the bottom is "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

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4 Courses

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

Convolutional Neural Networks in TensorFlow

Natural Language Processing in TensorFlow

Sequences, Time Series and Prediction



6 Jul, 2020

Vatsal Patel

has successfully completed the online, non-credit Professional Certificate

DeepLearning.AI TensorFlow Developer

Congratulations! You have completed all 4 courses of the DeepLearning.AI TensorFlow Developer Professional Certificate program. As part of this Professional Certificate program, you have learned: how to build and train neural networks using TensorFlow, how to improve network performance using convolutions as you train it to identify real-world images, how to teach machines to understand, analyze, and respond to human speech with natural language processing systems, and more! These, and other TensorFlow concepts, are going to be at the forefront of the coming transformation to an AI-powered future.



Laurence Moroney is an
AI Advocate at Google
Research

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Verify this certificate at:
coursera.org/verify/professional-cert/F4RVGGKYRMN6



JOHNS HOPKINS
UNIVERSITY

5 Jun, 2020

Vatsal Patel

has successfully completed with honors

Introduction to the Biology of Cancer

an online non-credit course authorized by Johns Hopkins University and offered through Coursera

Kenneth J. Pienta

Kenneth J. Pienta, M.D.
The Donald S. Coffey Professor of Urology
Professor of Oncology
The James Buchanan Brady Urological Institute
The Johns Hopkins University School of Medicine

COURSE CERTIFICATE

WITH HONORS



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AMERICAN MUSEUM OF NATURAL HISTORY

12 Jul, 2020

Vatsal Patel

has successfully completed

The Science of Stem Cells

an online non-credit course authorized by American Museum of Natural History and offered through Coursera

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

Dr. Zehra Dincer
Course Instructor

COURSE
CERTIFICATE



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VERIFIED

CERTIFICATE of ACHIEVEMENT

This is to certify that

Vatsal Patel

successfully completed and received a passing grade in

MCB80.1x: Fundamentals of Neuroscience, Part 1: The Electrical Properties of the Neuron

a course of study offered by HarvardX, an online learning initiative of Harvard University.



VERIFIED CERTIFICATE
Issued May 28, 2019

VALID CERTIFICATE ID
[dcd691c88ef940ec8274b6f5c6428f84](https://courses.edx.org/certificates/dcd691c88ef940ec8274b6f5c6428f84)



Dr. David Cox

Harvard University



JOHNS HOPKINS
UNIVERSITY

5 Jun, 2020

Vatsal Patel

has successfully completed

Algorithms for DNA Sequencing

an online non-credit course authorized by Johns Hopkins University and offered through Coursera



Ben Langmead, PhD
Assistant Professor
Computer Science
Johns Hopkins University



Computer Science
Johns Hopkins University

COURSE CERTIFICATE



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JOHNS HOPKINS
UNIVERSITY

8 May, 2020

Vatsal Patel

has successfully completed

Python for Genomic Data Science

an online non-credit course authorized by Johns Hopkins University and offered through Coursera

Mihaela Pertea

Mihaela Pertea, PhD
McKusick-Nathans Institute of Genetic Medicine
Johns Hopkins University

Steven Salzberg

Steven L. Salzberg, PhD
McKusick-Nathans Institute of Genetic Medicine
Johns Hopkins University

COURSE CERTIFICATE



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deeplearning.ai

9 May, 2020

Vatsal Patel

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/M92FY4QCE36L

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



THE UNIVERSITY
of EDINBURGH

3 Jul, 2020

Vatsal Patel

has successfully completed

Philosophy and the Sciences: Introduction to the Philosophy of Cognitive Sciences

an online non-credit course authorized by The University of Edinburgh and offered through Coursera

Orson H. Tolson *Shanle* *Samuel E. Tamm*
Mark Squiree *Damon Runyan* *John D. Peacock*
B. W. *Kel* *P. See*

Professor Michela Massimi, Dr. Alasdair Richmond, Dr. Suilin Lavelle, Dr David Carmel, Dr Mark Sprevak, Professor Duncan Pritchard, Professor Andy Clark, Professor John Peacock, Professor Barbara Webb, Dr Kenny Smith, Dr Peggy Series, The University of Edinburgh

COURSE CERTIFICATE



Verify at coursera.org/verify/ZCRK2K7VHFM9

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



13 Oct, 2020

Vatsal Patel

has successfully completed

Getting started with TensorFlow 2

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

A handwritten signature in black ink that reads "K.webster".

Kevin Webster
Senior Teaching Fellow in Statistics
Faculty of Natural Sciences, Department of Mathematics

COURSE CERTIFICATE



Verify at coursera.org/verify/74HHESJP5T4T

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



JOHNS HOPKINS
UNIVERSITY

25 May, 2020

Vatsal Patel

has successfully completed

Genomic Data Science with Galaxy

an online non-credit course authorized by Johns Hopkins University and offered through Coursera



A handwritten signature in black ink, appearing to read "James Taylor, PhD".

James Taylor, PhD
Department of Biology
Johns Hopkins University

COURSE CERTIFICATE



Verify at coursera.org/verify/R3ZQ2TQXYTDW

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UC San Diego



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

25 May, 2020

Vatsal Patel

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

Handwritten signatures of faculty members: Alexander S. Kulikov, Michael Levin, Neil Rhodes, Pavel A. Pevzner, Ronald R. Taylor, and Daniel M. Kane.

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



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



JOHNS HOPKINS
UNIVERSITY

7 May, 2020

Vatsal Patel

has successfully completed

Introduction to Genomic Technologies

an online non-credit course authorized by Johns Hopkins University and offered through Coursera

A handwritten signature of Steven L. Salzberg.

Steven L. Salzberg, PhD
McKusick-Nathans Institute of Genetic Medicine
Johns Hopkins University

A handwritten signature of Jeffrey Leek.

Jeffrey Leek, PhD
Department of Biostatistics
Johns Hopkins Bloomberg School of Public Health

COURSE CERTIFICATE



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THE UNIVERSITY of EDINBURGH

21 May, 2020

Vatsal Patel

has successfully completed

Philosophy and the Sciences: Introduction to the Philosophy of Physical Sciences

an online non-credit course authorized by The University of Edinburgh and offered through Coursera

Domenic Molaro, Michela Massimi, Dr. Alasdair Richmond, Dr. Suilin Lavelle, Dr David Carmel, Dr Mark Sprevak, Professor Duncan Pritchard, Professor Andy Clark, Professor John Peacock, Professor Barbara Webb, Dr Kenny Smith, Dr Peggy Series, Louise Connolly, The University of Edinburgh

Professor Michela Massimi, Dr. Alasdair Richmond, Dr. Suilin Lavelle, Dr David Carmel, Dr Mark Sprevak, Professor Duncan Pritchard, Professor Andy Clark, Professor John Peacock, Professor Barbara Webb, Dr Kenny Smith, Dr Peggy Series, Louise Connolly, The University of Edinburgh

COURSE CERTIFICATE



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



May 21, 2020

Vatsal Patel

has successfully completed

Crash Course on Python

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



Google

COURSE CERTIFICATE



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



Jun 14, 2020

Vatsal Patel

has successfully completed

Python Functions, Files, and Dictionaries

an online non-credit course authorized by University of Michigan and offered through Coursera

*Paul Resnick
Stephen Oney
Jaclyn Cohen*

Paul Resnick
Stephen Oney
Jaclyn Cohen

COURSE CERTIFICATE



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



May 13, 2020

Vatsal Patel

has successfully completed

Python Basics

an online non-credit course authorized by University of Michigan and offered through Coursera



Paul Resnick
Stephen Oney
Jaclyn Cohen

A horizontal line of three handwritten signatures in black ink. From left to right, they read: Paul Resnick, Stephen Oney, and Jaclyn Cohen.

Paul Resnick
Stephen Oney
Jaclyn Cohen

COURSE CERTIFICATE



Verify at coursera.org/verify/EXW3D4D6NJY3

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