$P(A=0) = 0.2$

$P(A=1) = 0.8$

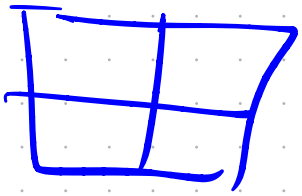
$P(A=0, B=1) = \dots$

$P(A,B)$

P	$A=0$	$A=1$	
$B=0$	0.2	0.4	0.6
$B=1$	0.1	0.3	0.4

$P(A=0, B=0) + P(A=1, B=0) = P(B=0)$

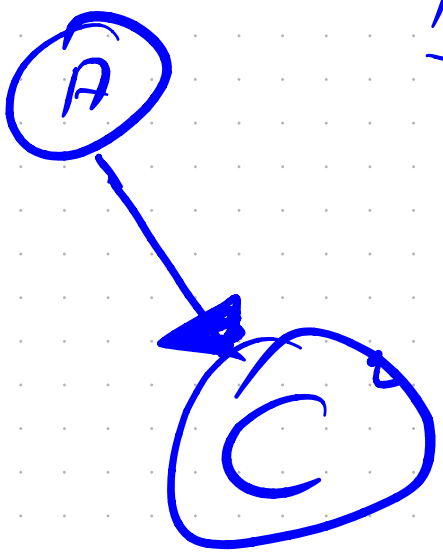
$P(A)$ $P(B) = P(A,B)$



$$P(A|B) = \frac{P(A,B)}{P(B)}$$

$$P(A|B) = \frac{P(B|A)\,P(A)}{P(B)}$$

$$P(A, C) = P(C|A)\,P(A)$$



$P(Sz:II) = \begin{pmatrix} 0.8 \\ 0.2 \end{pmatrix}$

Gesucht:

$P(\text{Aufgabe})$

$\sum_{Sz:II} P(S,A) = P(A)$

$P(Sz:II, \text{Aufgabe}) = P(\text{Aufgabe} \mid Sz:II)\, P(Sz:II)$

$P(\text{Aufgabe} \mid Sz:III)$

$\begin{pmatrix} 0.9 & 0.2 \\ 0.1 & 0.8 \end{pmatrix} \begin{pmatrix} 0.8 \\ 0.2 \end{pmatrix} = \begin{pmatrix} 0.72 & 0.04 \\ 0.08 & 0.16 \end{pmatrix} \xrightarrow{\Sigma} \begin{pmatrix} 0.76 \\ 0.24 \end{pmatrix}$

$P(A \mid S)$ $P(S)$ $P(A,S)$ $P(A)$

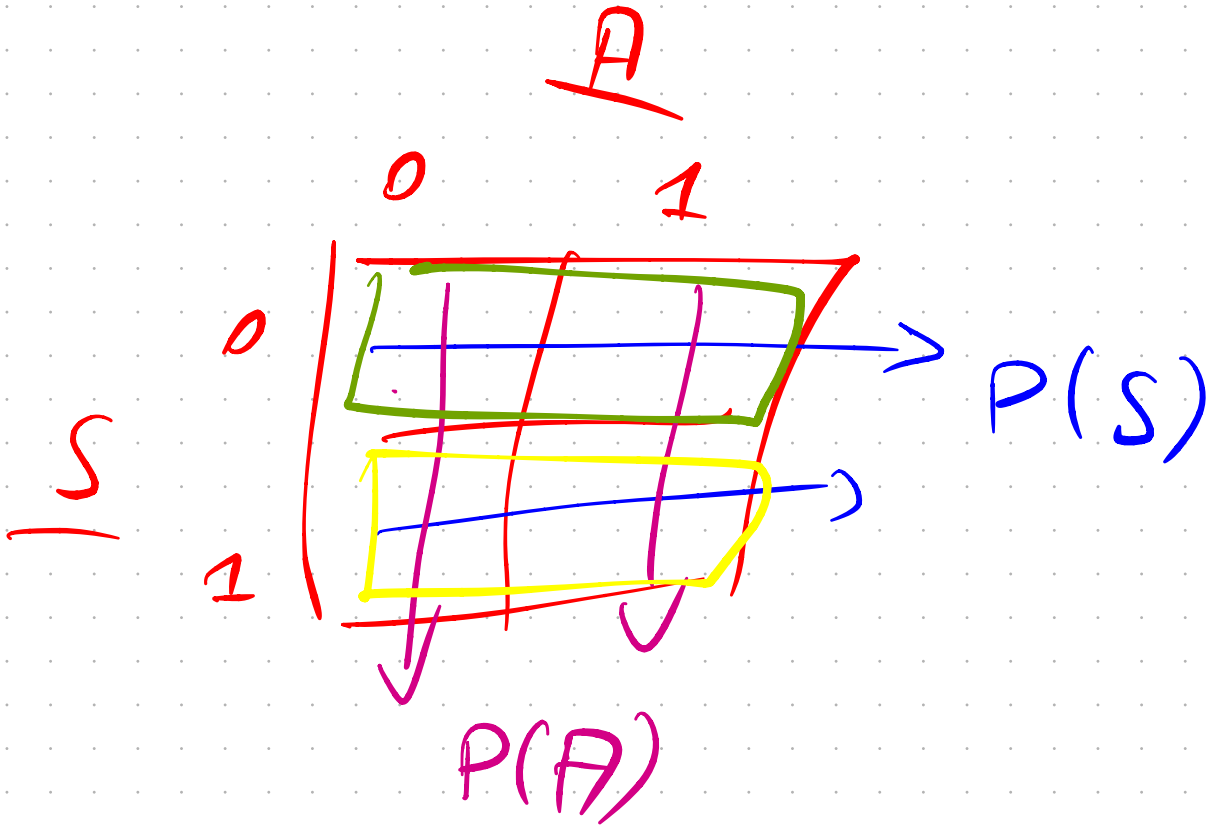
Aufgabe \ Sz:II	0	1
0	0.9	0.2 sep
1	0.1 juriss	0.8

Marginalisieren: $P(A, S)$

$\Rightarrow P(A)$

$$P(A) = \sum_S P(A, S)$$

$$= \underbrace{P(A, S=0)}_{P(A,S)} + P(A, S=1)$$



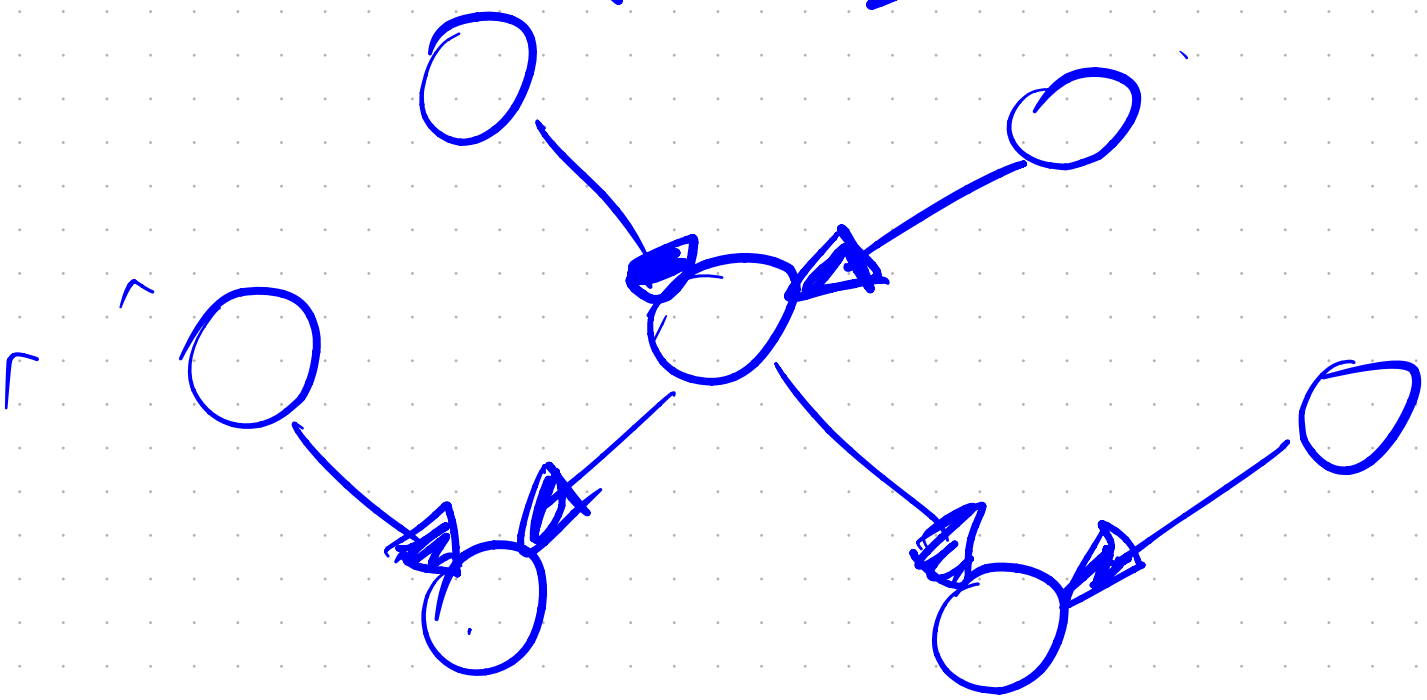
$P(S_{N1} \mid S_{A,1})$

S_{N1} \ $S_{A,1}$	0	1
0	ω_2	ω_3
1	$1-\omega_2$	$1-\omega_3$
Σ	1	1

$P(S_{N1} \mid S_{A,1}, S_{G1})$

S_A	0		1	
S_G	0	1	0	1
S_{N1}				

Markov Blanket for Directed GM

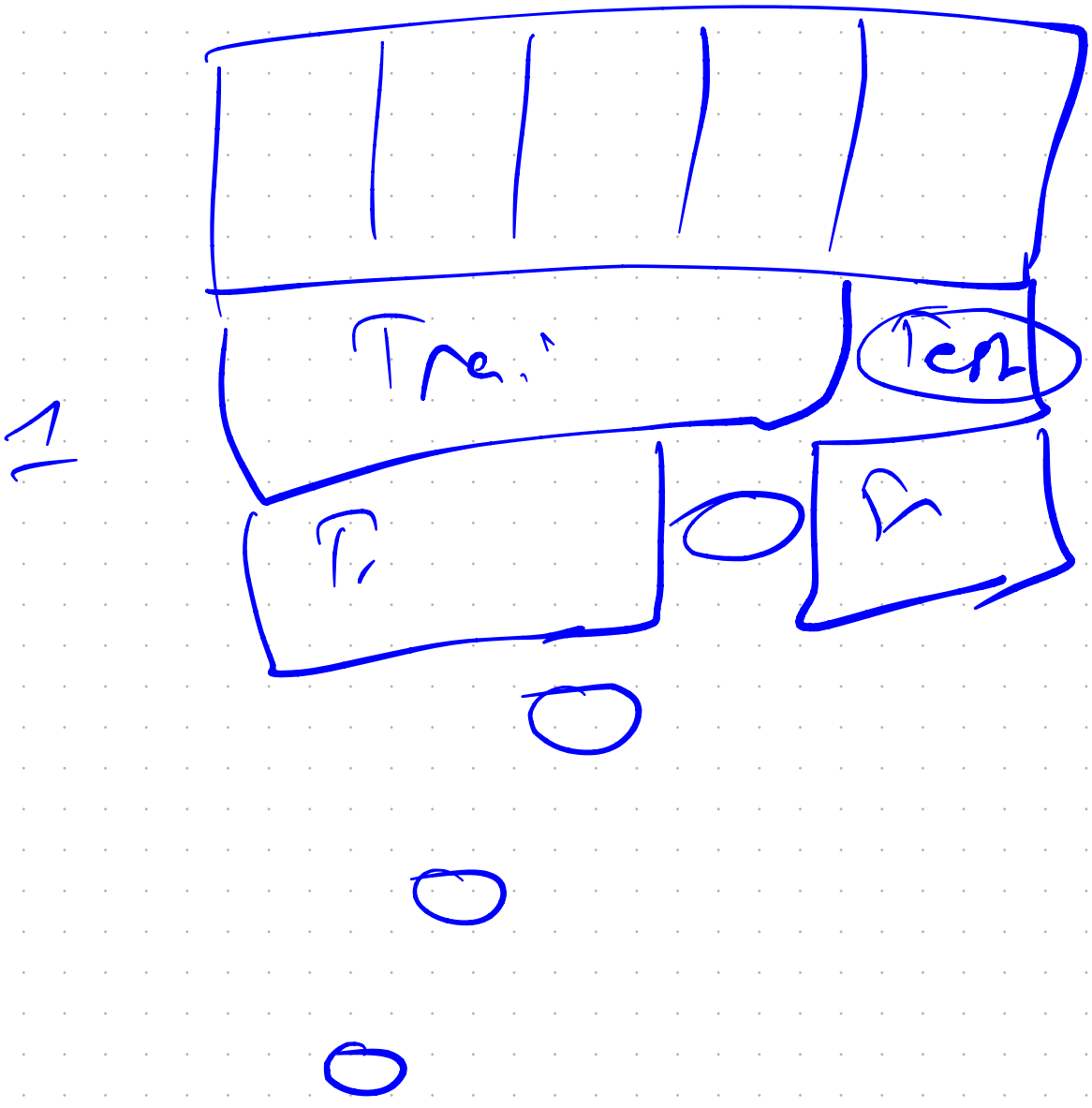


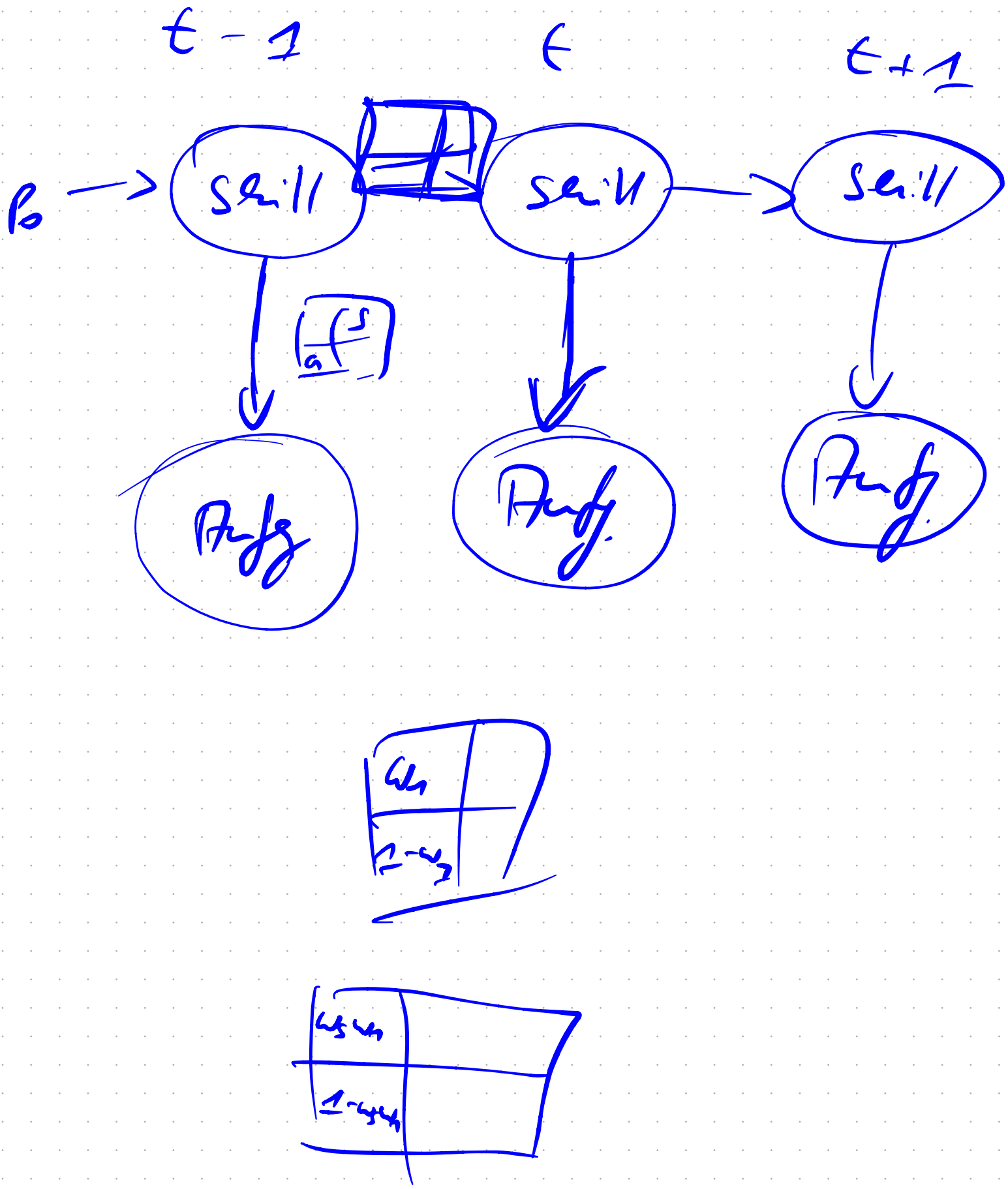
Maximum Likelihood as parameter finding

$$L(\theta) = \prod_{D} p(\cdot \mid \theta)$$

Joint Probability

Datensatz




t - 1
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$$\frac{1}{1+e^{-\cdot}}$$

$$\sigma$$

$$\frac{e^{\cdots}}{1+e^{\cdots}}$$