人工智慧近期的應用及突破

大綱

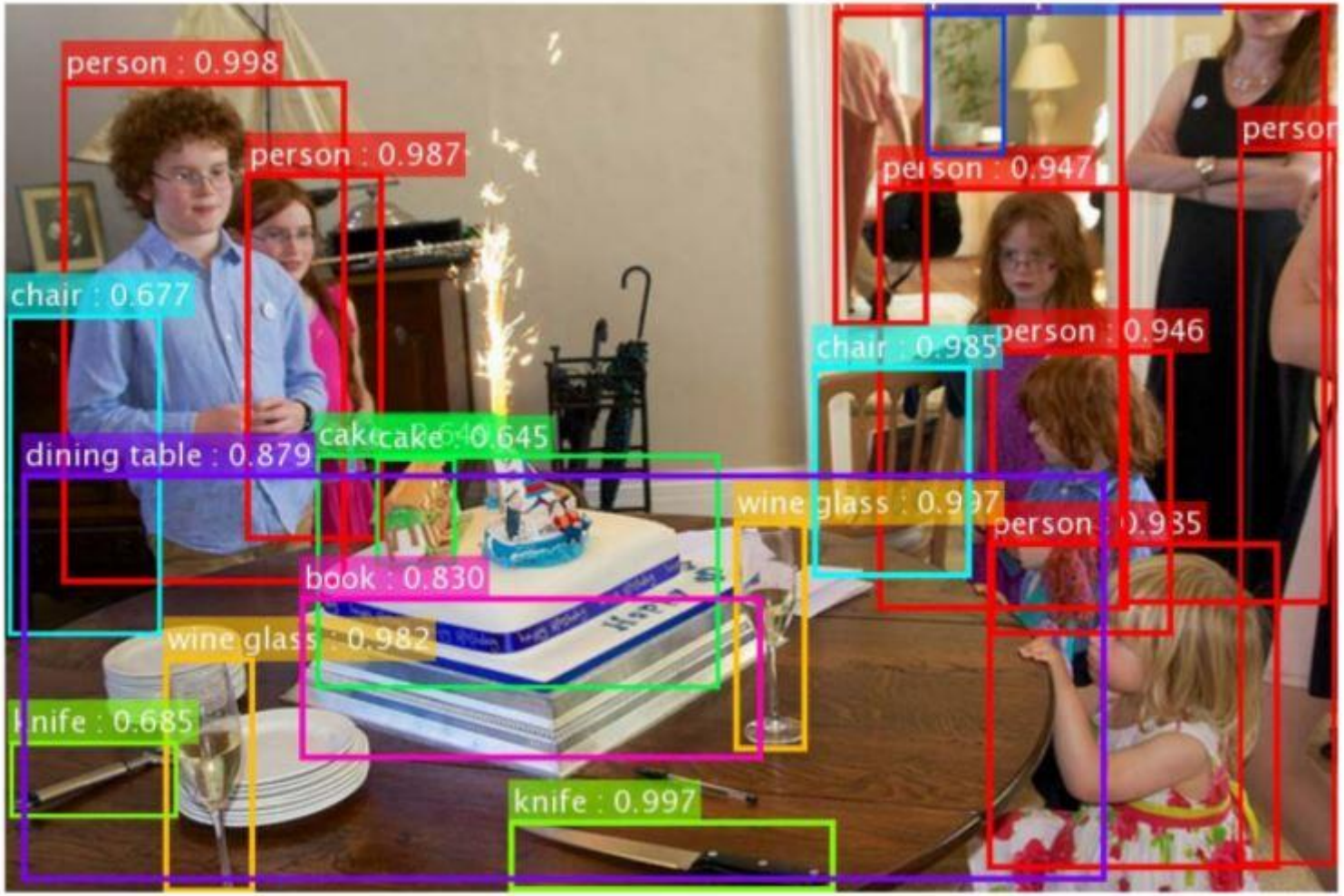
- 學術上近期的研究
- AI在各產業之應用

學術上近期的研究

- 影像辨識
  - 人臉偵測
  - 物件偵測
- 自然語言處理
  - 語意分析
  - 語言翻譯
- 聲音辨識
  - 語音辨識

還有很多應用……

物件偵測


person : 0.998
person : 0.987
chair : 0.677
dining table : 0.879
cake : 0.645
book : 0.830
wine glass : 0.982
knife : 0.685
knife : 0.997
person : 0.947
chair : 0.985
person : 0.946
wine glass : 0.937
person : 0.935

圖像描述

A woman is throwing a frisbee in a park.

A dog is standing on a hardwood floor.

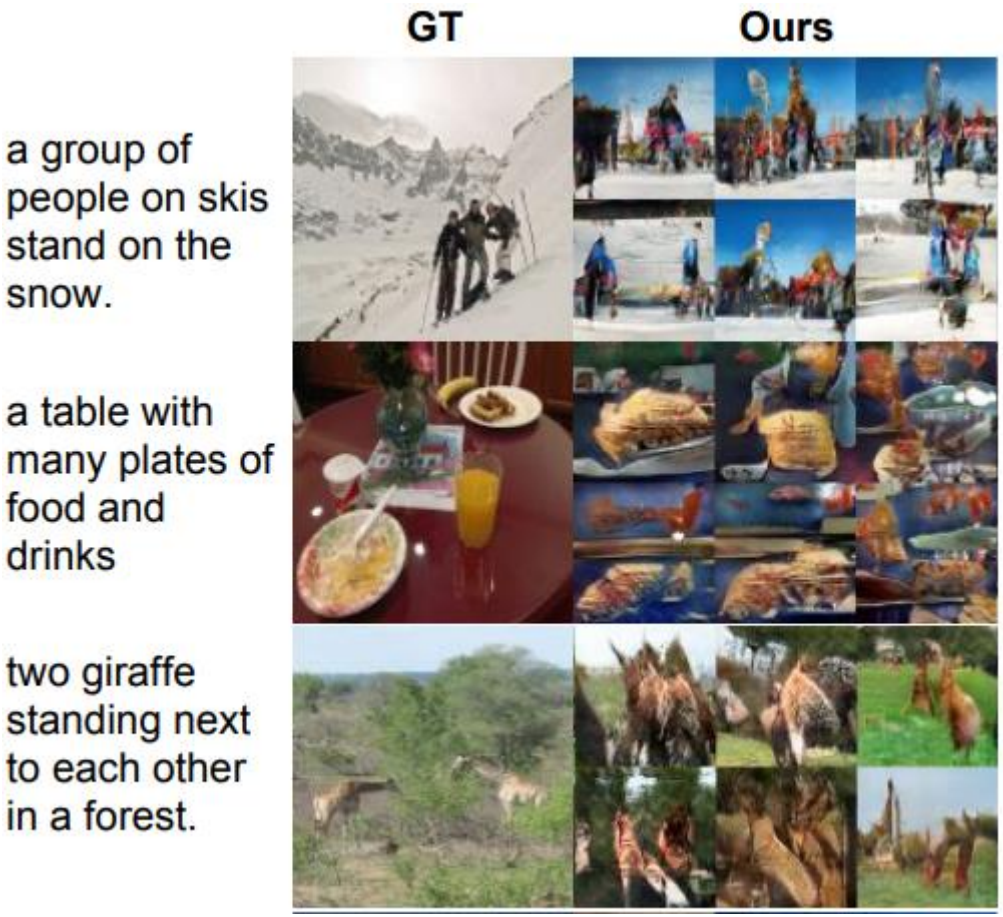
A stop sign is on a road with a mountain in the background.

A little girl sitting on a bed with a teddy bear.

A group of people sitting on a boat in the water.

A giraffe standing in a forest with trees in the background.

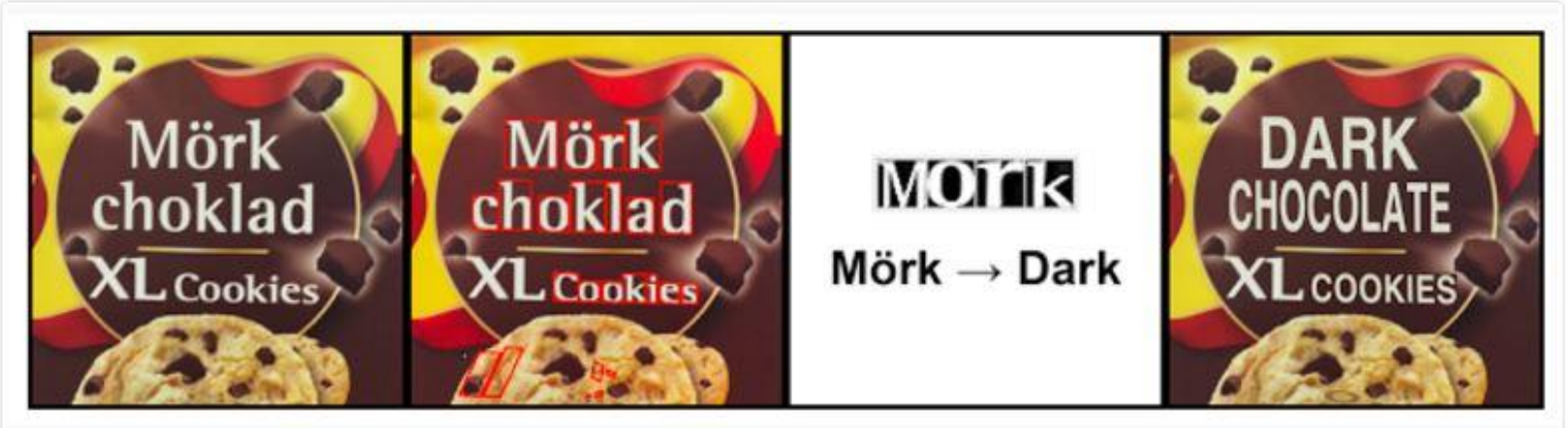
文字轉圖片


GT
Ours
a group of people on skis stand on the snow.
a table with many plates of food and drinks
two giraffe standing next to each other in a forest.

圖像風格遷移

圖像風格遷移

機器翻譯


Mörk
choklad
XL Cookies
Mörk
choklad
XL Cookies
Mörk → Dark
DARK
CHOCOLATE
XL COOKIES

文章產生器

```
PANDARUS:
Alas, I think he shall be come approached and the day
When little srain would be attain'd into being never fed,
And who is but a chain and subjects of his death,
I should not sleep.

Second Senator:
They are away this miseries, produced upon my soul,
Breaking and strongly should be buried, when I perish
The earth and thoughts of many states.

DUKE VINCENTIO:
Well, your wit is in the care of side and that.

Second Lord:
They would be ruled after this chamber, and
my fair nues begun out of the fact, to be conveyed,
Whose noble souls I'll have the heart of the wars.

Clown:
Come, sir, I will make did behold your worship.

VIOLA:
I'll drink it.
```

文章產生器

```
/*
 * Increment the size file of the new incorrect UI_FILTER group information
 * of the size generatively.
 */
static int indicate_policy(void)
{
  int error;
  if (fd == MARN_EPT) {
    /*
     * The kernel blank will coeld it to userspace.
     */
    if (ss->segment < mem_total)
      unblock_graph_and_set_blocked();
    else
      ret = 1;
    goto bail;
  }
  segaddr = in_SB(in.addr);
  selector = seg / 16;
  setup_works = true;
  for (i = 0; i < blocks; i++) {
    seq = buf[i++];
    bpf = bd->bd.next + i * search;
    if (fd) {
      current = blocked;
    }
  }
  rw->name = "Getjbbregs";
  bprm_self_clearl(&iv->version);
  regs->new = blocks[(BPF_STATS << info->historidac)] | PFMR_CLOBATHINC_SECONDS << 12;
  return segtable;
}
```

文章產生器(以金庸小說為例)

楊是“”過是道“是不，”：”是道“：“過一了。是
“是：”：”“是不是，過是是，”““：：是：”“不一不，”：：
“：過：”過一，“：：是：“““不不，過一一一，“”過是，過是
不，過道是一一，“““過不的不一，”“““是道過一。“是：是是不，
“是不是一，”是：：過一，“”是是是，“：“”過一了的，“是：：
“““是：“““是：是道“：“是是，“““：”””“是是是一。是不一
一。過：“““道過，”過是是一。”：：過道”“：是“：“是一不，
是“是道：是一，“是是道是是不，“是一，是不不，“是道”道是是
一。是

Epoch = 1

文章產生器(以金庸小說為例)

楊過不住，只不是他們，但不能不能是他。” 楊過道：“這位你這一句話們，不知是我不能，你也要不知不會，但不知你們的。” 郭襄道：“我們一聲不是你？” 楊過道：“那麼！”楊過笑道：“好啊，你是你這一人，我不是他的的。” 楊過道：“我……這是你，我是這一個人的一個，我便是不能。” 小龍女道：“你不能再不知你，我們們們的不是你。” 楊過笑想：“那是他一句話來，我不是不能好，你不是我？我不肯跟他說，我也不肯跟你。”黃蓉道：“你們這般好好。你說我不是？你不知不會。”郭芙道：“你說到我？”黃藥師道：“你說到我們

Epoch = 5

文章產生器(以金庸小說為例)

楊過一燈大師，也不知這兩個字，就算他一起去。” 楊過聽得“啊”的一聲，臉色大亂。楊過笑嘻的道：“我不知道，那也不是不錯？”楊過微微一笑，說道：“你師父和我相見，那也不敢說話。” 黃蓉微微一笑，叫道：“你們在那里去了？”黃蓉道：“我不肯說的，我要去瞧瞧，你也要去了！我說甚麼？”郭靖笑了起來，道：“這是你的孩子，不是你的，你便去啦。” 楊過心想：“我不知是我姑姑，我自然不知。”說著又道：“你們不肯再說，他就要去。” 楊過一驚，問道：“我是誰？”楊過道：“你不知道。” 楊過道：“我不知道，我也就算得了。”

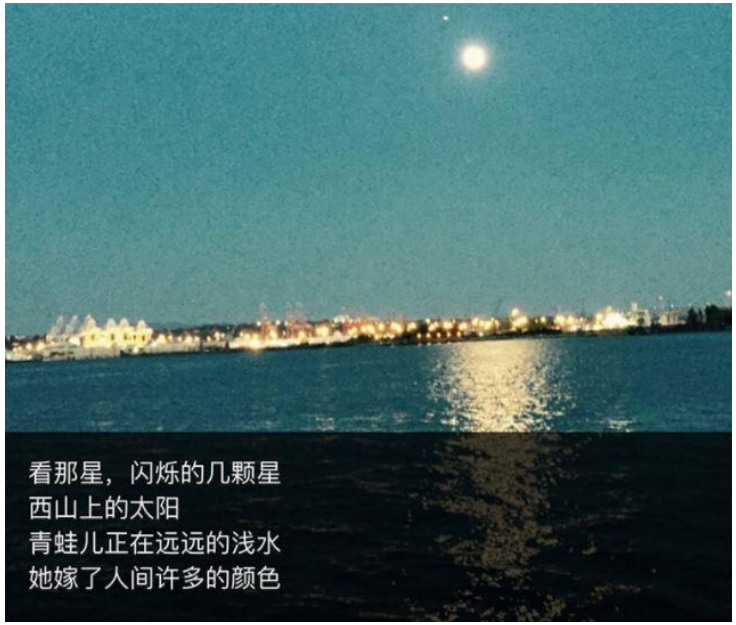
Epoch = 20

文章產生器(以金庸小說為例)

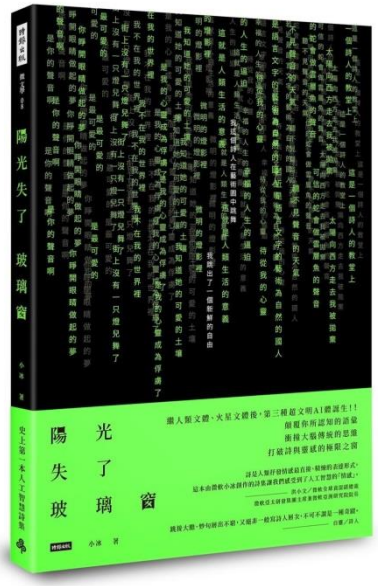
楊“哥，他越自言還。” 黃蓉一怔，一時不暇細想。郭靖與黃蓉夫婦說起郭靖，黃蓉及孩，是以心存一縱的敬意而已。郭芙道：“過兒，你也知道。我和小龍女重赴大事，小妹已在古墓中住不了幾年，這時再來助告。”公孫止一生心情，心中一動：“終南山一時尚未明白，但我一生孤苦，若是出言誘他治愈致功夫的情由，何以我一刻不死？而我自己也是難以挽到，又說你聰明過約，我也不想活了？” 郭芙大叫：“姑姑！” 楊過伸手接住，笑道：“你瞧，我也不用聽見麼？”郭芙道：“你說我有甚麼不好？” 小龍女一呆，道：“我媽媽這般說，我也決意要

Epoch = 100

AI產生新詩



Microsoft 小冰



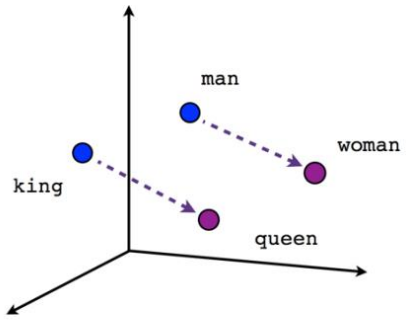
AI詩集

https://webapps.msxiaobing.com/V3/Portal?task=poem

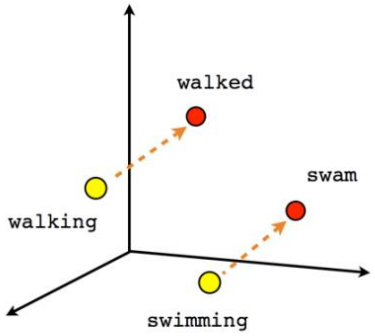
更多文章產生器

- 產生假的數學文件
  - https://cs.stanford.edu/people/jcjohns/fake-math/4.pdf
- 產生小孩英文名稱
  - https://cs.stanford.edu/people/karpathy/namesGenUnique.txt

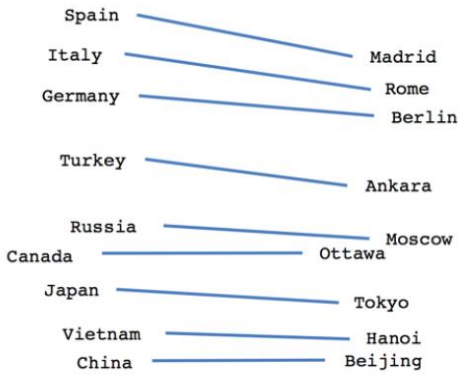
文字轉向量



Male-Female



Verb tense



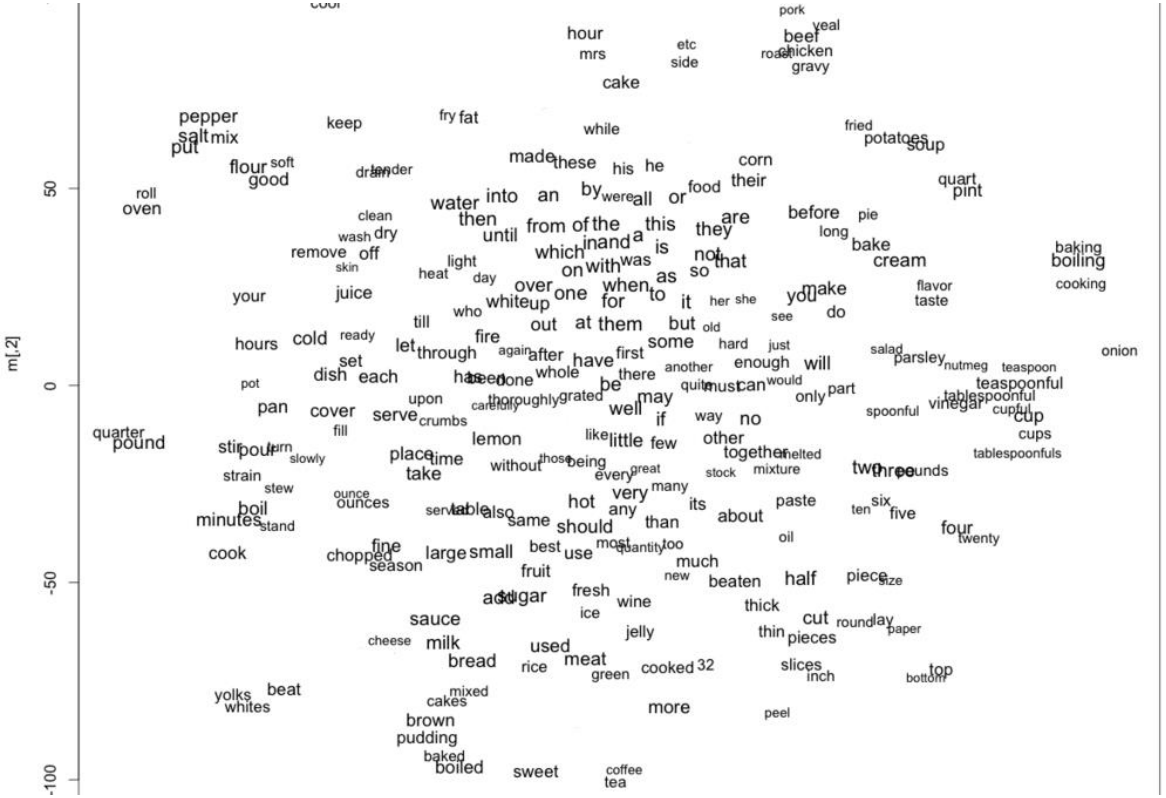
Country-Capital

vector(king) – vector(queen) = vector(man) – vector(woman)

vector(walking) – vector(walked) = vector(swimming) – vector(swam)

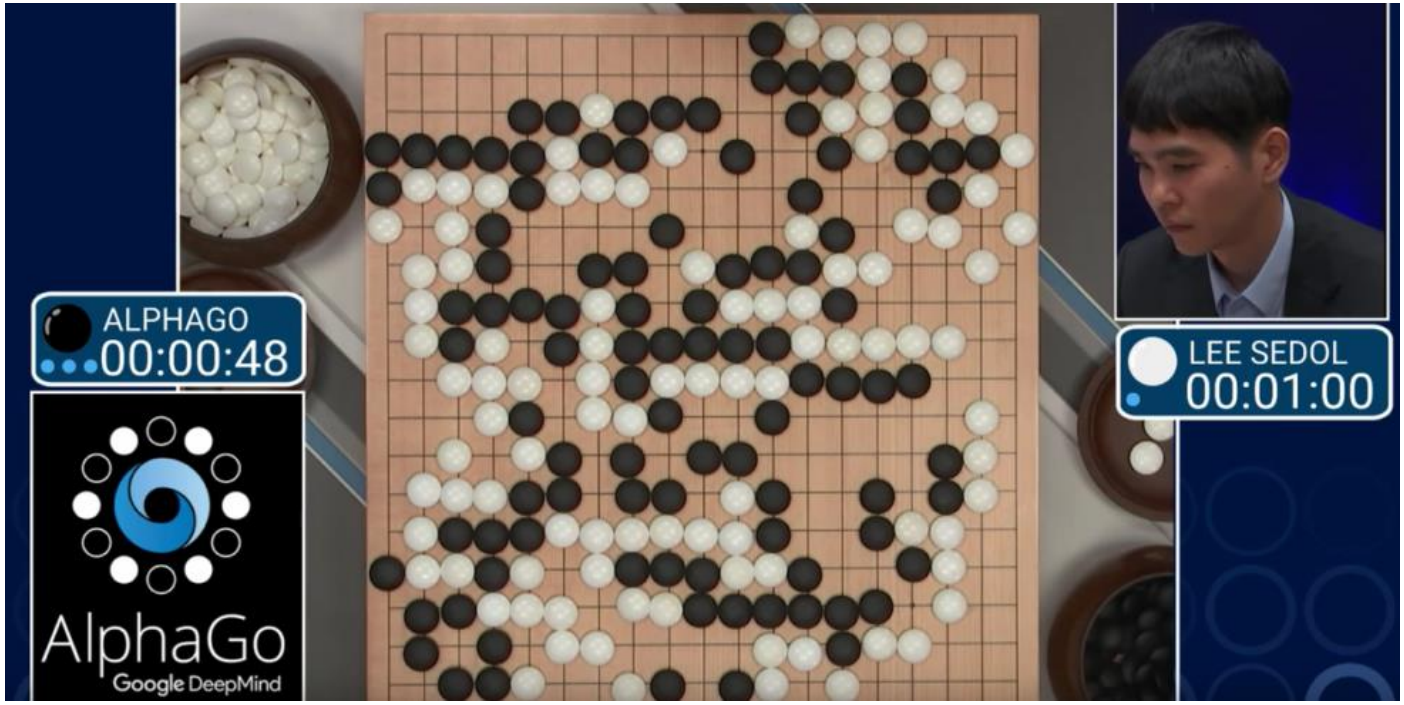
vector(Spain) – vector(Italy) = vector(Madrid) – vector(Rome)

文字轉向量



m[,2]
50
0
-50
-100
hour
mrs
etc
side
cake
pork
veal
beef
chicken
gravy
pepper
salt
mix
put
keep
fry
fat
while
fried
potatoes
soup
flour
soft
good
made
these
his
he
corn
their
quart
pint
roll
oven
water
into
an
by
were
all
or
food
clean
then
from
of
the
this
they
are
before
pie
long
wash
dry
until
inand
a
is
not
that
bake
cream
baking
boiling
remove
off
which
was
so
skin
light
heat
day
on
with
as
over
when
to
make
flavor
taste
cooking
your
juice
one
for
it
her
she
you
who
white
up
see
do
till
out
at
them
but
old
hours
cold
ready
fire
some
hard
just
salad
parsley
nutmeg
teaspoon
onion
let
through
again
after
have
first
enough
will
set
dish
each
whole
there
another
would
teaspoonful
pot
be
must
can
only
part
tablespoonful
upon
thoroughly
grated
may
vinegar
cupful
pan
cover
serve
well
if
way
no
spoonful
cup
quarter
pound
fill
crumbs
lemon
like
little
few
other
cups
stir
pour
turn
slowly
place
time
without
those
being
together
melted
tablespoonfuls
strain
take
every
great
stock
mixture
two
three
pounds
stew
ounce
ounces
very
many
boil
hot
its
paste
ten
six
five
minutes
stand
also
same
should
any
than
about
four
twenty
oil
cook
fine
chopped
large
small
best
use
most
quantity
too
much
season
fruit
new
beaten
half
piece
size
add
sugar
fresh
wine
thick
ice
sauce
cut
round
lay
paper
cheese
milk
jelly
thin
pieces
used
bread
rice
meat
green
cooked
32
slices
inch
top
bottom
yolks
beat
whites
mixed
cakes
more
peel
brown
pudding
baked
boiled
sweet
coffee
tea

AlphaGo圍棋軟體

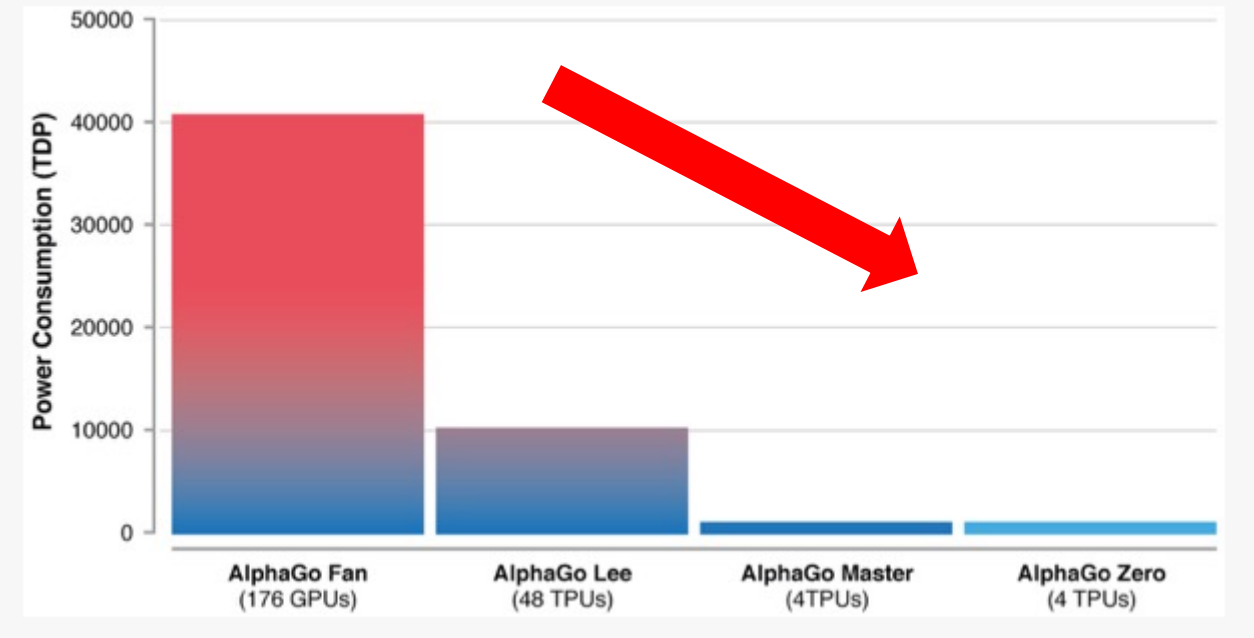


AlphaGo Zero

- AlphaGo zero是2017/10/18所釋出新版本之AlphaGo

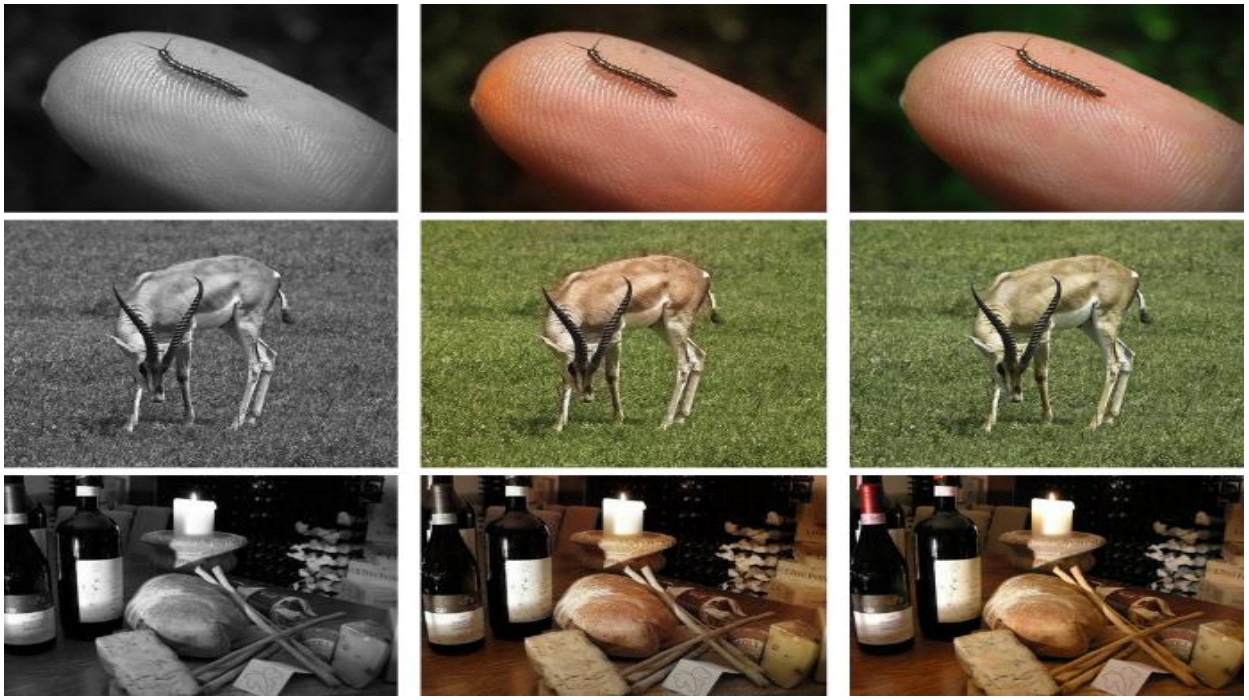
只花40天自學就把前面所有版本之Alphago打敗

AlphaGo Zero



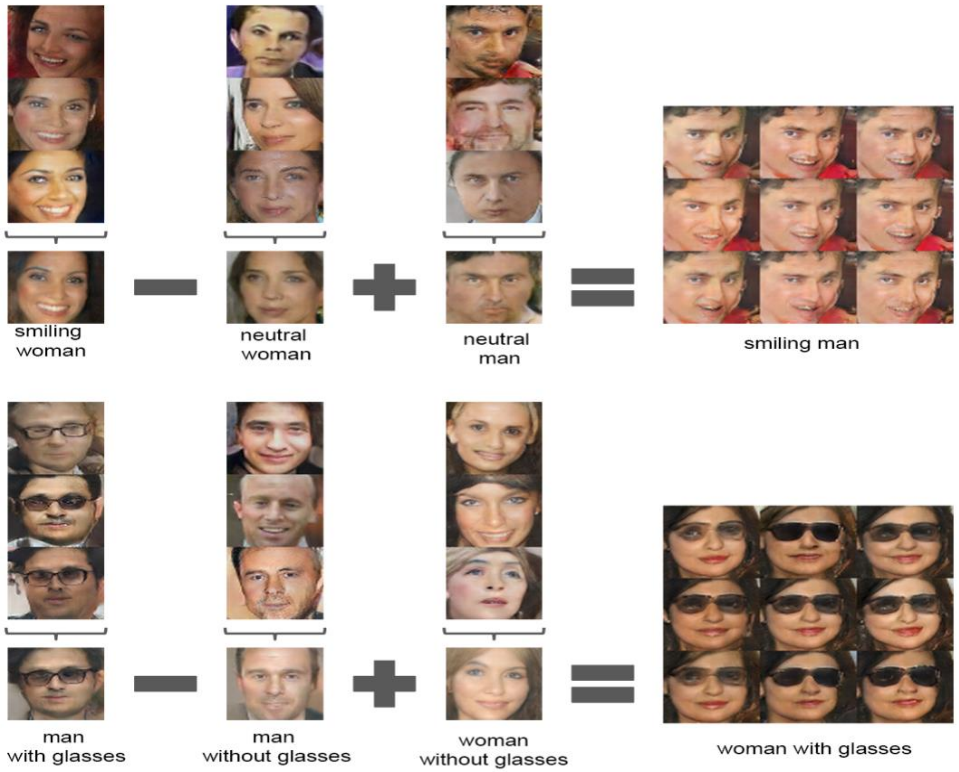
樊麾(2015/10)　李世乭(2016/03)　柯潔(2017/05)　(2017/10)

AI自動上色



產生假照片

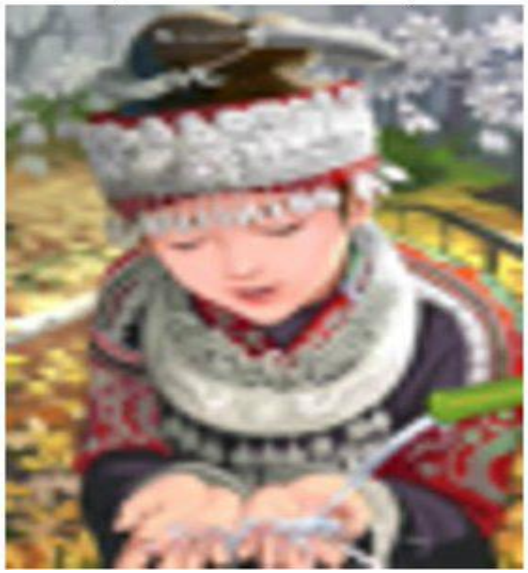
照片類推


smiling woman
neutral woman
neutral man
smiling man
man with glasses
man without glasses
woman without glasses
woman with glasses

超分辨率

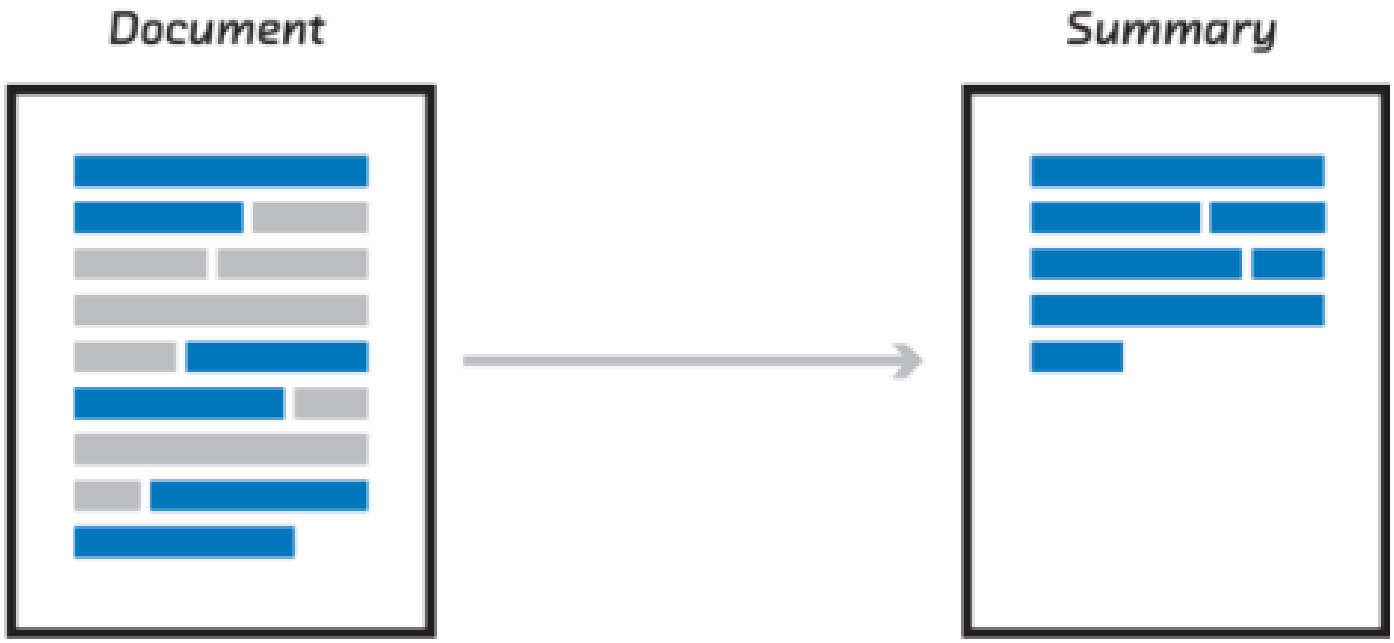
original

bicubic
(21.59dB/0.6423)



SRGAN
(20.34dB/0.6562)

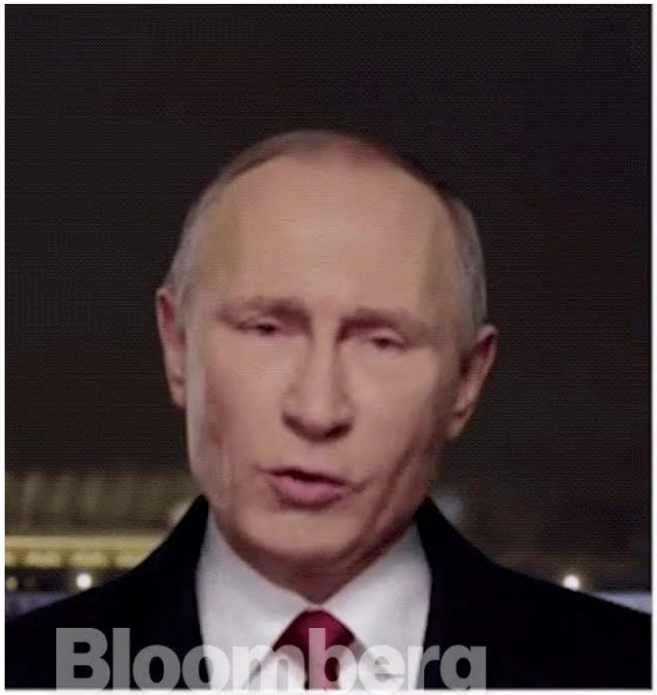
文章總結



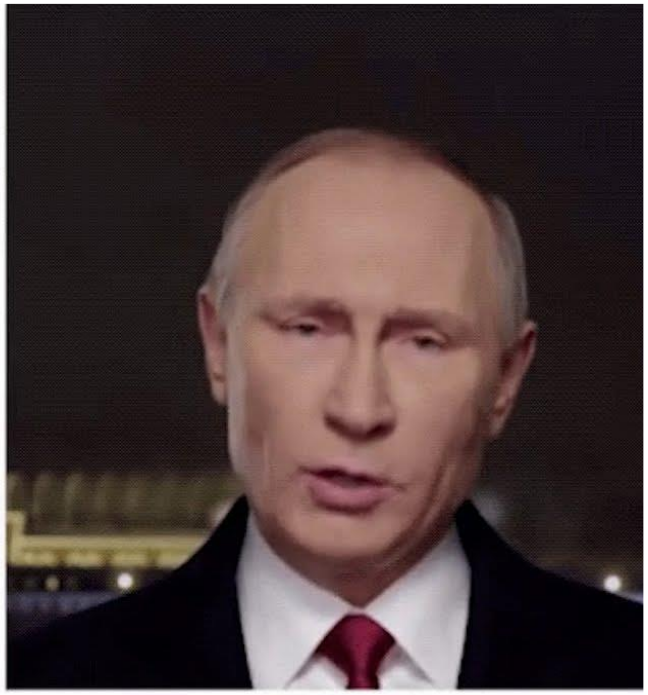
文章總結

Input: Article 1st sentence	Model-written headline
metro-goldwyn-mayer reported a third-quarter net loss of dlrs 16 million due mainly to the effect of accounting rules adopted this year	mgm reports 16 million net loss on higher revenue
starting from july 1, the island province of hainan in southern china will implement strict market access control on all incoming livestock and animal products to prevent the possible spread of epidemic diseases	hainan to curb spread of diseases
australian wine exports hit a record 52.1 million liters worth 260 million dollars (143 million us) in september, the government statistics office reported on monday	australian wine exports hit record high in september

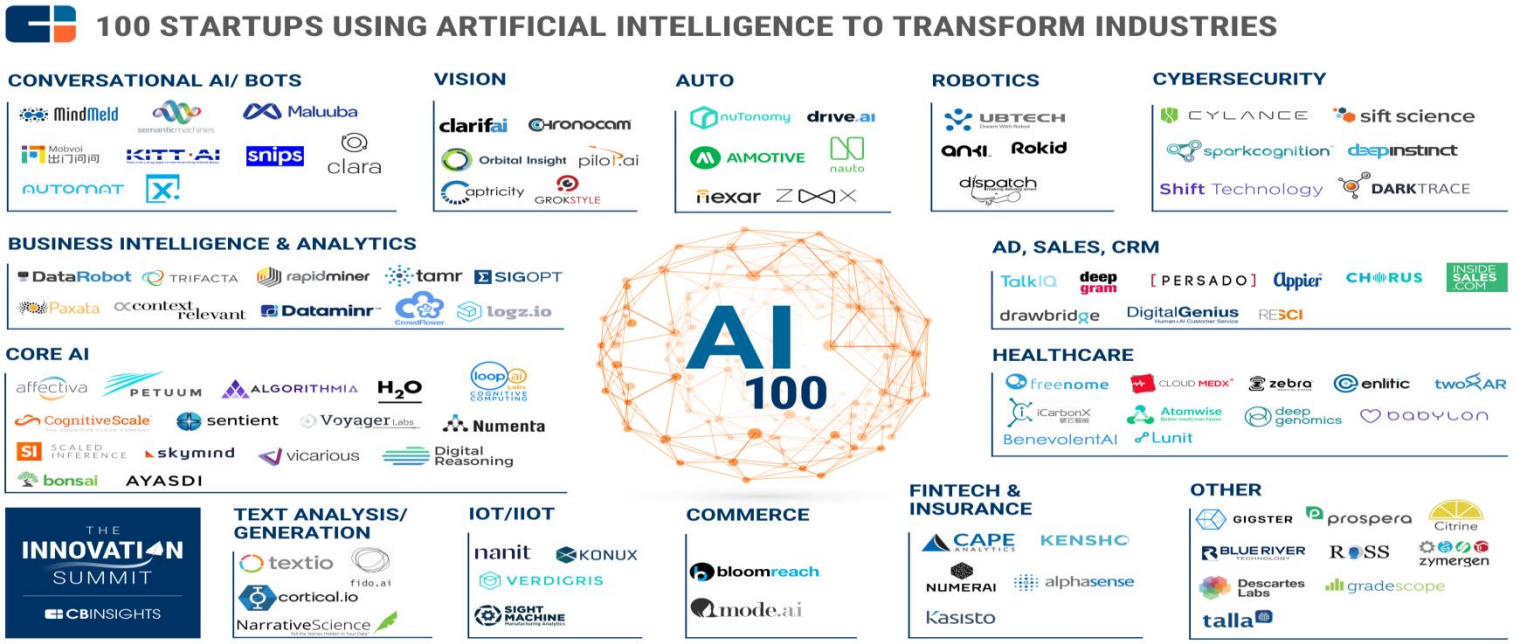
Deep Fake



Reference

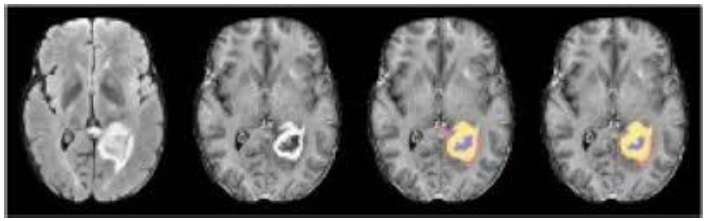

Our Result

AI新創


100 STARTUPS USING ARTIFICIAL INTELLIGENCE TO TRANSFORM INDUSTRIES
CONVERSATIONAL AI/ BOTS
MindMeld
semantic machines
Maluuba
Mobvoi 出门问问
KITT.AI
snips
clara
AUTOMAT
VISION
clarifai
Chronocam
Orbital Insight
pilot.ai
Captricity
GROKSTYLE
AUTO
nuTonomy
drive.ai
AIMOTIVE
nauto
nexar
ROBOTICS
UBTECH
anki
Rokid
dispatch
CYBERSECURITY
CYLANCE
sift science
sparkcognition
deepinstinct
Shift Technology
DARKTRACE
BUSINESS INTELLIGENCE & ANALYTICS
DataRobot
TRIFACTA
rapidminer
tamr
SIGOPT
Paxata
context relevant
Dataminr
logz.io
CORE AI
affectiva
PETUUM
ALGORITHMIA
H2O
loop ai
CognitiveScale
sentient
Voyager Labs
Numenta
SCALED INFERENCE
skymind
vicarious
Digital Reasoning
bonsai
AYASDI
AI 100
AD, SALES, CRM
TalkIQ
deep gram
[PERSADO]
Qppier
CHORUS
INSIDE SALES .COM
drawbridge
DigitalGenius
RESCI
HEALTHCARE
freenome
CLOUD MEDX
zebra
enlitic
twoXAR
ICarbonX
Atomwise
deep genomics
BabyLon
BenevolentAI
Lunit
THE INNOVATION SUMMIT
CBINSIGHTS
TEXT ANALYSIS/ GENERATION
textio
fido.ai
cortical.io
NarrativeScience
IOT/IIOT
nanit
KONUX
VERDIGRIS
SIGHT MACHINE
COMMERCE
bloomreach
mode.ai
FINTECH & INSURANCE
CAPE ANALYTICS
KENSHO
NUMERAI
alphasense
Kasisto
OTHER
GIGSTER
prospera
Citrine
BLUERIVER
ROSS
zymergen
Descartes Labs
gradescope
talla

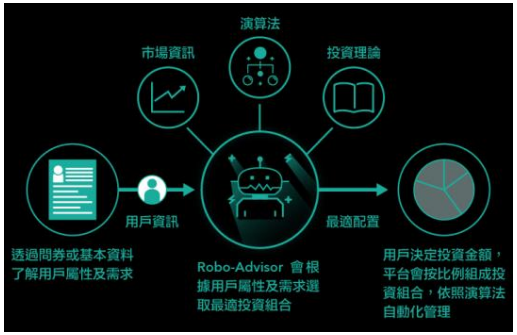
AI在各領域之應用

修圖軟體



醫療影像辨識

人臉支付



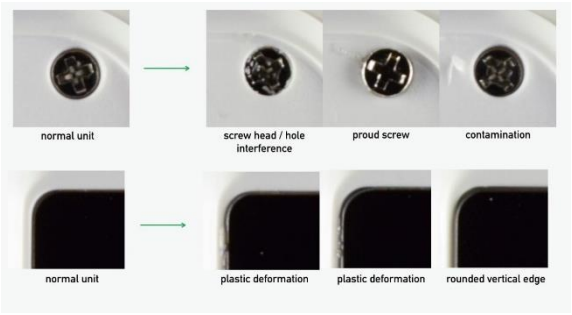
機器人理財

AI在各領域之應用

四軸飛行器

精準行銷

貼身廣告快狠準、花小錢也能經營客戶關係



AOI瑕疵偵測

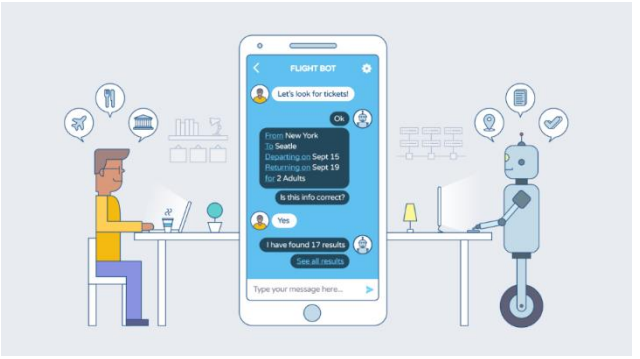
語音助理

AI在各領域之應用

生物辨識

資訊安全

保險理賠

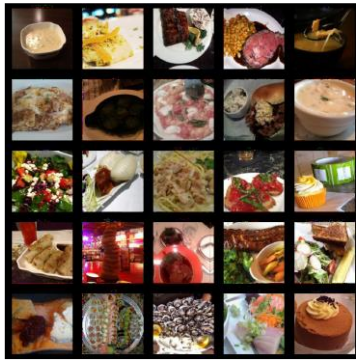


聊天機器人

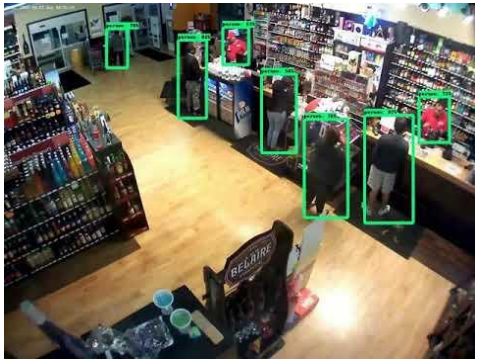
AI在各領域之應用

光學字元辨識

聲音辨識



食物辨識



人流偵測

AI在各領域之應用

紡織顏色配方分析

香味分析

搜尋引擎優化

動作分析

AI產品介紹-Google Len

- Google所開發之Android APP
  - 可以辨識植物、動物、著名餐廳、著名景點等

AI產品介紹-Amazon echo

AI產品介紹- Apple Siri

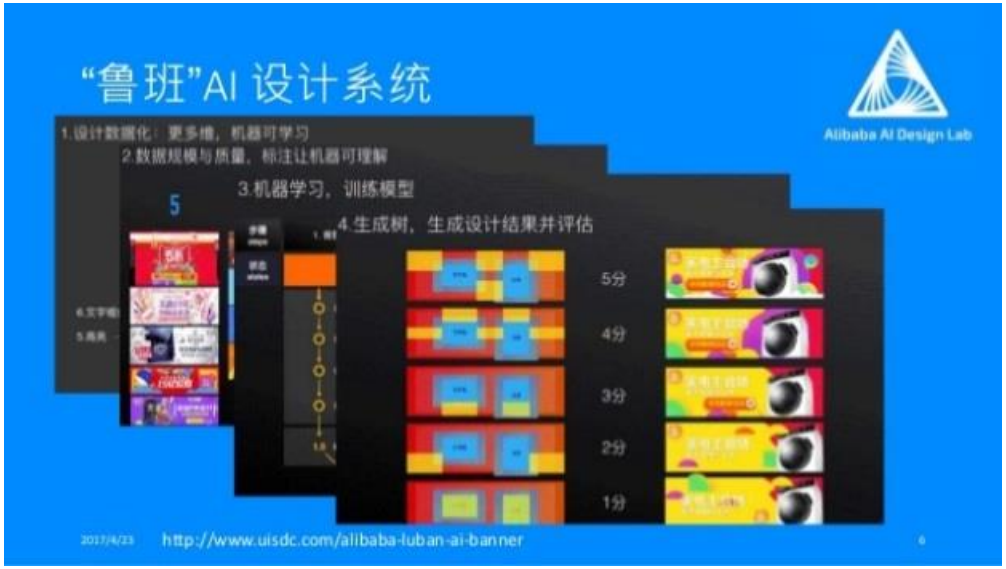
AI產業分析-汽車業

自駕車

AI產業分析-安控產業

智能安控系統

AI產業分析-設計業



阿里巴巴開發的“魯班”系統

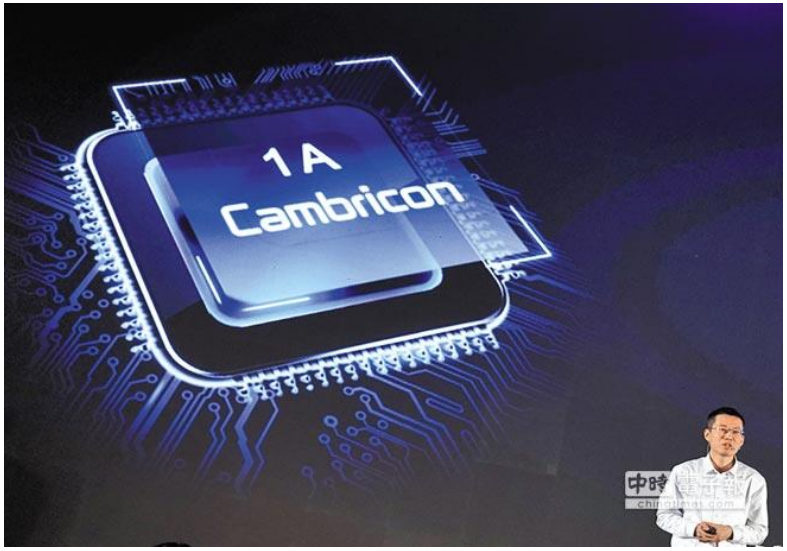
AI産業分析-教育業

AI產業分析-娛樂業

AI STARS

虛擬偶像

AI產業分析-IC設計業



AI晶片

AI產業分析-人資領域

AI選才

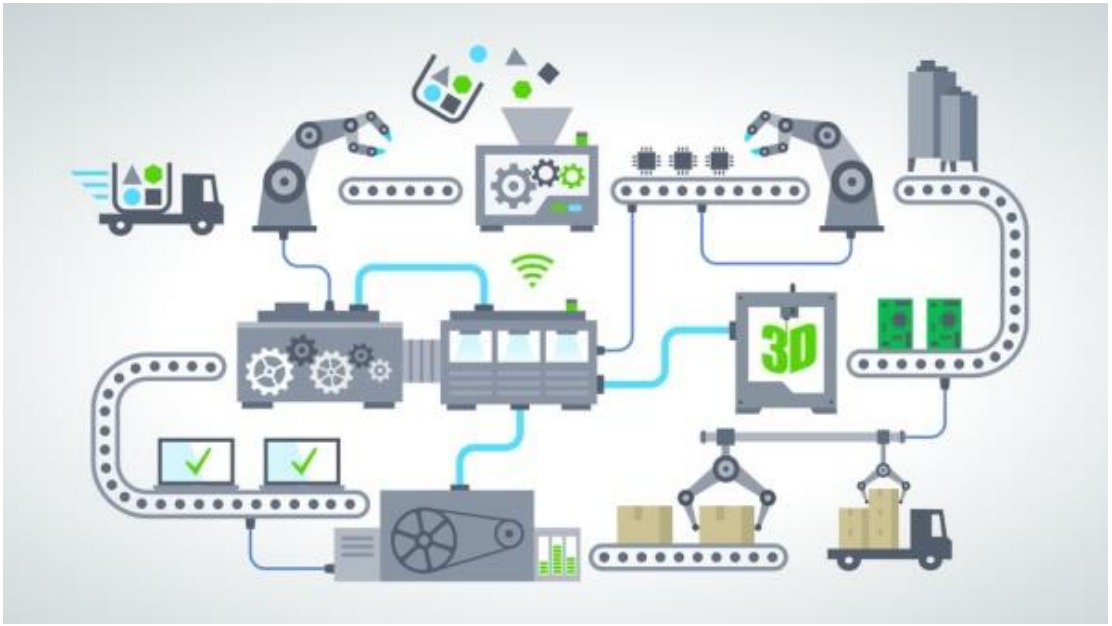
AI產業分析-零售業

無人超商

AI產業分析-金融業

金融數據分析

AI產業分析-製造業



智慧工廠