

DAILY ASSESSMENT FORMAT

Date:	16 JULY 2020	Name:	PAVITHRAN S
Course:	Coursera	USN:	4AL17EC068
Topic:	Mathematics for Machine Learning: Linear Algebra	Semester & Section:	6th B
Github Repository:	Pavithran		

FORENOON SESSION DETAILS(9.00am to 1.00pm)

Welcome to Mathematics for Machine Learning

Changing basis - Imperial College London

courseware.org/learn/linear-algebra-machine-learning/lecture/AN3cB/changing-basis

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Mathematics for Machine Learning Linear Algebra Week 2 Changing basis

Introduction

Finding the size of a vector, its angle, and projection

Changing the reference frame

Video: Changing basis 11 min

Practice Quiz: Changing basis 5 questions

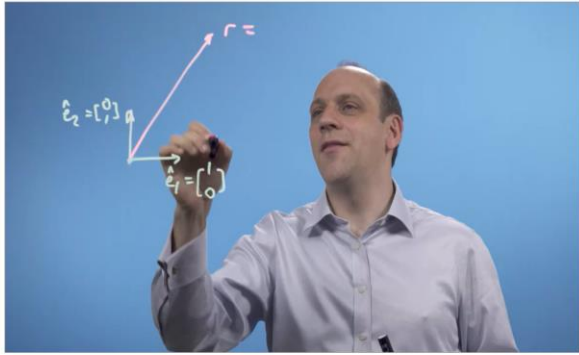
Video: Basis, vector space, and linear independence 4 min

Video: Applications of changing basis 3 min

Practice Quiz: Linear dependency of a set of vectors 6 questions

Doing some real-world vector problems

Changing basis



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Welcome to Mathematics for Machine Learning

Composition or combination - Imperial College London

courseware.org/learn/linear-algebra-machine-learning/lecture/VF5h2/composition-or-combination-of-matrix-transformations

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Mathematics for Machine Learning Linear Algebra Week 3 Composition or combination of matrix transformations

Video: Matrices, vectors, and solving simultaneous equation problems 5 min

Matrices in linear algebra: operating on vectors

Video: How matrices transform space 5 min

Video: Types of matrix transformation 6 min


Video: Composition or combination of matrix transformations 8 min

Practice Quiz: Using matrices to make transformations 6 questions

Matrix inverses

Special matrices and Coding up some matrix operations

Composition or combination of matrix transformations



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Vectors and matrices :

Scalars, Vectors and Matrices

A **vector** is a list of numbers (can be in a row or column), A **matrix** is an array of numbers (one or more rows, one or more columns).

vector in matrix algebra

It can be said that the **matrix algebra** notation is shorthand for the corresponding scalar longhand. **Vectors**. A **vector** is a column of numbers. $\{\mathbf{a}\} = \left[\begin{array}{c} a_1 \\ a_2 \\ \vdots \\ a_p \end{array} \right]$ The scalars a_i are the elements of **vector** $\{\mathbf{a}\}$.

Row Matrix and example

In an $m \times n$ **matrix**, if $m = 1$, the **matrix** is said to be a **row matrix**. Definition of **Row Matrix**: If a **matrix** have only one **row** then it is called **row matrix**. Examples of **row matrix**: ... [13025] is a **row matrix**.

Elements of Matrix :

The numbers, symbols, or expressions in the **matrix** are called its entries or its **elements**. The horizontal and vertical lines of entries in a **matrix** are called rows and columns, respectively.

So as long as we stick to **matrices** of the same size, we do in fact have a **vector** space. So the long and short of it is that **vectors** can be **matrices** and **matrices** can be **vectors**. Now, **Matrices** are **vectors** - from the **vector** space of **matrices** - but not **all vectors** are **matrices**.
Scalars, **Vectors and Matrices**

A **vector** is a list of numbers (can be in a row or column), A **matrix** is an array of numbers (one or more rows, one or more columns).

The father of matrices :

Arthur Cayley (1821-1895), English mathematician and lawyer, who first published an abstract definition of a matrix in his Memoir on the Theory of Matrices in 1858, thus establishing it as a branch of mathematics. So this man was the father of matrix.

Vectors are a type of matrix having only one **column** or one **row**. A **vector** having only one **column** is called a **column vector**, and a **vector** having only one **row** is called a **row vector**. For example, matrix a is a **column vector**, and matrix a' is a **row vector**.

A **matrix** is a collection of numbers arranged into a fixed number of rows and columns. Usually the numbers are real numbers. In general, **matrices** can contain complex numbers but we won't see those here. Here is an **example** of a **matrix** with three rows and three columns: The top row is row 1.

The series primarily consists of a trilogy of science fiction action films beginning with *The Matrix* (1999) and continuing with two sequels, *The Matrix Reloaded* and *The Matrix Revolutions* (both in 2003), all written and directed by the Wachowskis and produced by Joel Silver.

Main point of the Matrix

The **Matrix** trilogy suggests that everyone has the individual responsibility to make the choice between the real world and an artificial world. Though Neo is the exemplar of free will, fate plays a large role in his adventure. Neo relies on the Oracle, and everything she says comes true in some way.

Application of Matrices

Almost every branch of physics, including classical mechanics, optics, electromagnetism, quantum mechanics, and quantum electrodynamics, **matrices** are used to study physical phenomena, such as the motion of rigid bodies.

Matrices have also come to have important applications in computer graphics, where they have been used to represent rotations and other transformations of images. is a 2×3 **matrix**. A **matrix** with n rows and n columns is called a square **matrix** of order n

Matrices are classified according to the number of rows and columns, and the specific elements therein. (i) Row **Matrix**: A **matrix** which has exactly one row is called a row **matrix**. The above two **matrices** are row **matrices** because each has only one row.

Matrices are a **useful** way to represent, manipulate and study linear maps between finite dimensional vector spaces (if you have chosen basis). **Matrices** can also represent quadratic forms (it's **useful**, for example, in analysis to study hessian **matrices**, which help us to study the behavior of critical points).

The numbers in a **matrix** can represent data, and they can also represent **mathematical** equations. Even more frequently, they're called upon to multiply **matrices**. **Matrix** multiplication can be thought of as solving linear equations for particular variables.

The term **matrix** was introduced by the 19th-century English mathematician James Sylvester, but it was his friend the mathematician Arthur Cayley who developed the algebraic aspect of **matrices** in two papers in the 1850s.

In biology, **matrix** is the material (or tissue) in animal or plant. Structure of connective tissues is an extracellular **matrix**. ... It is found in various connective tissue. It is generally used as a jelly like structure instead of cytoplasm in connective tissue.

In the **mitochondrion**, the **matrix** is the space within the inner membrane. The word "**matrix**" stems from the fact that this space is viscous, compared to the relatively aqueous cytoplasm.

The **extracellular matrix** (ECM) is the non-cellular component present within all tissues and organs, and provides not only essential physical scaffolding for the cellular constituents but also initiates crucial biochemical and biomechanical cues that are required for tissue morphogenesis, differentiation and homeostasis.

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IMAGE:

Salesforce Platform Basics > Get Started with the Salesforce Platform

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Activity Chatter

Email

Write an email... Compose

Activity Timeline

Next Steps

Past Activity

Time Estimate

Topics

Challenge

Let's start small. Michelle wants a way to quickly indicate whether a potential home buyer is prequalified for a home loan. To make this change, D'Angelo wants to create a prequalified checkbox on the contact object. In Salesforce-speak, we're adding a custom field to a standard object. Let's see how he does it.

1. From the gear icon (⚙️), click **Setup** to launch the setup page. We use Setup a lot, so remember this step!
2. Click the **Object Manager** tab.
3. Click **Contact**.

Report – Report can be typed or hand written for up to two pages.

☐ At Salesforce, we group our services by clouds. There's Sales Cloud for CRM, Service Cloud for customer support, and a handful of other clouds that help companies support their business functions. And while each of these clouds serves a unique purpose, there's one thing they all have in common: the power of the Salesforce platform.

☐ What is the Salesforce platform, exactly? Like any platform, the Salesforce platform is a group of technologies that supports the development of other technologies on top of it. What makes it unique is that the platform supports not only all the Salesforce clouds, but it also supports custom functionality built by our customers and partners. This functionality ranges from simple page layouts to full-scale applications.

☐ If you're here today, we're assuming you know a bit about software development. Throughout this module, we're going to give you an overview of development on the Salesforce platform. We talk about some of the pillars of Salesforce development and how they work together to create a robust system. We even touch on some common questions that developers new to the platform run into as they get started.

☐ Before we continue, let's make sure we're on the same page. If you're brand new to Salesforce and you haven't completed the Salesforce Platform Basics module, we suggest you do that before you keep reading.

☐ As we mentioned, the platform not only forms the foundation of core Salesforce products like Sales Cloud and Service Cloud, but it also lets you build your own functionality. Building your own functionality can mean customizing existing Salesforce offerings or it can mean building something from scratch.

☐ Let's focus on that latter part and talk about what the Salesforce platform offers developers.

☐ Our core platform lets you develop custom data models and applications for desktop and mobile. And with the platform behind your development, you can build robust systems at a rapid pace.

☐ And then there's the Heroku platform. Heroku gives developers the power to build highly scalable web apps and back-end services using Python, Ruby, Go, and more. It also provides database tools to sync seamlessly with data from Salesforce.

☐ And then there's the host of Salesforce APIs. These let developers integrate and connect all their enterprise data, networks, and identity information.

☐ And then there's the Mobile SDK. The Mobile SDK is a suite of technologies that lets you build native, HTML5, and hybrid apps that have the same reliability and security as the Salesforce app.

☐ The problem with the platform and all its parts is that listing them out takes a really long time. And just talking about them doesn't help you understand everything they do. Let's take a different approach and talk about what we can do with the platform. Or, more precisely, what we can build with it.

