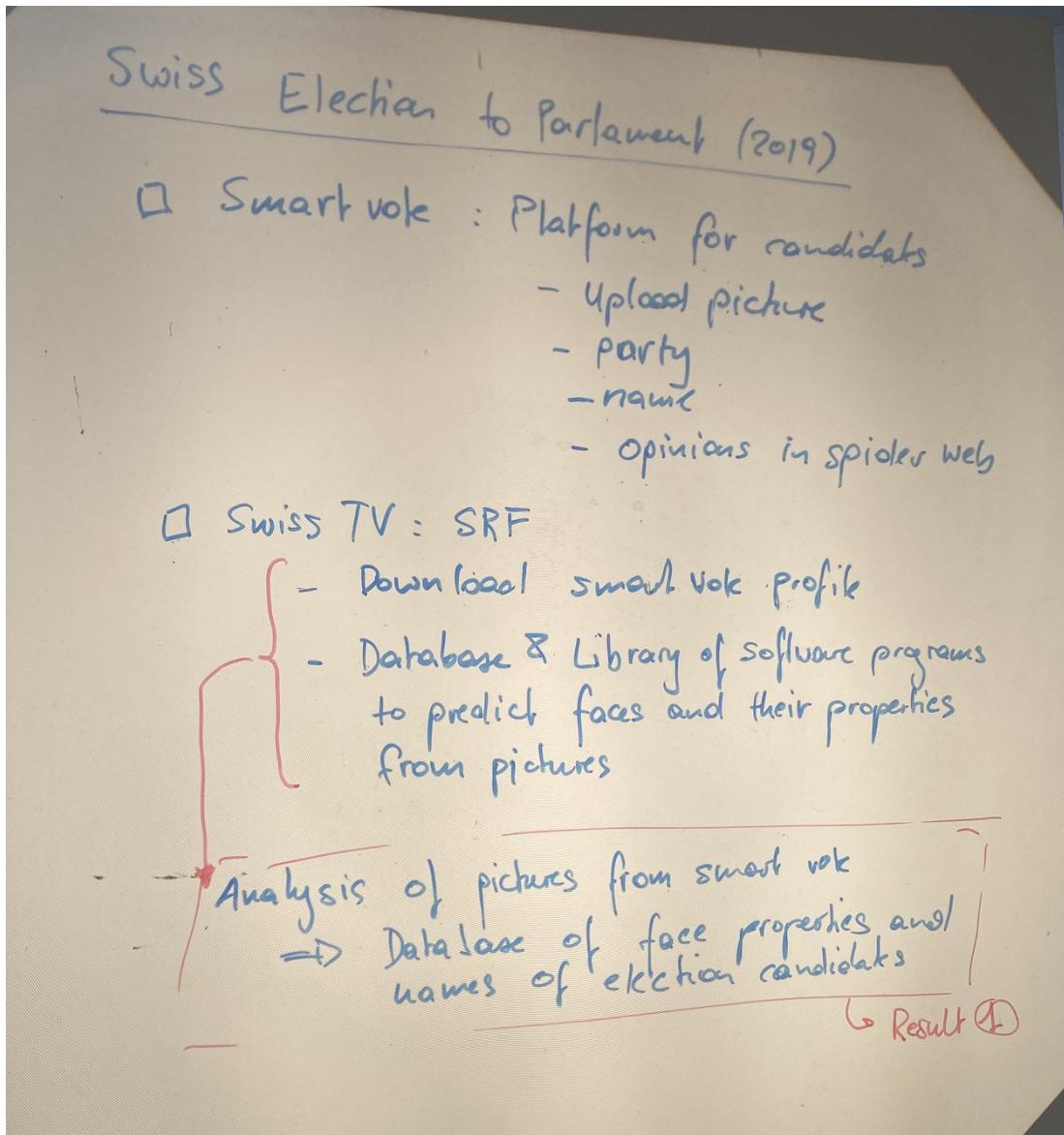


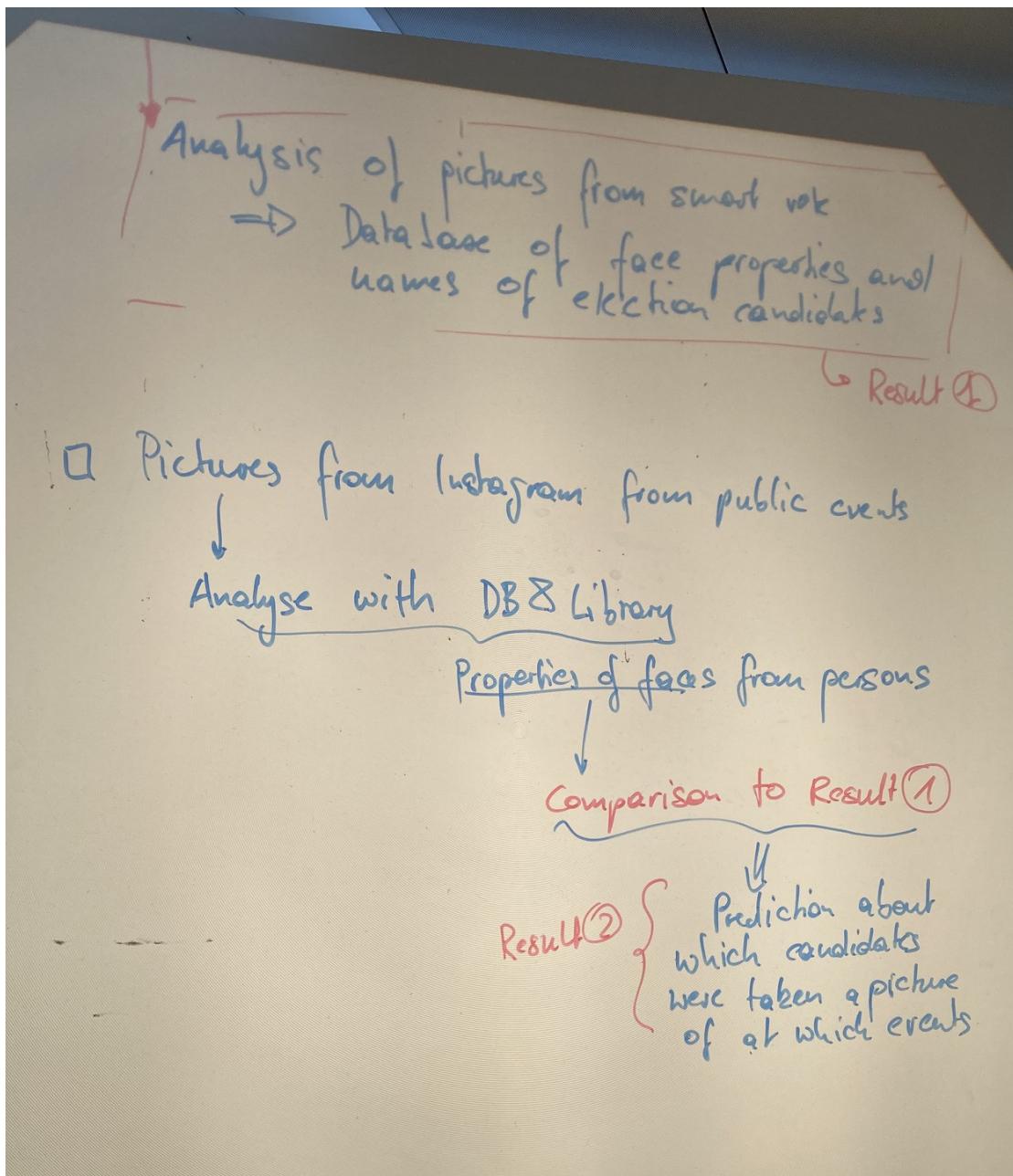
OHP Picture 1

<u>Course Concepts</u>		
<input type="checkbox"/>	Linear Model categories:	
-	Regression	
-	Fixed linear effect	
-	Mixed linear	
	Livestock Breeding & Genomics	
<input type="checkbox"/>	Data Science:	
-	Given data set	
-	Analyse	
-	Results	
<hr/> <u>Example Dataset : Genomic Breeding Value Prediction</u> <hr/>		
Animal	SNP ₁ --- SNP _k	Observation y
1	—	—
2	—	—
—	—	—
N	—	—

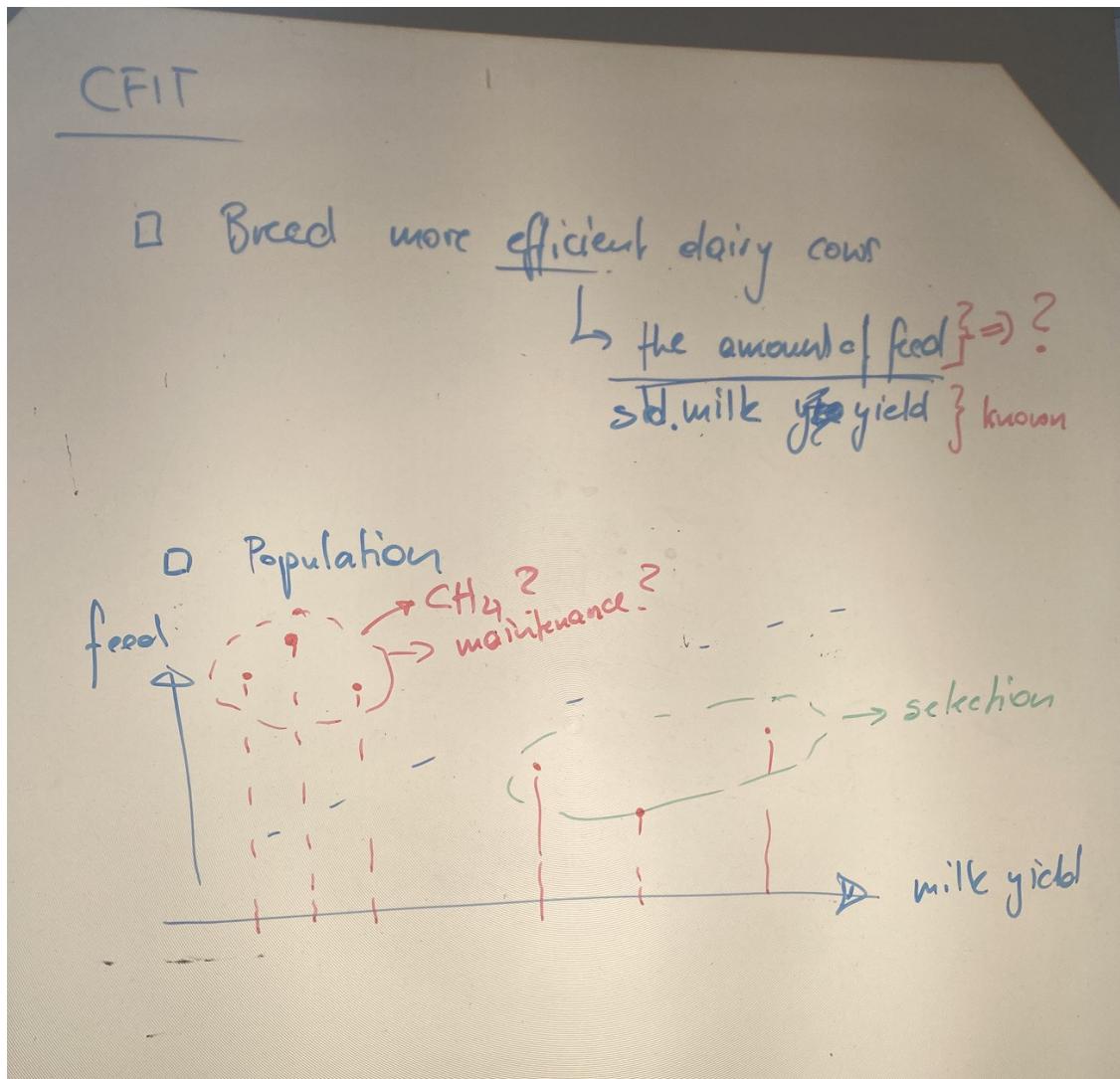
OHP Picture 2



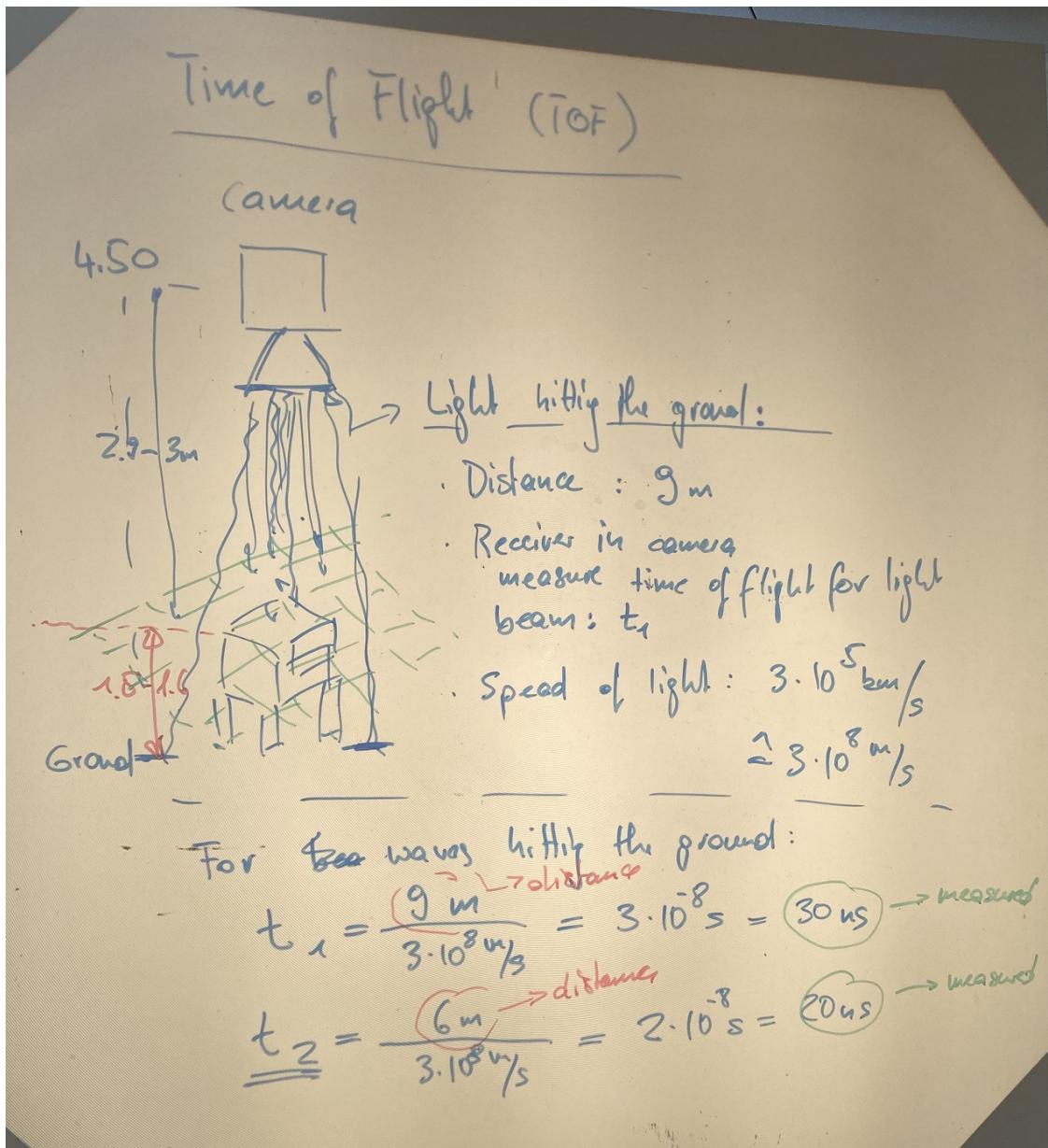
OHP Picture 3



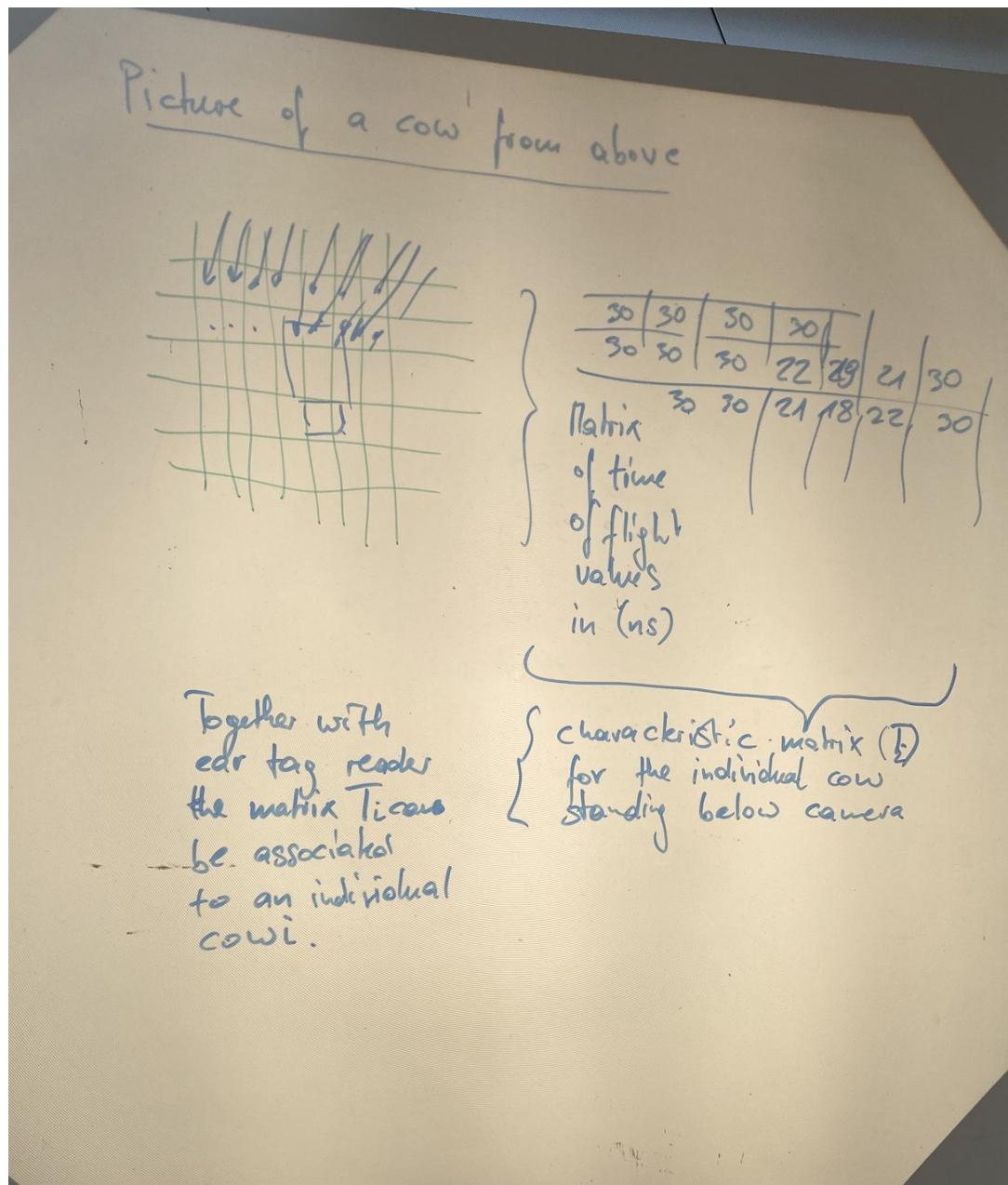
OHP Picture 4



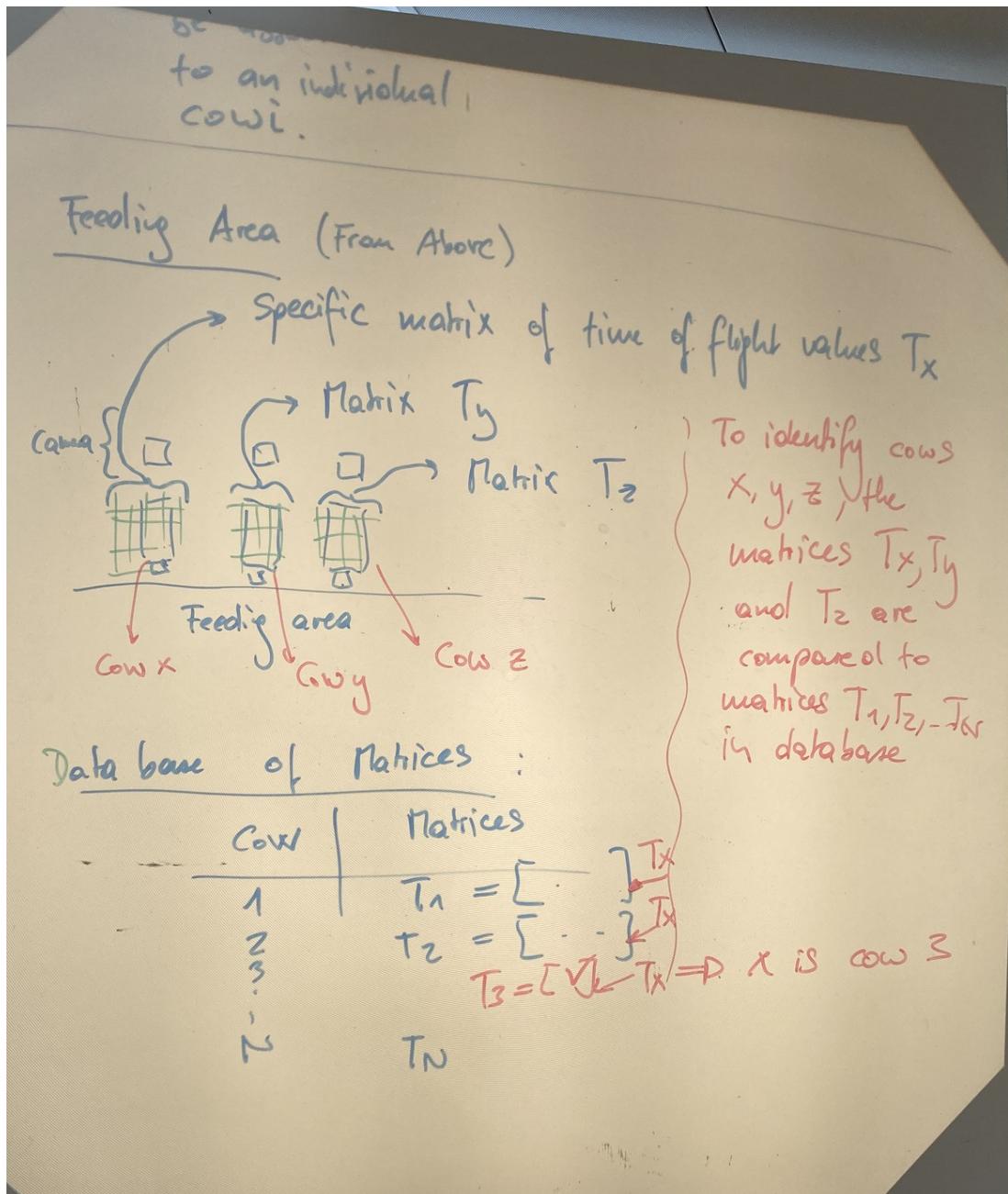
OHP Picture 5



OHP Picture 6



OHP Picture 7



OHP Picture 8

Comparison of time of flight matrices

- Not rely on exact matches between a matrix T_x from the field area and a given matrix T_i from the identification database, because an exact match means

if $T_x = T_i \Rightarrow$ dimensions equal

every element $(T_x)_{lk} = (T_i)_{lk}$ in row l and column k

$$\begin{matrix} T_x \\ \left[\begin{matrix} 30 & \\ & \end{matrix} \right] \end{matrix} = \begin{matrix} T_i \\ \left[\begin{matrix} 30 & \\ & \end{matrix} \right] \end{matrix}$$

Diagram illustrating the comparison of two matrices T_x and T_i . Both matrices are shown as 2x2 grids. The first matrix T_x has a value '30' in the top-left position. The second matrix T_i also has a value '30' in the top-left position. Red arrows point from the '30' in T_x to the '30' in T_i , indicating a comparison or match between these specific elements.

- Instead of exact match, take ~~etc~~ the matrix T_i that is 'closest' to the matrix T_x

OHP Picture 9

Closest match

□ Take matrix T_x and sort the values ~~according to~~ numerically:

$$T_x = \begin{bmatrix} 30 & 30 & \dots & 30 \\ 30 & 27 & 26 & \dots & 30 \\ 30 & 28 & 25 & 19 & \dots & 30 \end{bmatrix}$$

↓

$$y^{\text{v}} = \begin{bmatrix} 16 & (1,1) \\ 17 & (5,1,3) \\ 18 & (3,5) \\ \vdots \\ 30 \end{bmatrix}$$

Vector with sorted values and remember row and column indices

$$T_i = \begin{bmatrix} 30 & \dots & 30 \\ \vdots & \ddots & \vdots \\ 1 & \dots & 1 \end{bmatrix}$$

sort the same way as T_x

$$X = \begin{bmatrix} (T_i)_{1,1} \\ (T_i)_{5,1,3} \\ \vdots \end{bmatrix}$$

\Rightarrow creates vector X

OHP Picture 10

