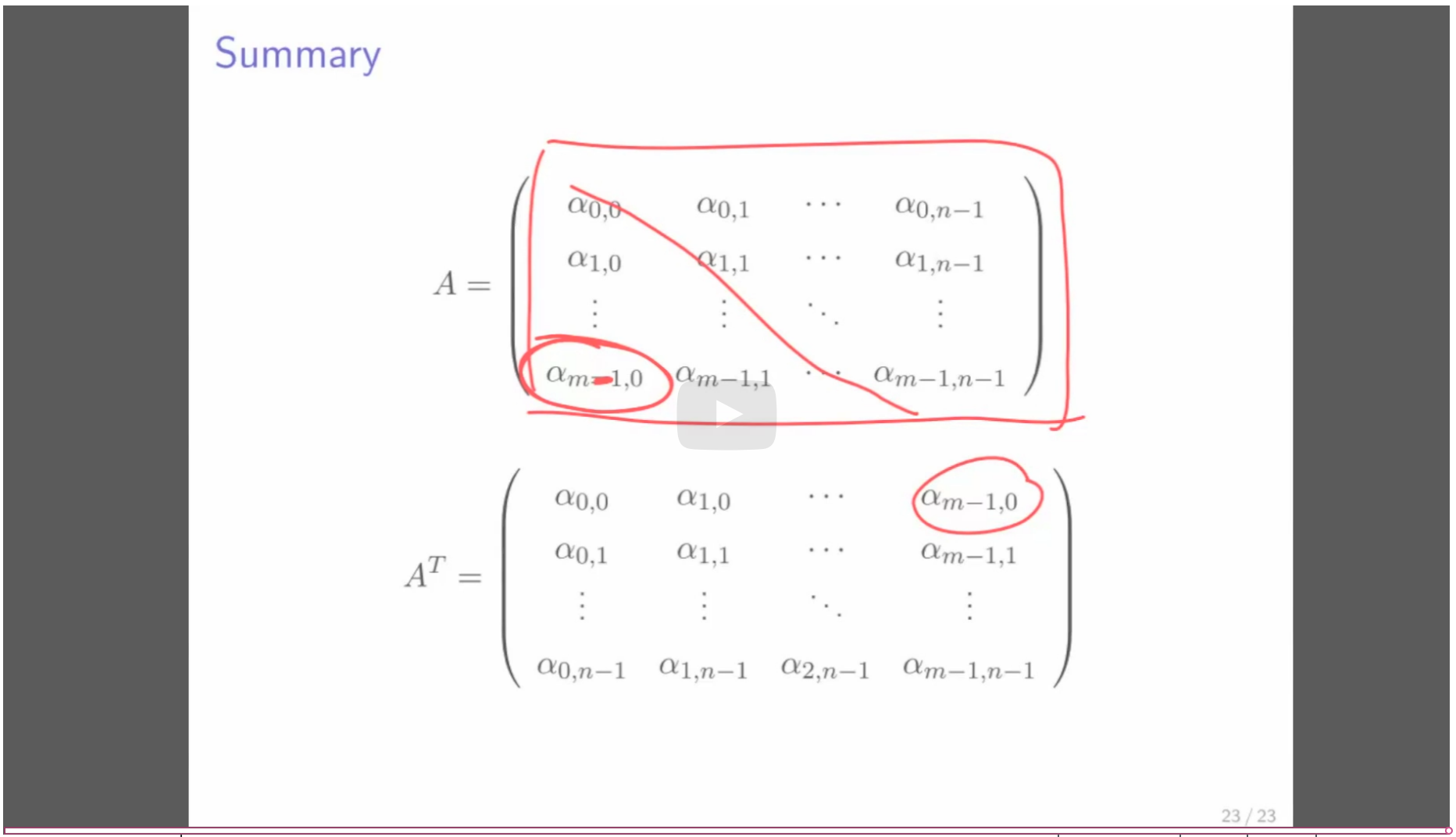
3.2.5 Transpose Matrix

Bookmark this page

Week 3 due Oct 18, 2023 06:12 IST

3.2.5 Transpose Matrix



▶ 5:46 / 5:46 2.0x

Video

Download video file

Transcripts

Download SubRip (.srt) file

Download Text (.txt) file

Reading Assignment

0 points possible (ungraded)

Read Unit 3.2.5 of the notes. [LINK]

☑ Done

✔

Submit

✔ Correct

Discussion

Topic: Week 3 / 3.2.5

Hide Discussion

Add a Post

Show all posts by recen

Calculator

? Picture Flame likes it, but Matlab does not. Getting a "input matrices must have same number of columns" — 3
function [B_out] = Transpose_unb(A, B) [AL, AR] = FLA_Part_1×2(A, ... 0, 'FLA_LEFT'); [BT, ... BB] = FLA_Part_2×1(B, ... 0, 'FLA_TOP'); whil...

? 'T' on b1t — 3
Hi, I just wanted ask about the transpose label on b1t. At 4:50, professor van de Geijn explains that 'it has to do with the fact that it's a row of B ...

? Transpose_unb_var2(A, B) not working correctly in MATLAB — 6
Anyone else getting an error transposing using the alternative code? The first row is transposed fine but the following rows stay the same. The f...

Homework 3.2.5.8 - is it clearer if the question is changed to an always/sometimes/never question? — 4
While an identity matrix remains unchanged after transposition. Other matrices (i.e. symmetric matrices) have the same property.

Homework 3.2.5.1

15/15 points (graded)

Let $A = \begin{pmatrix} -1 & 0 & 2 & 1 \\ 2 & -1 & 1 & 2 \\ 3 & 1 & -1 & 3 \end{pmatrix}$ and $x = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix}$.

What is $A^T =$

-1	✔ Answer: -1	2	✔ Answer: 2	3	✔ Answer: 3
0	✔ Answer: 0	-1	✔ Answer: -1	1	✔ Answer: 1
2	✔ Answer: 2	1	✔ Answer: 1	-1	✔ Answer: -1
1	✔ Answer: 1	2	✔ Answer: 2	3	✔ Answer: 3

What is $x^T =$

-1 ✔	2 ✔	4 ✔
Answer: -1	Answer: 2	Answer: 4

Explanation

$$A^T = \begin{pmatrix} -1 & 0 & 2 & 1 \\ 2 & -1 & 1 & 2 \\ 3 & 1 & -1 & 3 \end{pmatrix}^T = \begin{pmatrix} -1 & 2 & 3 \\ 0 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 2 & 3 \end{pmatrix}$$ and

$$x^T = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix} = \begin{pmatrix} -1 & 2 & 4 \end{pmatrix}$$

Submit

Answers are displayed within the problem

Homework 3.2.5.2

1/1 point (graded)

Consider the following algorithm.

Algorithm: $[B] := \text{TRANSPOSE\_ALTERNATIVE}(A, B)$

Partition $A \rightarrow \left(\begin{array}{c} A_T \\ \hline \end{array}\right)$, $B \rightarrow \left(\begin{array}{c|c} B_L & B_R \end{array}\right)$

Calculator

$\left(\begin{array}{c} A_B \end{array}\right)$

where A_T has 0 rows, B_L has 0 columns

while $m(A_T) < m(A)$ **do**

Repartition

$$\left(\begin{array}{c} A_T \\ \hline A_B \end{array}\right) \rightarrow \left(\begin{array}{c} A_0 \\ \hline a_1^T \\ \hline A_2 \end{array}\right), \left(\begin{array}{c|c} B_L & B_R \end{array}\right) \rightarrow \left(\begin{array}{c|c|c} B_0 & b_1 & B_2 \end{array}\right)$$

where a_1 has 1 row, b_1 has 1 column

Continue with

$$\left(\begin{array}{c} A_T \\ \hline A_B \end{array}\right) \leftarrow \left(\begin{array}{c} A_0 \\ \hline a_1^T \\ \hline A_2 \end{array}\right), \left(\begin{array}{c|c} B_L & B_R \end{array}\right) \leftarrow \left(\begin{array}{c|c|c} B_0 & b_1 & B_2 \end{array}\right)$$

endwhile

What belongs in the blank?

(Check all that apply)

- [x] $b_1 := (a_1^T)^T$
- [ ] $a_1 := b_1^T$
- [ ] $a_1 := 0$
- [ ] $b_1 := 0$

✔

Submit

Answers are displayed within the problem

Homework 3.2.5.3

1/1 point (graded)
Implement the functions

- `Transpose_unb( A, B )`)
- Transpose_alternative_unb(A, B)

(As before, implement as many as you enjoy implementing and/or until you "get the point". Then move on. We suggest you implement at least one of these.)

Some links that will come in handy:

- Spark (alternatively, open the file `LAFF-2.0xM/Spark/index.html`)
- PictureFLAME (alternatively, open the file `LAFF-2.0xM/PictureFLAME/PictureFLAME.html`)

Calculator

You will need these in many future exercises. Bookmark them!

☑ Done/Skip

✔

Answer:

- View a document that we put together that has most algorithms and MATLAB implementations that are homework problems in this week:

  Week 3 algorithms and implementations .

  This document is best viewed two pages, side by side, so that you can see the algorithm on the left and its implementation on the right.

Submit

ℹ Answers are displayed within the problem

Homework 3.2.5.4

1/1 point (graded)

The transpose of a lower triangular matrix is an upper triangular matrix.

Always ✔ Answer: Always

Submit

ℹ Answers are displayed within the problem

Homework 3.2.5.5

1/1 point (graded)

The transpose of a strictly upper triangular matrix is a strictly lower triangular matrix.

Always ✔ Answer: Always

Submit

ℹ Answers are displayed within the problem

Homework 3.2.5.6

1/1 point (graded)

The transpose of the identity matrix is the identity matrix.

Always ✔

Submit

✔ Correct (1/1 point)

Homework 3.2.5.7

8/8 points (graded)

$\begin{pmatrix} 0 & 1 \end{pmatrix}^T =$

Calculator

$\begin{pmatrix} 1 & 0 \end{pmatrix}$

0 ✔ Answer: 0 1 ✔ Answer: 1

1 ✔ Answer: 1 0 ✔ Answer: 0

$\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}^T =$

0 ✔ Answer: 0 1 ✔ Answer: 1

-1 ✔ Answer: -1 0 ✔ Answer: 0

Submit

Answers are displayed within the problem

Homework 3.2.5.8

1/1 point (graded)

If $A = A^T$ then $A = I$ (The identity matrix).

FALSE ✔ Answer: FALSE

Explanation

See Homework 3.2.5.7

Submit

Answers are displayed within the problem

Previous Next

edX

About
Affiliates
edX for Business
Open edX
Careers

Calculator

News

Legal

Terms of Service & Honor Code
Privacy Policy
Accessibility Policy
Trademark Policy
Sitemap
Cookie Policy
Your Privacy Choices

Connect

Idea Hub
Contact Us
Help Center
Security
Media Kit

Calculator