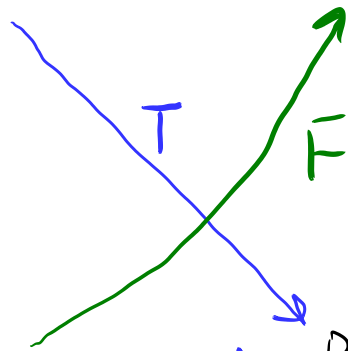


AI can solve general problems  $\xrightarrow{T}$  Robots enslave humans



Computers <sup>can be</sup> are cheaper than guns  $\xrightarrow{T}$  Bananas are available yearround

P	Q	$P \rightarrow Q$	$(\neg P) \vee Q$
0	0	1	1
0	1	1	1
1	0	0	0
1	1	1	1

P	Q	$((\neg P) \wedge (\neg Q)) \vee ((\neg P) \wedge Q)$	$(P \wedge Q)$
0	0	1	0
0	1	1	0
1	0	0	0
1	1	0	1

SALE!



P	Q	P and Q
0	0	0
0	1	0
1	0	0
1	1	1

P implies Q  
 True unless we have  
 a counter-example

Unary Binary Boolean operators

AND

$\wedge$

conjunction

OR

$\vee$

disjunction

XOR

$\oplus$

IMPLIES

antecedent  $\rightarrow$  consequent

conditional

IFF

$\leftrightarrow$

biconditional

NOT P

$\neg P$

$\bar{P}$

iff  
if and only if

$$P \rightarrow Q \quad \wedge \quad Q \rightarrow P$$

P	Q	$P \leftrightarrow Q$
0	0	1
0	1	0
1	0	0
1	1	1

$\neg$

P	$\neg P$	$1 \oplus P$
0	1	1
1	0	0

$\oplus$

A

P	Q	$P \wedge Q$	$P \oplus Q$	$1 \oplus P \oplus Q$
0	0	0	0	1
0	1	0	1	0
1	0	0	1	0
1	1	1	0	1

# De Morgan law/rule

P	Q	P	$\neg$	Q	$\neg$	$(\neg P \vee \neg Q)$	$\neg Q$
0	0	0	1	0	1	1	1
0	1	0	1	1	0	1	0
1	0	1	0	0	1	0	1
1	1	1	0	1	0	0	0

1  
0  
0  
1

0  
0  
0  
1

1  
1  
1  
0

