

INTRODUCTION

Deep learning is a branch of machine learning which is a subset of artificial intelligence in which multilayered neural networks learn from big volumes of data that is unstructured or unlabeled. Deep learning is inspired by the human brain and tries to mimic human behavior by attempting to draw similar conclusions as humans would by continuously analyzing data with a given logical structure. Examples of application of deep learning include how Netflix and you tube are able to recommend movies and songs that are particular to your taste/ liking, self-driving cars and many others.

Neural networks are trained to perform tasks such as filtering, clustering, classification on data similar to the way our brains identify patterns and classify different types of information increasing the likelihood of a correct output. Artificial neural networks have unique features that enable problem solving that machine learning models can never solve.

Neural networks consist of a collection of nodes called the neurons that model the biological neurons in the human brain. A neuron is a graphical representation of a numerical value which keeps on changing weights between the neurons as the neural network learns. The weights between the neurons keep on changing through training.

COURSE OBJECTIVES

This course is of importance as it provides knowledge on modelling computer vision,

speech recognition, translation, chat bots, Internet of Things (IoT) and medical images.

Target groups:

- Statisticians
- IT Professionals
- ICT Professionals
- data managers
- Software Developers and Architects,
- Business Intelligence Professionals
- Project Managers,
- Aspiring Data Scientists,
- University students looking to begin a career in Deep learning as an aspect of artificial intelligence.

COURSE STRUCTURE AND REGULATIONS

Duration:

The course takes a total of four (4) weeks.

Course outline:

There are twelve required modules:

Module one:

Python Preliminaries.

Module Two:

Python for Machine Learning.

Module Three:

Tensorflow and Keras for Neural Networks.

Module Four:

Training for Tabular Data.

Module Five:

Regularization and Dropout.

Module Six:

CNN for Vision.

Module Seven:

Generative Adversarial Networks (GANs)

Module Eight:

Transfer Learning.

Module Nine:

Time Series in Keras.

Module Ten:

Natural Language Processing.

Module Eleven:

Reinforcement Learning.

Module Twelve:

Deployment and Monitoring.

Mode of Study:

This is a part time program at JKUAT main campus.

Regulations:

All JKUAT University Regulations shall apply.

Evaluation:

Evaluation will be based on:

- Individual performance and participation throughout the course.
- Assessment for each assignment.
- An oral presentation of results in the course.
- A project within the four (4) weeks.

CERTIFICATION:

On successful completion of the short course, the participant will receive a certificate of attendance on Deep Learning from JKUAT

REQUIREMENTS

A student to be admitted must satisfy the following requirements;

1. Attendance in all parts of the course is required.
2. Partake an assignment after every module.
3. Students will be required to complete case study exercises in individual/small groups throughout the course.

STAFF AND FACILITIES

The course is taught and examined by the staff of JKUAT together with the Senate approved specialist lecturers in the relevant subject areas. There are sufficient computer resources to support the programme.

HOW TO APPLY

Advertisement of course is through online platforms and the press. The application forms are then obtainable from JKUAT upon payment of a non-refundable fee of Kshs. 200.00 for Kenyan Citizens and Kshs. 2600.00 for Non-Citizens.

TUITION FEES

For Kenyan participants, tuition fees is Kshs. 12,000 and Kshs. 15,000 for international participants. Payable to the following bank account:

BANK DETAILS:

BANK NAME: KCB BANK LTD
BRANCH: JKUAT BRANCH
ACCOUNT NAME: JKUAT IT CENTRE
ACC. NO: 1102698210

ACCOMMODATION

Accommodation may not be available and students are expected to make their own arrangements. The office of the Dean of Students may recommend suitable hostels for accommodation.

For more information contact,
The Dean,
School of Mathematics and Physical Sciences,
P.O Box 62000-00200 NAIROBI
Tel: (067) 52181-4, 52711 Ext 2709
Fax: (067) 52164/52030
Email: dean.sms@jkuat.ac.ke

Or

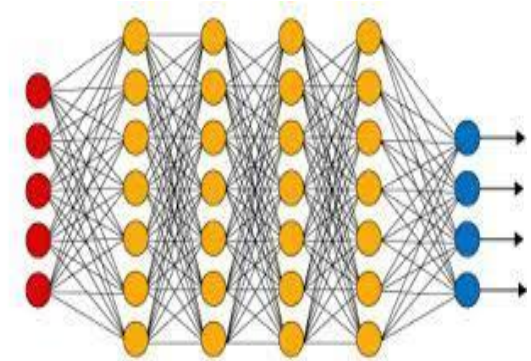
The Chairman,
Dept. of Statistics and Actuarial Sciences
P.O Box 62000- 00200
NAIROBI
Email: stacs@fsc.jkuat.ac.ke



JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY
(JKUAT)

**DEPARTMENT OF STATISTICS AND
ACTUARIAL SCIENCES**

**Data Science –
Deep Learning**



P.O Box 62000-00200, Nairobi, KENYA
Telephone: +254(67) 52218
Fax: +254(67) 52089
Email: stacs@fsc.jkuat.ac.ke