


Nash Equilibria in Mixed Strategies

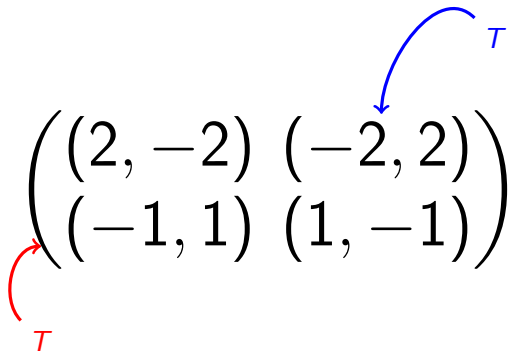
Game Theory

Vincent Knight

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

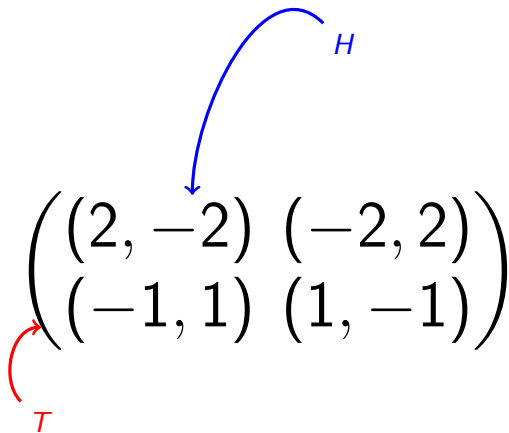

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

T

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$


A diagram showing a 2x2 matrix with two curved arrows labeled T . A red arrow points from the bottom-left element $(-1, 1)$ to the top-left element $(2, -2)$. A blue arrow points from the top-right element $(-2, 2)$ to the top-left element $(2, -2)$.

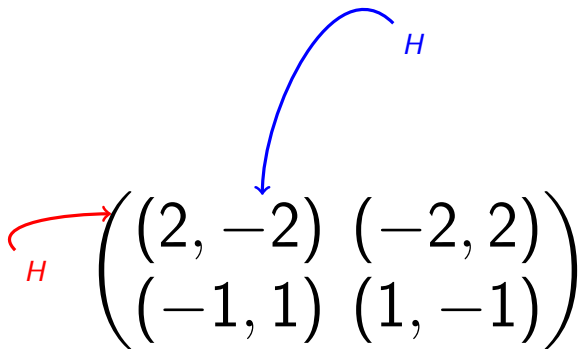
$$T - T$$



A diagram showing a 2x2 matrix with arrows pointing to its elements. A blue arrow labeled H points to the top-left element $(2, -2)$. A red arrow labeled T points to the bottom-left element $(-1, 1)$.

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

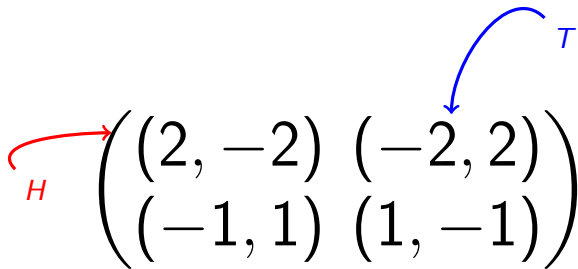
$$T - T - H$$



A diagram showing a 2x2 matrix with two arrows labeled 'H' pointing to its elements. A red arrow points from the label 'H' to the element (2, -2). A blue arrow points from the label 'H' to the element (-2, 2).

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

T-T-H-H



A diagram showing a 2x2 matrix with arrows pointing to its elements from labels H and T .

$$\begin{matrix} & & & T \\ & & \swarrow & \\ H & \rightarrow & \begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix} \end{matrix}$$

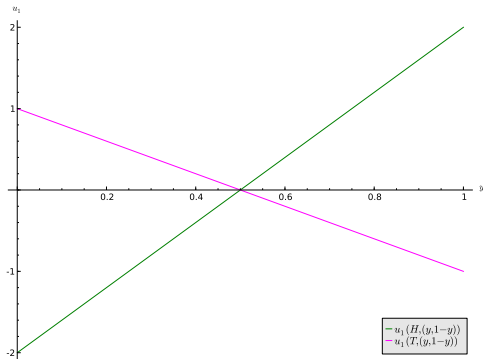
$T-H-H-T$

$$u_1(H, \sigma_2) = 2y - 2(1 - y) = 4y - 2$$

$$u_1(T, \sigma_2) = -y + (1 - y) = 1 - 2y$$

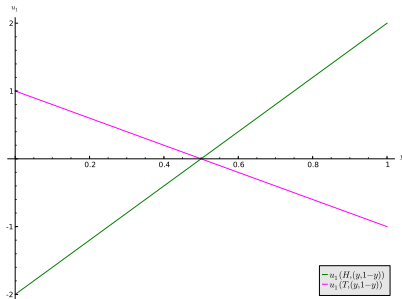
$$u_1(H, \sigma_2) = 2y - 2(1 - y) = 4y - 2$$

$$u_1(T, \sigma_2) = -y + (1 - y) = 1 - 2y$$



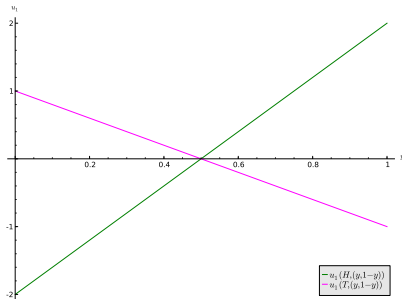
Row player:

$$s_1^* = \begin{cases} T, & \text{if } y < 1/2 \\ H, & \text{if } y > 1/2 \\ \text{Indifferent,} & \text{if } y = 1/2 \end{cases}$$



Row player:

$$s_1^* = \begin{cases} T \Leftrightarrow x = 0, & \text{if } y < 1/2 \\ H \Leftrightarrow x = 1, & \text{if } y > 1/2 \\ \text{Indifferent,} & \text{if } y = 1/2 \end{cases}$$



Row player:

$$s_1^* = \begin{cases} T \Leftrightarrow x = 0, & \text{if } y < 1/2 \\ H \Leftrightarrow x = 1, & \text{if } y > 1/2 \\ \text{Indifferent,} & \text{if } y = 1/2 \end{cases}$$

Column player:

$$s_2^* = \begin{cases} H, & \text{if } x < 1/3 \\ T, & \text{if } x > 1/3 \\ \text{Indifferent,} & \text{if } x = 1/3 \end{cases}$$

Row player:

$$s_1^* = \begin{cases} T \Leftrightarrow x = 0, & \text{if } y < 1/2 \\ H \Leftrightarrow x = 1, & \text{if } y > 1/2 \\ \text{Indifferent,} & \text{if } y = 1/2 \end{cases}$$

Column player:

$$s_2^* = \begin{cases} H \Leftrightarrow y = 1, & \text{if } x < 1/3 \\ T \Leftrightarrow y = 0, & \text{if } x > 1/3 \\ \text{Indifferent,} & \text{if } x = 1/3 \end{cases}$$