

DAILY ASSESSMENT FORMAT

Date:	14-07-2020	Name:	POOJA K S
Course:	Coursera	USN:	4AL17EC070
Topic:	Mathematics for Machine Learning: Linear Algebra	Semester & Section:	6 th SEM and 'B' section
Github Repository:	pooja-shivanna		

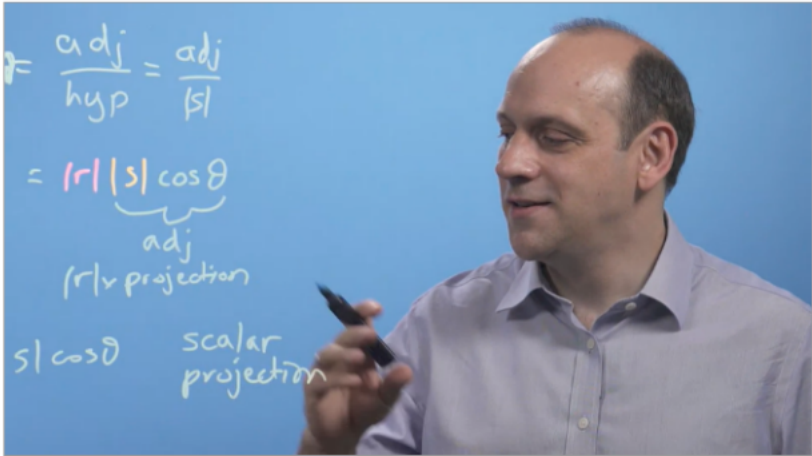
FORENOON SESSION DETAILS(9.00am to 1.00pm)

Mathematics for Machine Learning: Linear Algebra > Week 2 > Projection
Prev | Next

Introduction

- ✓ **Video:** Introduction to module 2 - Vectors
49 sec
- Finding the size of a vector, its angle, and projection**
- ✓ **Video:** Modulus & inner product
10 min
- ✓ **Video:** Cosine & dot product
5 min
- ▶ **Video:** Projection
6 min
- 📖 **Practice Quiz:** Dot product of vectors
6 questions
- Changing the reference frame**
- Doing some real-world vectors examples**

Projection



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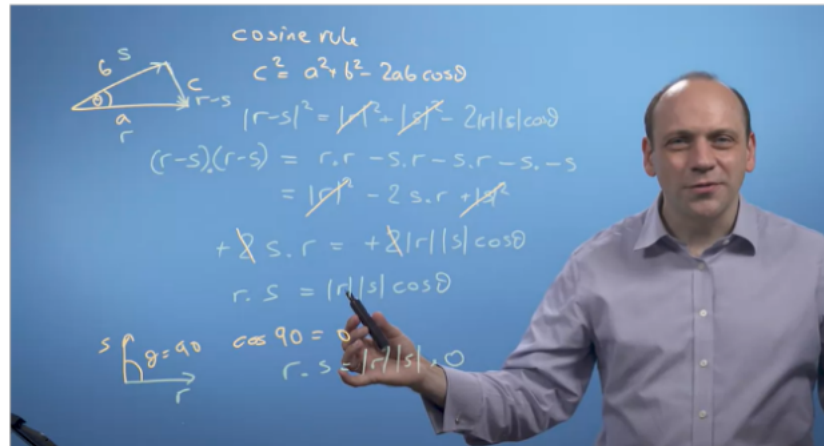
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Changing the reference frame

Doing some real-world vectors examples

Cosine & dot product



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📄 Download



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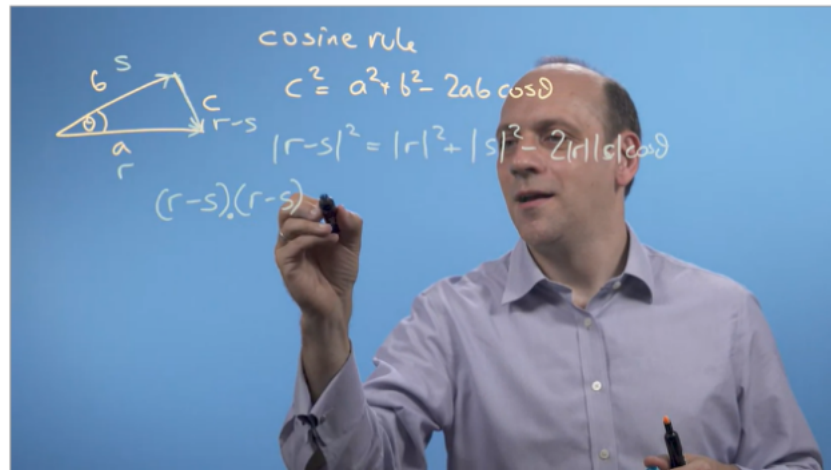
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Mathematics for Machine Learning: Linear Algebra > Week 2 > Modulus & inner product
Prev | Next

Introduction

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- Video: Modulus & Inner product 10 min
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- Video: Projection 6 min
- Practice Quiz: Dot product of vectors 6 questions

Changing the reference frame

Doing some real-world vectors examples

Modulus & inner product

commutative $r \cdot s = r_i s_i + r_j s_j = 3 \cdot 1 + 2 \cdot 2 = 1 = s \cdot r$

distributive over addition $r \cdot (s + t) = r \cdot s + r \cdot t$

associative over scalar multiplication $r \cdot (a s) = a (r \cdot s)$

$r_1(a s_1) + r_2(a s_2) = a(r_1 s_1 + r_2 s_2) = a(r \cdot s)$

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The dot product may be defined algebraically or geometrically. The geometric definition is based on the notions of angle and distance (magnitude of vectors). The equivalence of these two definitions relies on having a Cartesian coordinate system for Euclidean space.

In such a presentation, the notions of length and angles are defined by means of the dot product. The length of a vector is defined as the square root of the dot product of the vector by itself, and the cosine of the (non oriented) angle of two vectors of length one is defined as their dot product. So the equivalence of the two definitions of the dot product is a part of the equivalence of the classical and the modern formulations of Euclidean geometry.

The distance is covered along one axis or in the direction of force and there is no need of perpendicular axis or sin theta. In cross **product** the angle between must be greater than 0 and less than 180 degree it is max at 90 degree. ... That's why we use **cos** theta for **dot product** and sin theta for cross **product**.

An important use of the **dot product** is to test whether or not two vectors are orthogonal. Two vectors are orthogonal if the angle between them is 90 degrees. ... Thus, two non-zero vectors have **dot product** zero if and only if they are orthogonal.



Dot products are very geometrical objects. They actually encode relative information about vectors, specifically they tell us "how much" one vector is in the direction of another. Particularly, the **dot product** can tell us if two vectors are (anti)parallel or if they are perpendicular.

The **dot product** as **projection**. The **dot product** of the vectors a (in blue) and b (in green), when divided by the magnitude of b , is the **projection** of a onto b .

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The screenshot displays a Coursera lab interface. On the left, a sidebar lists course topics: 'Welcome to the course', 'How to use Qwiklabs', 'Course Feedback', 'What is IoT?', 'Cloud IoT Platform', 'Sensors and Devices', 'Communicating with Devices', 'Pub/Sub', 'Cloud IoT Core', 'Google Cloud Storage', and 'Dataflow'. The main content area is titled 'Getting Started with Google Cloud and Qwiklabs' and features a video player for 'Video: Getting Started with Google Cloud Platform and Qwiklabs'. Below the video, there is a 'Graded External Tool' section for 'Lab: Console and Cloud Shell'. The page also includes a 'Tips for Course Labs' section and a bottom bar with 'Save Note', 'Discuss', and 'Download' buttons. The language is set to 'English'.





Internet of Things Use Cases

Graded Quiz • 10 min

Due Jul 20, 12:29 PM IST



Congratulations! You passed!

TO PASS 75% or higher

Keep Learning

Retake the assignment in 7h 57m

GRADE

100%

Internet of Things Use Cases

LATEST SUBMISSION GRADE

100%

1. Take a moment to ponder some of the uses of IoT: predictive maintenance, industry safety solutions, building and home automation, remote patient monitoring, asset tracking, and fraud detection.

1 / 1 point

All of these uses have a common theme that is the reason IoT is garnering so much attention. What is it?

- ☐ All the use cases use machine learning or artificial intelligence, which is an incredibly fast growing field.
- ☐ All the use cases employ sensors in new and unique ways
- ☒ All the use cases are gaining insights about an environment that cannot be obtained any other way.



Correct

Yes, each of these use cases is getting valuable insights about their particular real world situations. And it is due to the data collected from IoT sensors and devices.



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Industrial IoT on Google Cloud Platform > Week 1 > Cloud IoT Platform Stages

Prev | Next

5 min

✓ Reading: Lesson Review
1 min

✓ Quiz: IoT Networks
4 questions

Cloud IoT Platform

✓ Reading: Lesson Introduction
3 min

✓ Discussion Prompt: Industry Transformations
5 min

✓ Reading: IoT Architecture
3 min

✓ Reading: Google Cloud IoT Architecture
6 min

📖 Reading: Cloud IoT Platform Stages
2 min

📖 Reading: Ingest Data
2 min

Cloud IoT Platform Stages

The diagram illustrates the three stages of the Cloud IoT Platform:

- Ingest (Blue):** Includes Cloud IoT Core, Cloud Pub/Sub, and Cloud IoT Edge.
- Process (Red):** Includes Cloud Dataflow, Cloud Functions, Cloud Bigtable, Cloud Spanner, and Cloud Storage.
- Analyze (Green):** Includes Cloud BigQuery, Cloud Datastore, Cloud Machine Learning, and Data Studio.

Google Cloud IoT platform includes the three stages necessary for an IoT pipeline: data ingestion, data

The course discusses sensors and devices but the focus is on the **cloud** side. You'll learn about the importance of scaling, device communication, and processing streaming data.

IoT cloud refers to any number of **cloud** services that power the **IoT**. These include the underlying infrastructure needed for processing and storing **IoT** data, whether in real time or not. ... Discover the power of Arm's transformative device-to-data **platform**.

Ingest data from connected devices and build rich applications that integrate with the other big data services of **Google Cloud Platform**.

Father of IoT, **Kevin Ashton**, says, 'if you think IoT is a buzzword, your business will fail'.

Which cloud is best for IoT?

Arduino IoT Cloud is an application that helps makers build connected objects in a quick, easy and secure way. You can connect multiple devices to each other and allow them to exchange real-time data.

IoT is essentially a platform where embedded devices are connected to the internet, so they can collect and exchange data with each other. It enables devices to interact, collaborate and, learn from each other's experiences just like humans do.M

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What are examples of IoT?

Top Internet-of-Things (IoT)

- Connected appliances.
- Smart home security systems.
- Autonomous farming equipment.
- Wearable health monitors.
- Smart factory equipment.
- Wireless inventory trackers.
- Ultra-high speed wireless internet.
- Biometric cybersecurity scanners

