

Gebze Technical University
Computer Engineering

MAT 214
2017 Spring

HOMEWORK 02 REPORT

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Homework 2

PART #2

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ 1 \end{pmatrix} = \begin{pmatrix} x' \\ y' \\ 1 \end{pmatrix}$$

$$B(x,y) = [1, 2] \quad P(x',y') = [2, 2]$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix}$$

$$\begin{cases} a_{11} + 2a_{12} + a_{13} = 2 \\ a_{21} + 2a_{22} + a_{23} = 2 \end{cases}$$

$$B(x,y) = [2, 1] \quad P(x',y') = [-1, 4]$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix} = \begin{pmatrix} -1 \\ 4 \\ 1 \end{pmatrix}$$

$$\begin{cases} 2a_{11} + a_{12} + a_{13} = -1 \\ 2a_{21} + a_{22} + a_{23} = 4 \end{cases}$$

$$B(x,y) = [3, 1] \quad P(x',y') = [-4, 4]$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 3 \\ 1 \\ 1 \end{pmatrix} = \begin{pmatrix} -4 \\ 4 \\ 1 \end{pmatrix}$$

$$\begin{cases} 3a_{11} + a_{12} + a_{13} = -4 \\ 3a_{21} + a_{22} + a_{23} = 4 \end{cases}$$

$$\left. \begin{aligned} a_{11} + 2a_{12} + a_{13} &= 2 \\ 2a_{11} + a_{12} + a_{13} &= -1 \\ 3a_{11} + a_{12} + a_{13} &= -4 \end{aligned} \right\}$$

$$\left. \begin{aligned} a_{21} + 2a_{22} + a_{23} &= 2 \\ 2a_{21} + a_{22} + a_{23} &= 4 \\ 3a_{21} + a_{22} + a_{23} &= 4 \end{aligned} \right\}$$

$$\begin{pmatrix} 1 & 2 & 1 \\ 2 & 1 & 1 \\ 3 & 1 & 1 \end{pmatrix} \begin{pmatrix} a_{11} \\ a_{12} \\ a_{13} \end{pmatrix} = \begin{pmatrix} 2 \\ -1 \\ -4 \end{pmatrix} \Rightarrow$$

Gauss Elimination
Uyguladığımızda

$$a_{11} = -3$$

$$a_{12} = 0$$

$$a_{13} = 5$$

$$a_{21} = 0$$

$$a_{22} = -2$$

$$a_{23} = 6$$

A metrisini
yazdık.

$$A = \begin{bmatrix} -3 & 0 & 5 \\ 0 & -2 & 6 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\Rightarrow A^{-1} = \frac{1}{|A|}$$

$$\begin{vmatrix} a_{22} & a_{23} & a_{13} & a_{12} & a_{12} & a_{13} \\ a_{32} & a_{33} & a_{31} & a_{32} & a_{22} & a_{23} \end{vmatrix} \begin{vmatrix} a_{13} & a_{12} & a_{13} & a_{11} & a_{13} & a_{11} \\ a_{31} & a_{33} & a_{23} & a_{21} & a_{23} & a_{21} \end{vmatrix} \begin{vmatrix} a_{12} & a_{11} & a_{12} & a_{11} & a_{12} & a_{11} \\ a_{31} & a_{32} & a_{31} & a_{32} & a_{21} & a_{22} \end{vmatrix}$$

Uyguladığımızda;

$$A^{-1} = \frac{1}{6} \begin{pmatrix} -2 & 0 & 10 \\ 0 & -3 & 18 \\ 0 & 0 & 6 \end{pmatrix} = \begin{pmatrix} -\frac{1}{3} & 0 & \frac{5}{3} \\ 0 & -\frac{1}{2} & 3 \\ 0 & 0 & 1 \end{pmatrix} //$$