

>> Life After the Robot Apocalypse

Aaron Stockdill

University of Canterbury

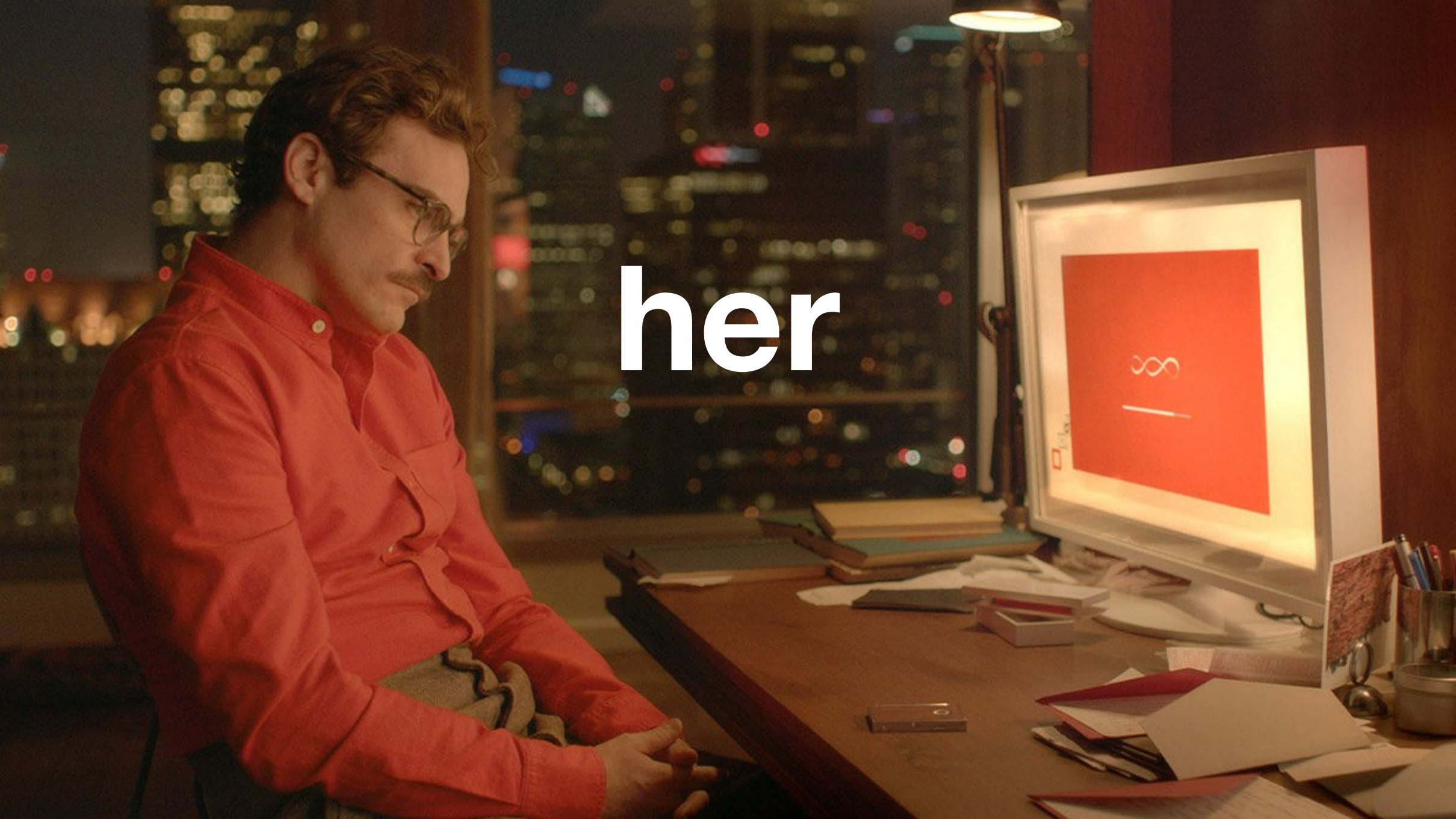
September 2016

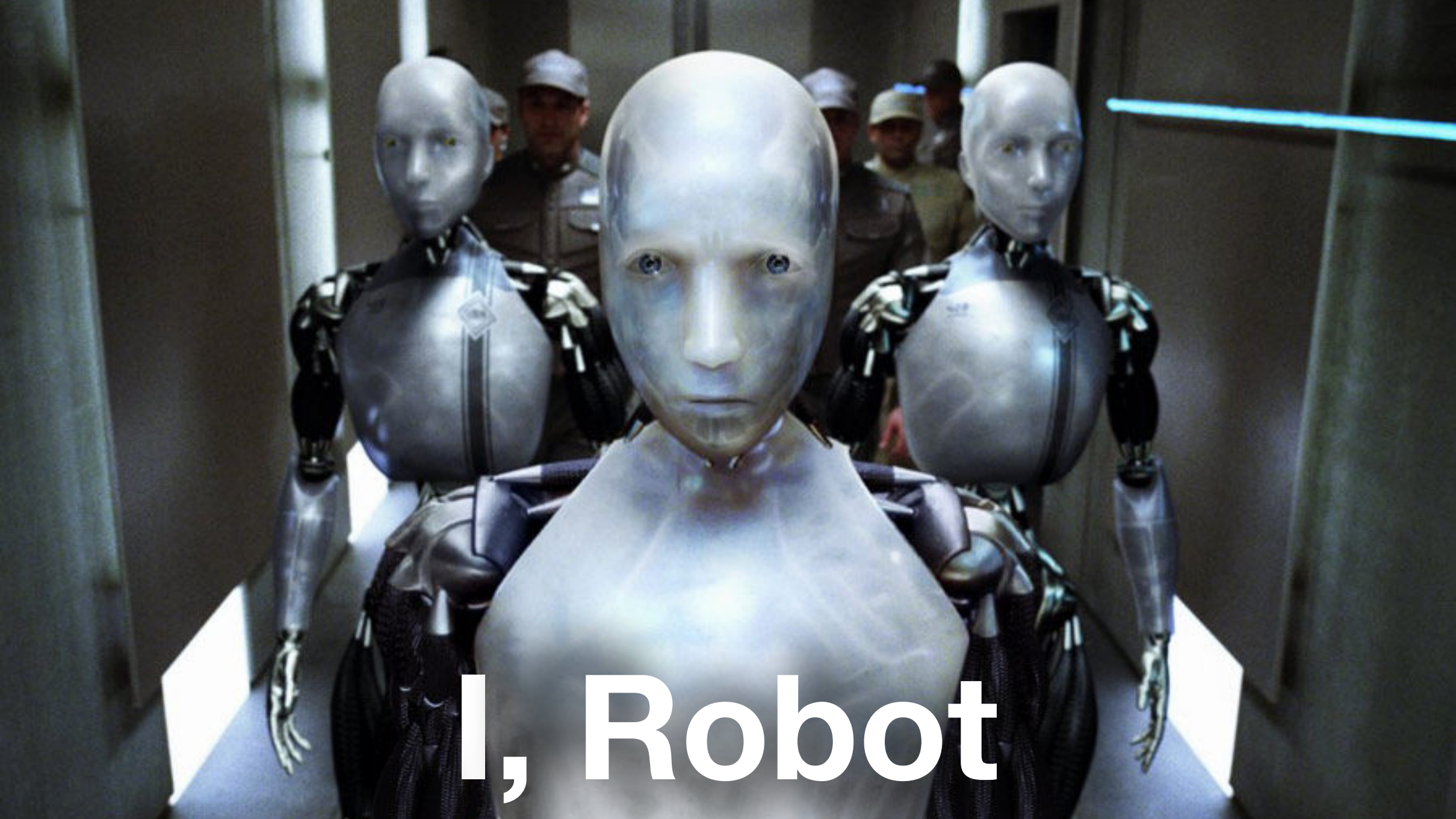


AI

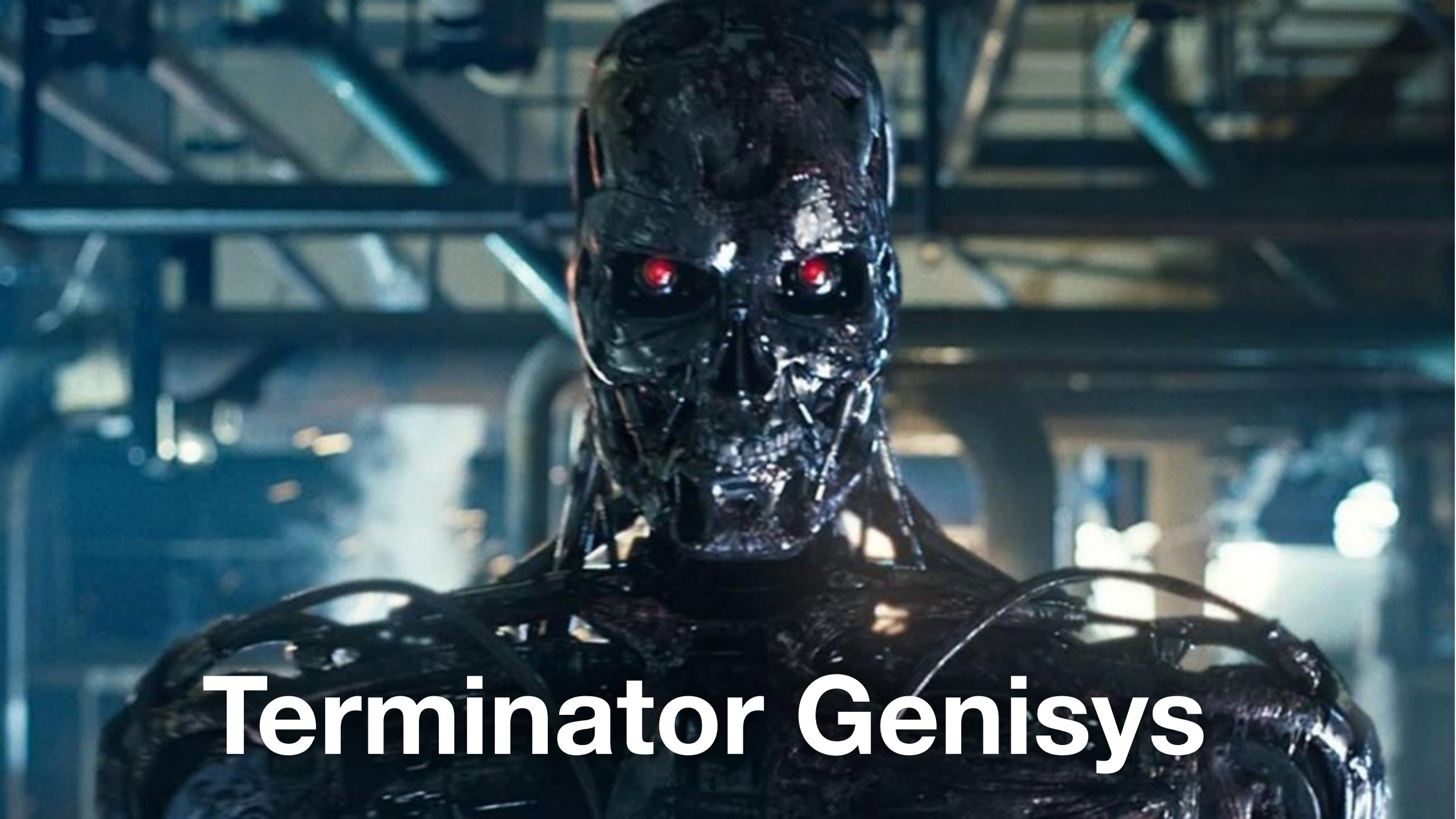
Artificial Intelligence

her





I, Robot



Terminator Genisys

$$\mathbf{y}(t) = \mathbf{W}^{\text{out}}[1; \mathbf{u}(t); \mathbf{x}(t)]$$

$$\mathbf{x}(t) = (1 - \alpha) \times \mathbf{x}(t - 1) + \alpha \times \tilde{\mathbf{x}}(t)$$

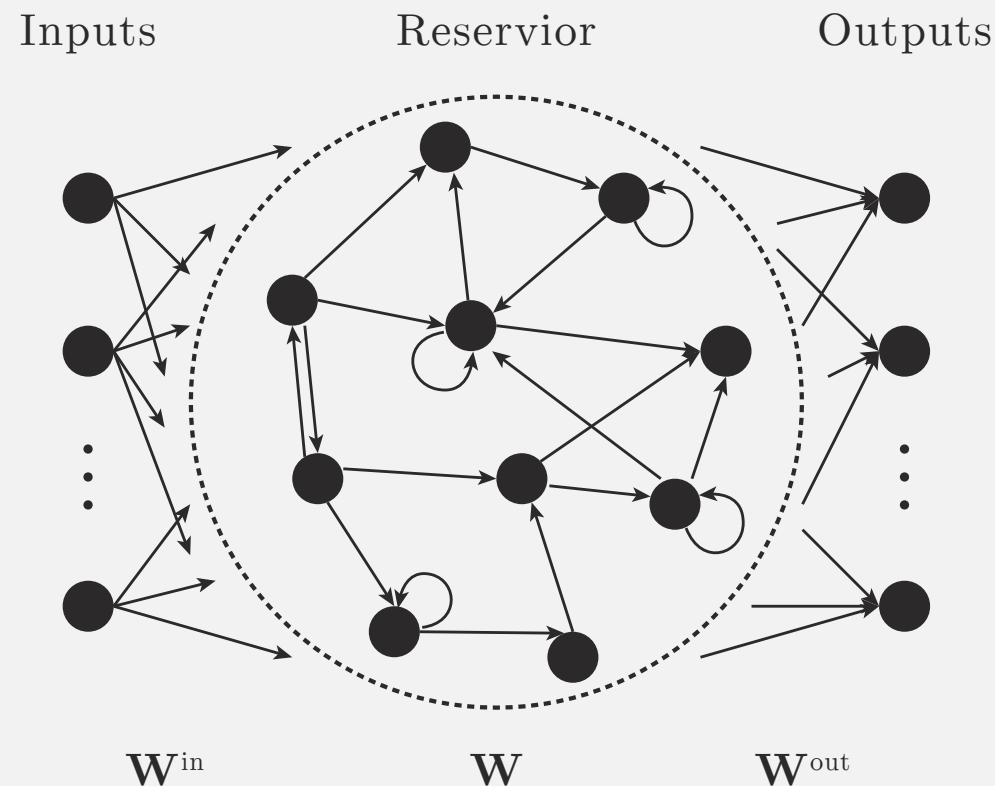
$$\tilde{\mathbf{x}}(t) = \tanh \left(\mathbf{W}^{\text{in}}[1; \mathbf{u}(t)] + \mathbf{W}\mathbf{x}(t - 1) \right)$$

$$\mathbf{W}^{\text{out}} = \mathbf{Y}^{\text{target}} \mathbf{X}^{\text{T}} \left(\mathbf{X} \mathbf{X}^{\text{T}} + \beta \mathbf{I} \right)^{-1}$$

$$I = G(x, V) \cdot V$$

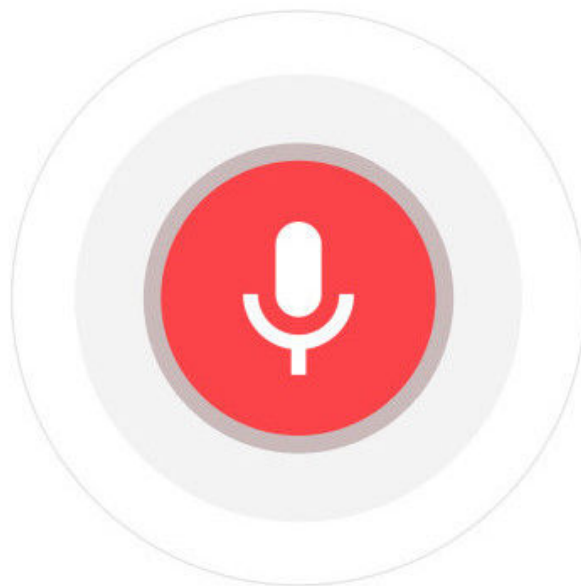
$$\frac{dx}{dt} = f(x, V)$$

$$\frac{dx}{dt} = \beta V + \frac{1}{2}(\alpha - \beta)(|V + V_T| - |V - V_T|)$$

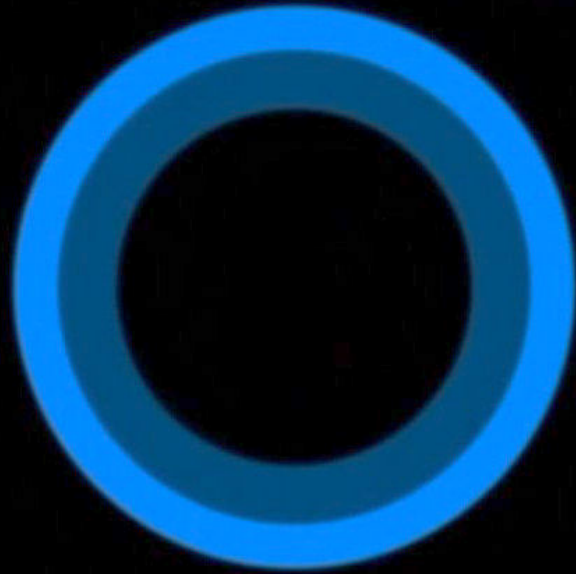




Google Now



Cortana

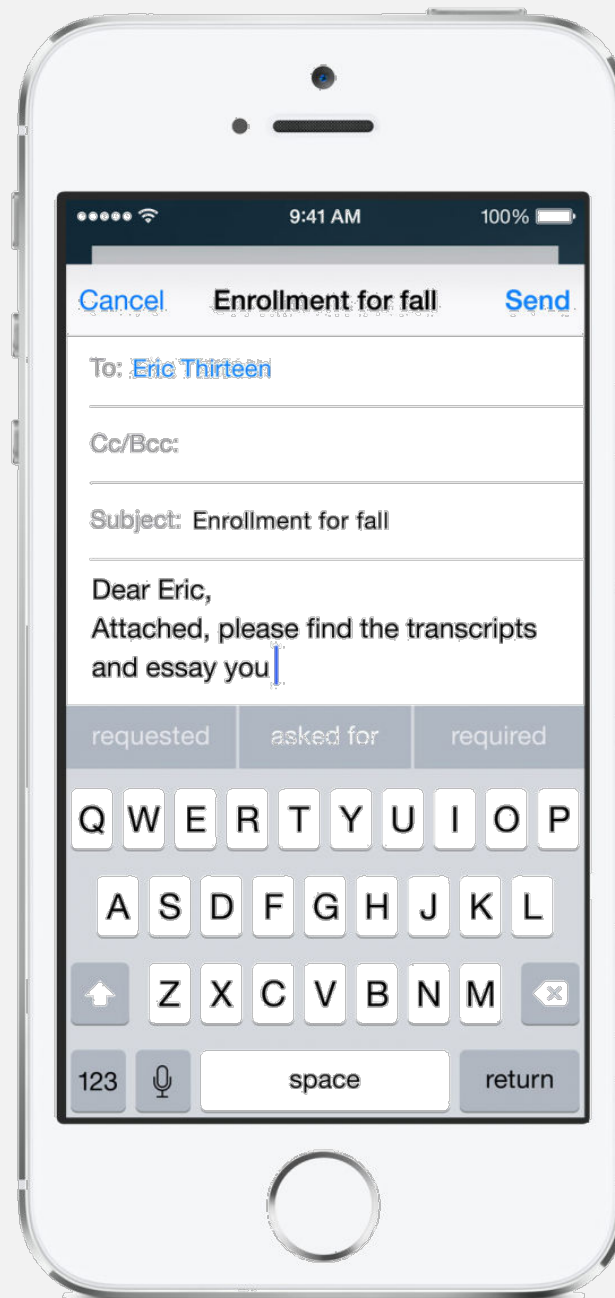


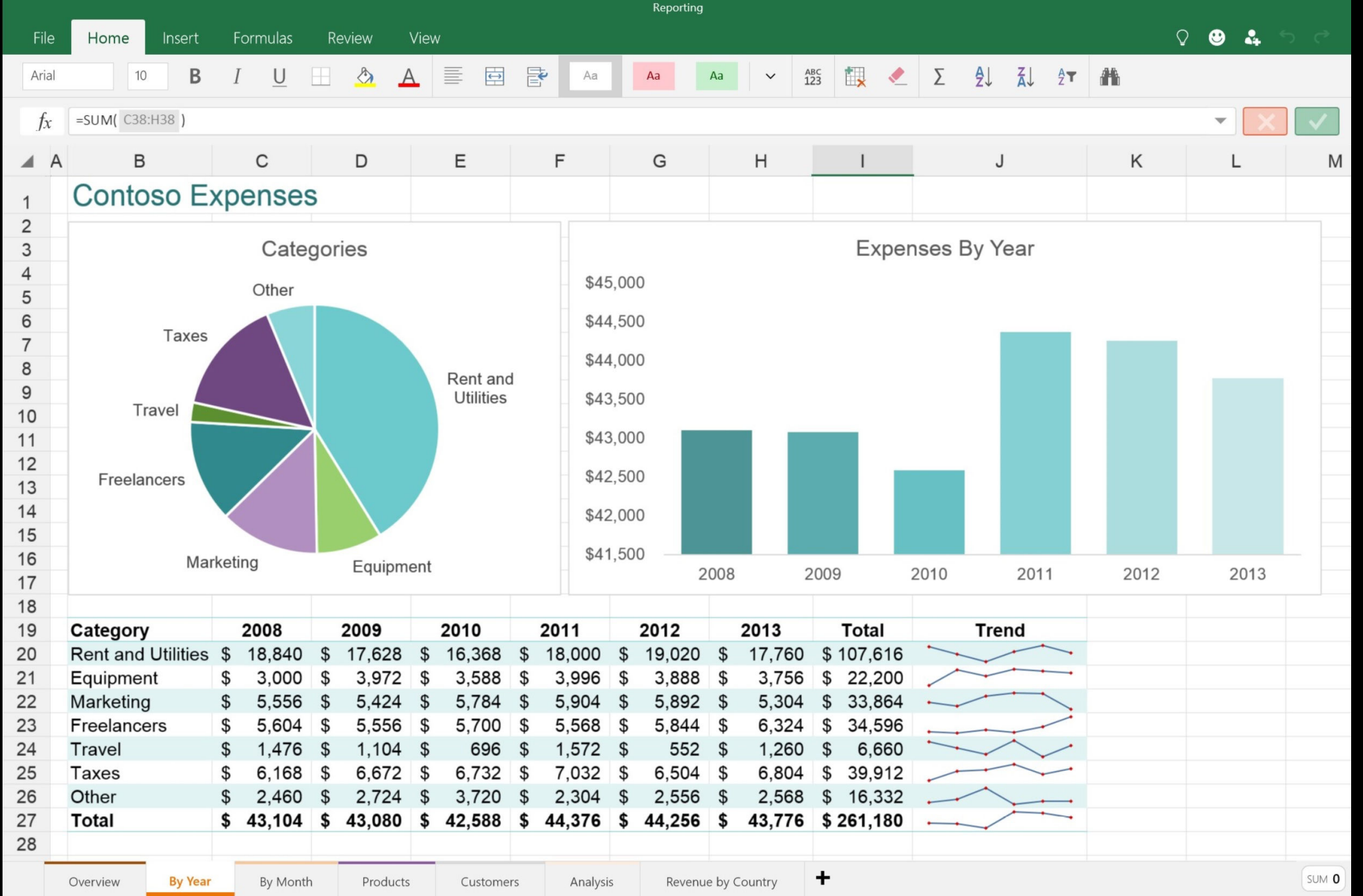
Amazon
Alexa



Siri









Customize

Find

Help

Options

Timetable

View

Specification

File

Main

?Questions
Comments? Write us

School



Verification

Generate
new

Test

Relations / Students
Seminars

Teachers



Classrooms



Classes



Subjects

Whole

Print
preview

Print



Save



Open



New

Wednesday								Tuesday								Monday								Sunday								Saturday														
8	7	6	5	4	3	2	1	0	8	7	6	5	4	3	2	1	0	8	7	6	5	4	3	2	1	0	8	7	6	5	4	3	2	1	0	8	7	6	5	4	3	2	1	0		
CMP	MAT	ARA	ART	ENG	ISL	SOS	ENG		PED	ARA	ISL	MAT	ENG	ARA	ENG	SCE		ISL	ARA	ENG	ARA	MAT	MAT	FRE	SCE	CMP	SOS	MAT	ENG	SCE	ISL	ARA	ENG		ENG	SCE	ARA	MAT	FRE	ENG	PED	ARA		4A		
ENG	SCE	PED	MAT	ARA	ENG	ISL	FRE		ENG	MAT	SOS	ARA	SCE	ENG	MAT	CMP		ENG	MAT	ARA	ISL	SCE	FRE	ARA	ENG		ARA	ISL	ENG	PED	ARA	ART	MAT	SCE		ISL	ENG	MAT	ARA	CMP	SOS	ARA	ENG		4B	
FRE	ENG	MAT	CMP	SCE	SOS	ARA	ISL		ARA	SCE	ENG	ENG	PED	MAT	ISL	ARA		SOS	FRE	MAT	SCE	ARA	ENG	ENG	ARA		MAT	ARA	CMP	ARA	ENG	ENG	PED	ISL		MAT	ARA	ISL	ENG	SCE	MAT	ENG	ART		4C	
MAT	ENG	CMP	ARA	ISL	SCE	ARA	ENG		FRE	ARA	PED	ENG	MAT	SCE	ENG	SOS		SCE	ISL	ART	ARA	ENG	CMP	ENG	MAT		PED	FRE	ISL	ARA	MAT	MAT	ENG	ARA		SOS	ENG	SCE	ISL	ARA	ARA	MAT	ENG		4D	
MAT	CMP	ENG	MUS	PED	ARA	SOS	ENG		MAT	FRE	SCE	MAT	ENG	ENG	ARA	ISL		ARA	MAT	ENG	SOS	ENG	ISL	SCE	PED		ISL	MAT	ISL	CMP	ENG	ENG	SCE	SOS		ENG	ISL	FRE	ENG	MAT	ISL	ART	SCE		4G	
SCE	PED	ENG	URD	FRE	MAT	ARA	MAT	ENG		ART	ENG	CMP	MAT	SOS	ENG	ARA	ISL		ARA	ENG	ENG	SCE	URD	FRE	ISL	MAT		ISL	ENG	ISL	ENG	PED	SOS	SCE	MAT		MAT	ISL	ENG	SCE	SOS	ISL	ENG	CMP		4H
MAT	ISL	SCE	ARA	ENG	FRE	MUS	MAT		ART	SOS	ENG	CMP	MAT	ISL	SCE	ARA		ENG	PED	ISL	ENG	ARA	SCE	MAT	ARA		ARA	MAT	ENG	SCE	ISL	CMP	ENG	ARA		PED	MAT	ENG	ARA	ENG	ARA	SOS	FRE		5A	
ISL	SOS	ARA	ENG	CMP	MAT	ENG	ARA		ENG	ISL	FRE	ARA	ARA	SCE	MAT	ENG		SCE	ENG	ENG	ART	PED	ARA	ISL	MAT		SOS	CMP	MAT	ISL	SCE	FRE	ARA	ENG		SCE	PED	MAT	MAT	ARA	ENG	ENG	ARA		5B	
PED	ENG	MAT	SCE	SOS	ARA	ART	ENG		ARA	ARA	ISL	SCE	ENG	FRE	CMP	MAT		ARA	ISL	MAT	SOS	ENG	PED	SCE	ENG		ISL	ENG	ARA	ENG	ARA	SCE	MAT	FRE		ENG	ARA	ARA	ENG	MAT	MAT	CMP	ISL		5C	
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ENG	SCE	ARA	MAT	ARA	PED	ISL	ENG		MAT	ISL	SCE	ARA	FRE	ENG	ENG	ARA		ARA	MAT	PED	CMP	ISL	ENG	ENG	ARA		SCE	ISL	ARA	MAT	MAT	ENG	ARA		CMP	ARA	MAT	ENG	ENG	ARA	FRE	SCE		6A		
MAT	ARA	SCE	ENG	FRE	ISL	ENG	ARA		ARA	ART	ARA	ENG	ENG	ISL	SCE	MAT		ENG	ARA	CMP	PED	ENG	ARA	ISL	MAT		MAT	SCE	FRE	ARA	ISL	ENG	ARA	ENG		MAT	ENG	CMP	ARA	SCE	MAT	ARA	PED		6B	
SCE	ENG	ENG	ARA	MAT	FRE	PED	ARA		ARA	SCE	ENG	ISL	ARA	MAT	CMP	ENG		ISL	ENG	SCE	ARA	MAT	MAT	ARA	ENG		ART	ARA	SCE	ENG	CMP	ARA	MAT	ISL		ENG	ISL	ARA	FRE	PED	ENG	MAT	ARA		6C	
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SOS	ENG	ENG	ISL	SCE	MUS	ISL	MAT		MAT	CMP	ENG	ARA	FRE	PED	ENG	SCE		SOS	ENG	MAT	ISL	ENG	ART	ISL	SCE		SCE	ENG	PED	MAT	ISL	ARA	CMP	ENG		MAT	MAT	ISL	SOS	ISL	ENG	ENG	FRE	URD		6H
SCE	MAT	MAT	ISL	ENG	SOS	ISL	ENG		SOS	FRE	CMP	ARA	MAT	ENG	PED	ENG		ART	SCE	ENG	ISL	MUS	ENG	ISL	MAT		MAT	PED	ENG	SOS	ISL	ARA	ENG	SCE		ENG	ENG	ISL	SCE	ARA	FRE	CMP	MAT		6I	
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SCE	ENG	ARA	ENG	MAT	MAT	FRE	ISL		ARA	HIS	MAT	ENG	SCE	GEO	ENG	ISL		ISL	ARA	PED	ENG	SCE	CMP	MAT	SCE		SCE	MAT	ARA	ARA	HIS	ENG	ISL	FRE		ENG	GEO	CMP	MAT	PED	ARA	SCE	ARA		7B	













Butterfly Network



AUGMEDIX

RespondWell®

LEAGUE

TIDEPOOL

zipnosis

FLATIRON

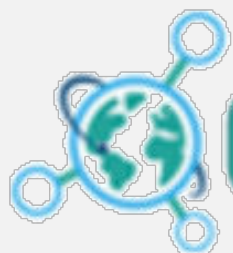
pager



BRIDGECREST
— MEDICAL —

AdhereTech 

mira⁺



CliniOps

 MedWand™
DIGITAL HEALTH

Twitter and Facebook could harm moral values

The Telegraph,
on Social Media

Twitter and Facebook could harm moral values

The Telegraph,
on Social Media

Google is making us stupid

The Atlantic,
on search engines and the
internet

**It will exhaust the children's
brains and nervous systems**

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brains and nervous systems**

The Sanitarian, 1883,
on school

**It will exhaust the children's
brains and nervous systems**

The Sanitarian, 1883,
on school

Confusing and harmful

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Conrad Gessner, 1565,
on the newspaper

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They will not use their memories

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They will not use their memories

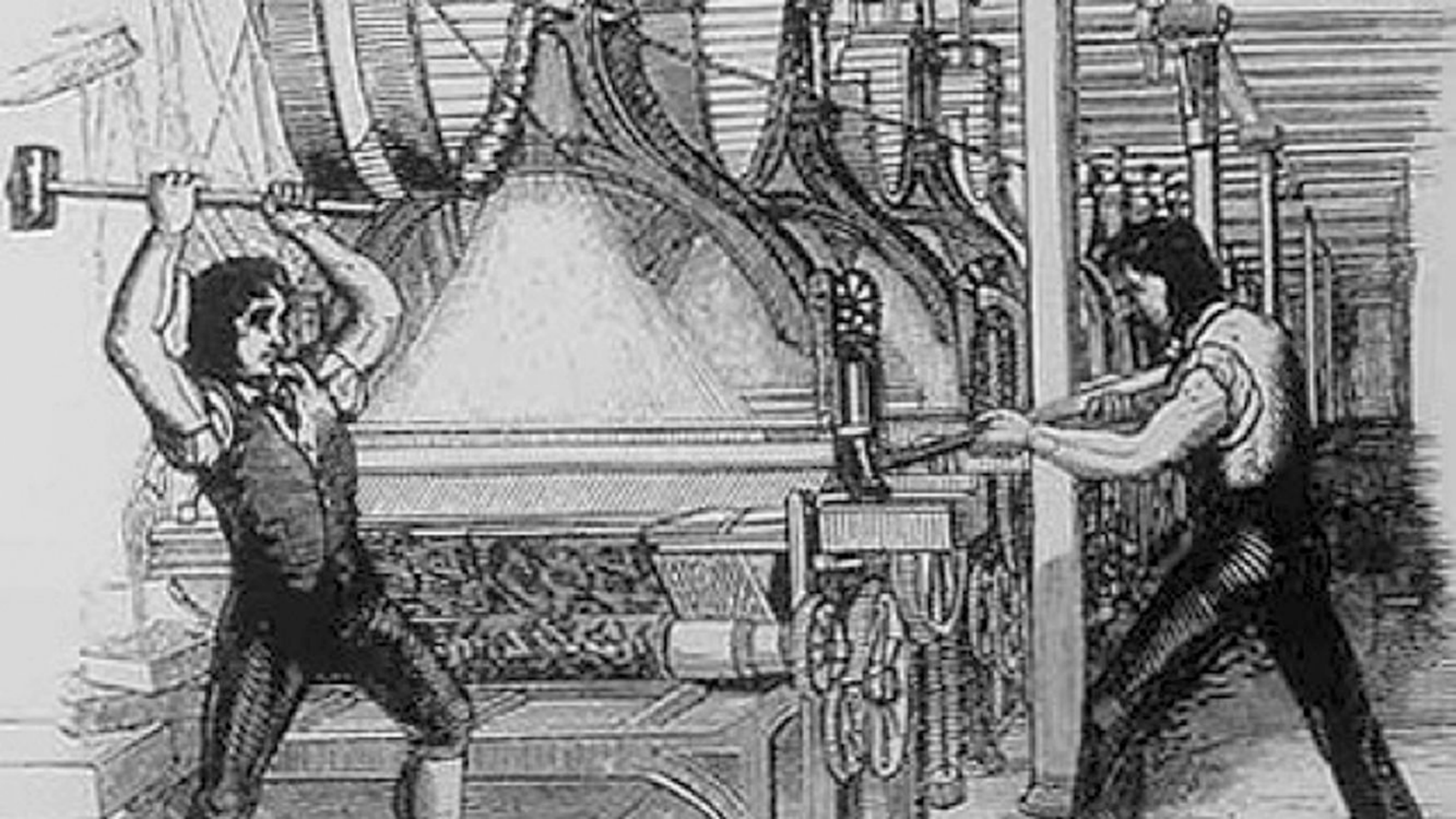
Socrates (recorded by Plato circa 370BC), on books

Disruption

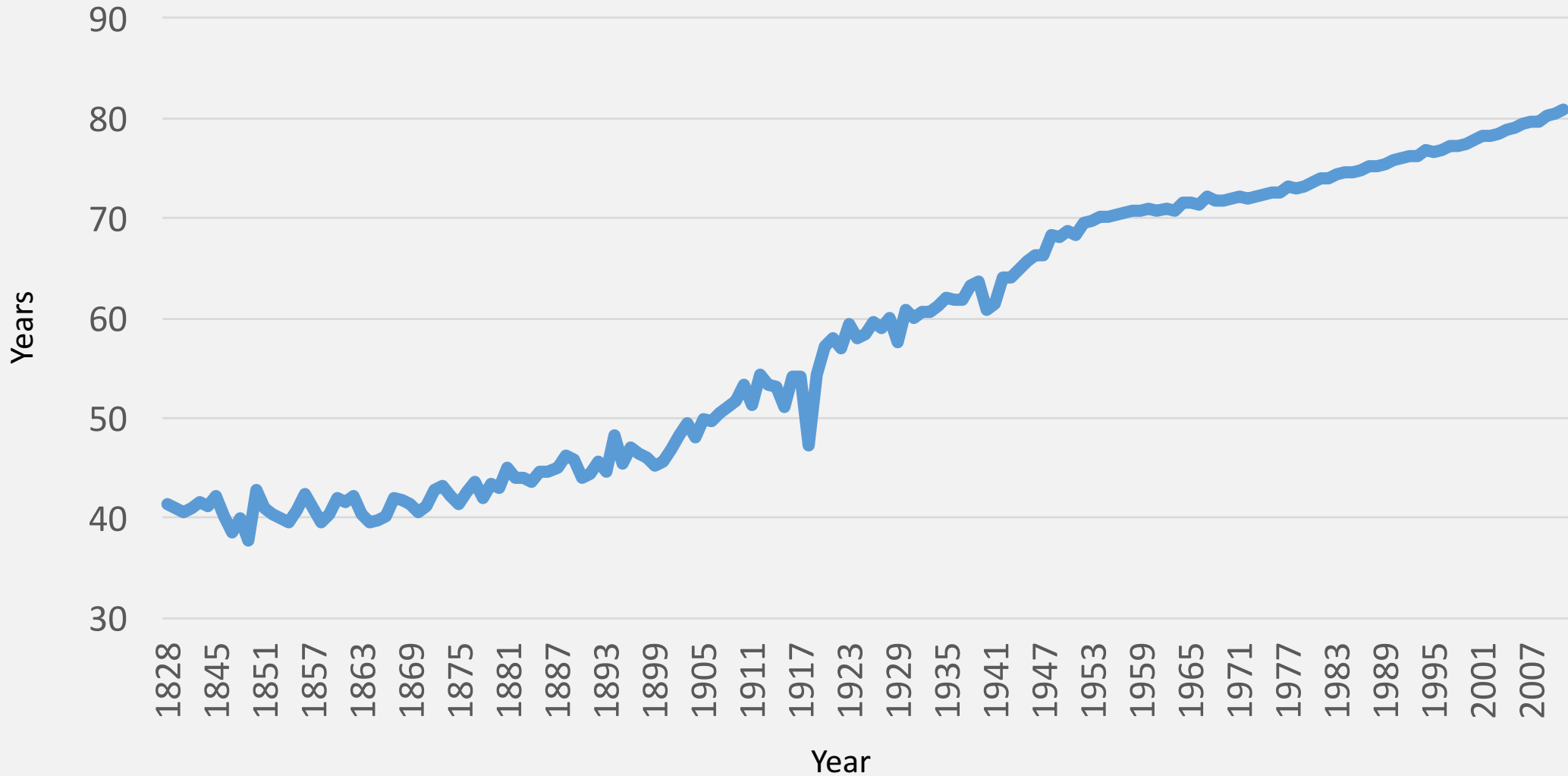
Apocalypse



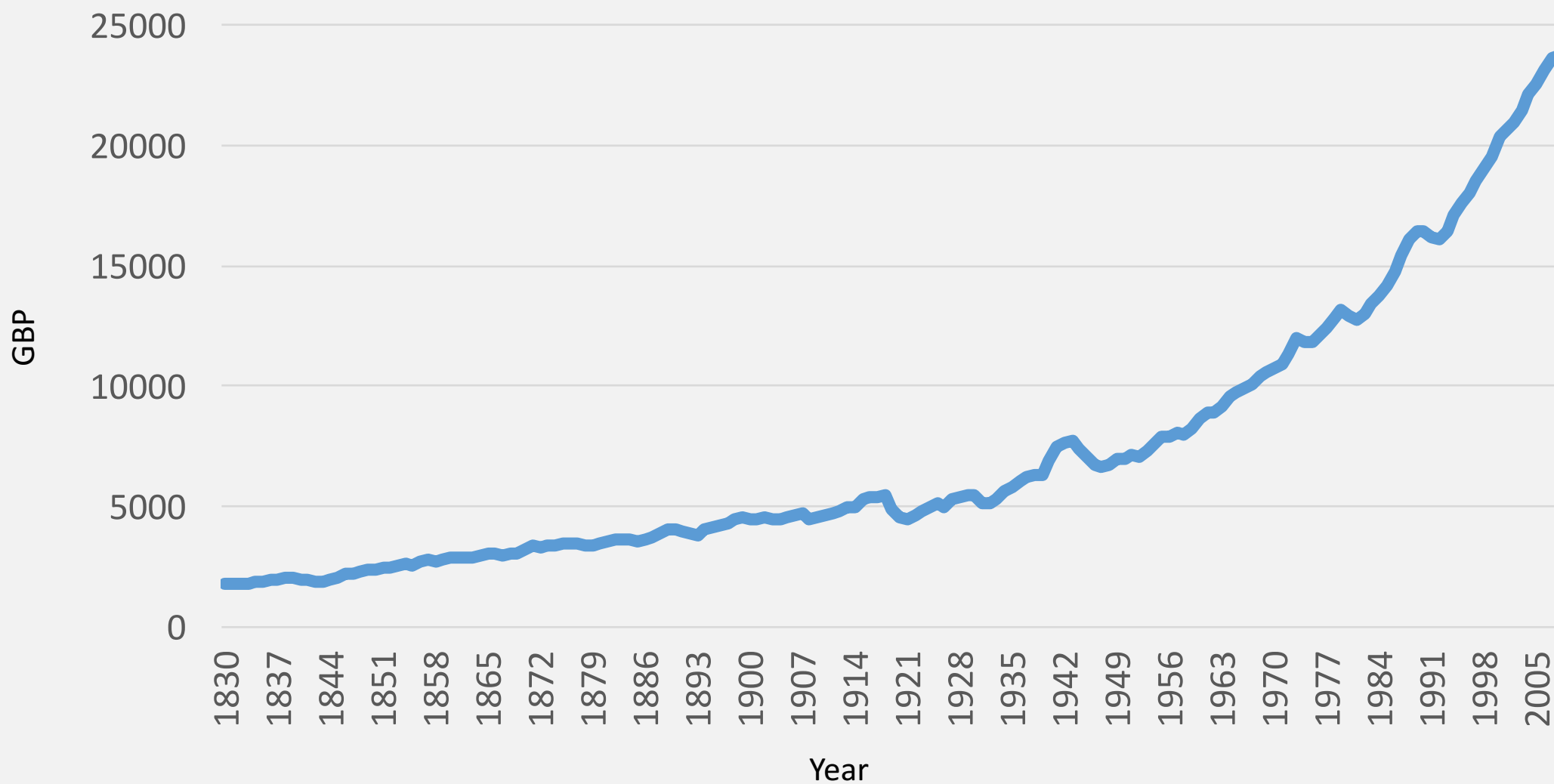
Apocalypse



Life Expectancy at Birth



GDP Per Capita



Robots add real value
when working with humans,
not replacing them.







SQL Tutor

http://132.181.10.22:8000/sql-tutor/respond-to-main-form - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites History

Address http://132.181.10.22:8000/sql-tutor/respond-to-main-form

SQL-Tutor Change Database New Problem History Student Model Run Query Help Log Out

Problem 3 Retrieve the name and address of all employees who work for the Research department

Select
From
Where
Group by
Having
Order by

Feedback Level Error Flag Submit Answer Reset

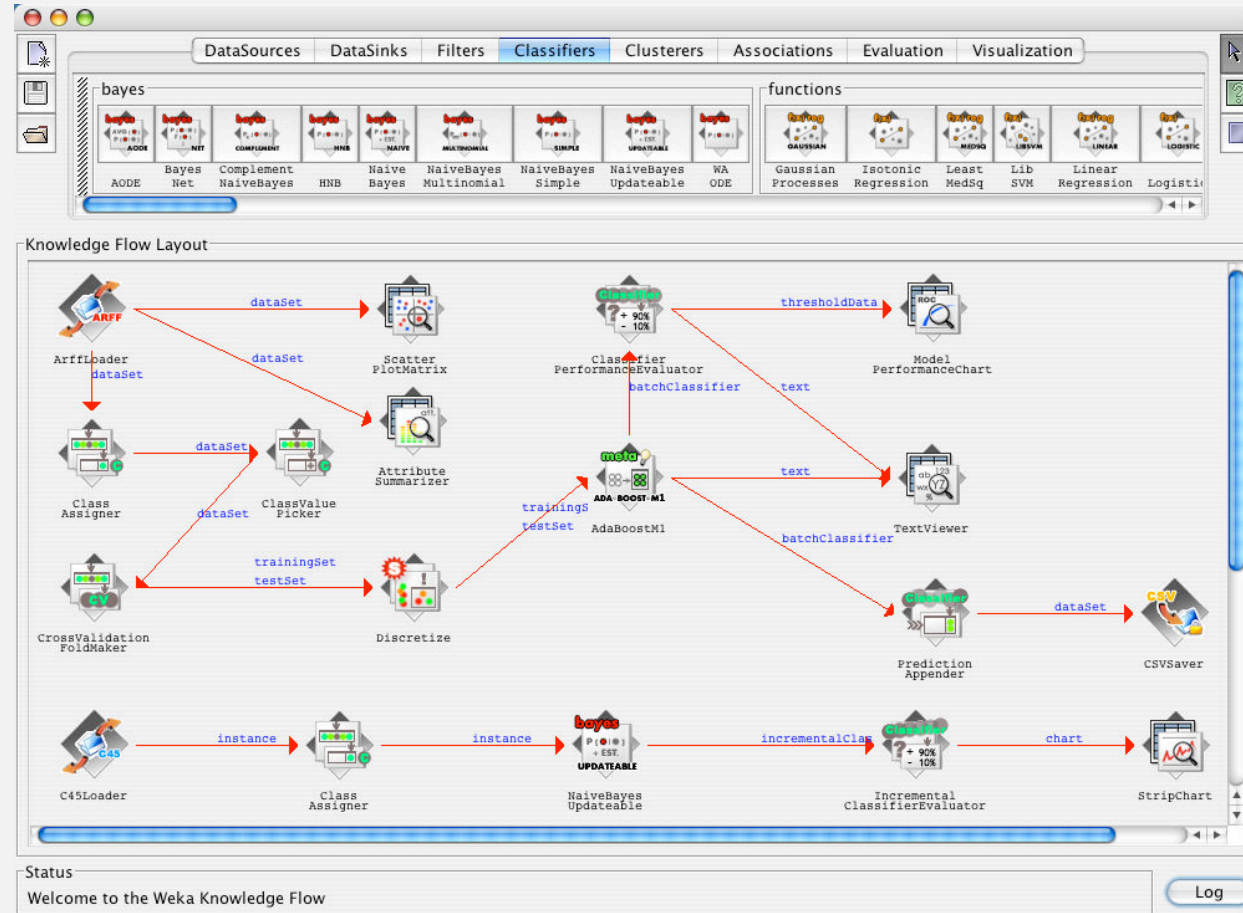
There are some errors in your solution, try again

Schema for the COMPANY Database

The general description of the database is available [here](#). Clicking on the name of a table brings up the table details. Primary keys in the attribute list are underlined, foreign keys are in *italics*.

Table name	Attribute list
DEPARTMENT	DNAME <u>DNUMBER</u> MGR MGRSTARTDATE
EMPLOYEE	<u>EMPID</u> LNAME MINIT FNAME BDATE ADDRESS SEX SALARY SUPERVISOR <i>DNO</i>
DEPT_LOCATIONS	<u>DNUMBER</u> LOCATION
PROJECT	PNAME <u>PNUMBER</u> PLOCATION <i>DNUM</i>
WORKS_ON	<i>EMPID</i> <i>PNO</i> HOURS
DEPENDENT	<i>EMPID</i> <i>DEPENDENT_NAME</i> SEX BDATE RELATIONSHIP

Done Internet



Robots are taking our jobs

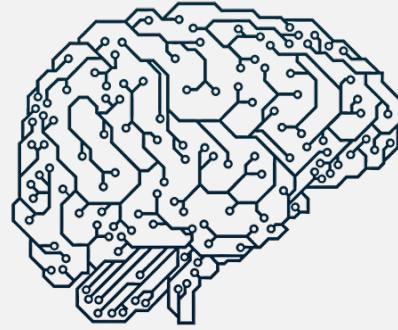
Robots are taking our jobs

They will do them better

Robots are taking our jobs

They will do them better

Everything will be OK



brain concept

**KEEP
CALM
AND
CARRY
ON**

>> Life After the Robot Apocalypse

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September 2016