Lecture 14: Basis

In this exercise, we look at three linear spaces, the

- **row space**, the span of the row vectors

- the **column space**, the span of the column vectors, which is the image

- the kernel the vectors perpendicular to the row space.

The image

1   Let $A = \begin{bmatrix} 2 & 2 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$.   Find a basis for the span of all column

vectors of A.

The kernel

2   Find a basis for the span of the linear space of all vectors perpendicular to the row vectors of A.