

## Machine Learning and Optimization Cheat Sheet by anlumithe via cheatography.com/177005/cs/36970/

Linear Algebra		L	inear regression	
A+B	has result, only if A and B have same dim	N	Model	$y = X\theta^* + z$
A <b>x</b> =x_1* <b>a_1</b> ++x_n* <b>a_n</b>	result is vector	F	Risk	
A*B	row of A times column of B, result is matrix	F	Ridge regression	
$A^{T}$	row becomes column and vice versa			
Properties of transpose	(1) if A is $(m \times n) A^{T}$ is $(n \times m)$ (2) $(A^{T})^{T} = A$ (3) $(A+B)^{T} = A^{T} + B^{T}$ (4) $(AB)^{T} = B^{T}A^{T}$ (5) $(tA)^{T} = tA^{T}$		Logistic Regression	
		3	Support Vector Machines	
Inverse of Matrix	$AA^{-1}=I=A^{-1}A$			
Properties of invertible matrix	$(A^{-1})^{-1} = A$ $(AB)^{-1} = B^{-1}A^{-1}$ $(A^{T})^{-1} = (A^{-1})^{T}$	N	Neuronal Networks	
Singular value decomposition	<ul> <li>A = UΣV<sup>T</sup></li> <li>what means that every vector-matrix-multiplication can be viewed as a 3 step process</li> <li>(1) rotation into space V</li> <li>(2) scaling by singular value</li> <li>(3) rotation into new space U</li> </ul>			
Eigen value decomposition	A = $QAQ^{-1}$ this is only possible, if A <i>and</i> Q are square matrices			



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Not published yet.

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