

# 臺北市立大學演講-2021-11-09-演講

## 數學系背景要如何做個稱職的資料科學家

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### 自我介紹：

- 王季豪
- 中央大學數學系 → 中央大學數學系碩博士

$$ax^2 + bx + c = 0 \text{ 求 } x = ?$$



數學小王子 高斯

- 
- 
- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後

賽局理論：

	小王 不出賣 小明	小王 出賣 小明
小明 不出賣 小王	小明小王都關1年	小王 不用關 小明 被關 10 年
小明 出賣 小王	小明 不用關 小王 被關 10 年	小明小王都關10年

- 
- 
- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後 → 美商寶蘊凌科公司  
資料科學家

**Computing the Future of AI**

We help businesses leverage AI with machine learning from cloud to edge

**Vision AI Platform**

Linker Networks AI-based auto-labeling technology has proved to take annotation efficiency and reliability to a whole new level.

[Learn more >>](#)

**Auto-Labeling Platform**

The Future of Intelligent Workplace Safety. Linker Networks has developed an AI-powered worker safety system that helps prevent workplace injury 24/7.

[Learn more >>](#)

### AI Visualization

Linker's web-based visualization AI platform is purposefully made simple, user-friendly, and off-the-shelf accessible. We want customers to be able to use Linker solution and have it up and running in a day, even if they don't have data scientists on staff.

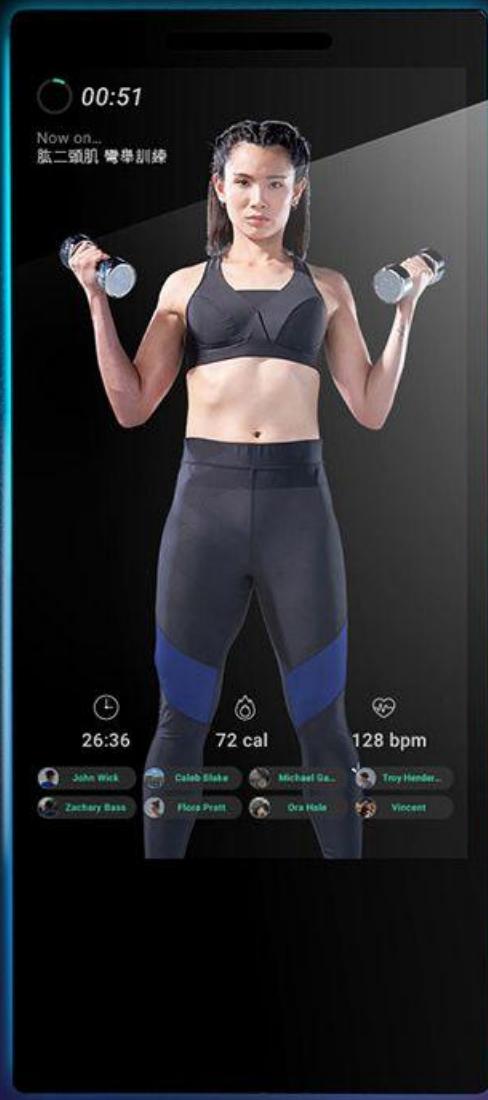
- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後 → 美商寶蘊凌科公司  
資料科學家 → 喬山健康科技公司主任工程師

# NEW!! 新概念 健身魔鏡

動態感知

自由隨選

即時互動

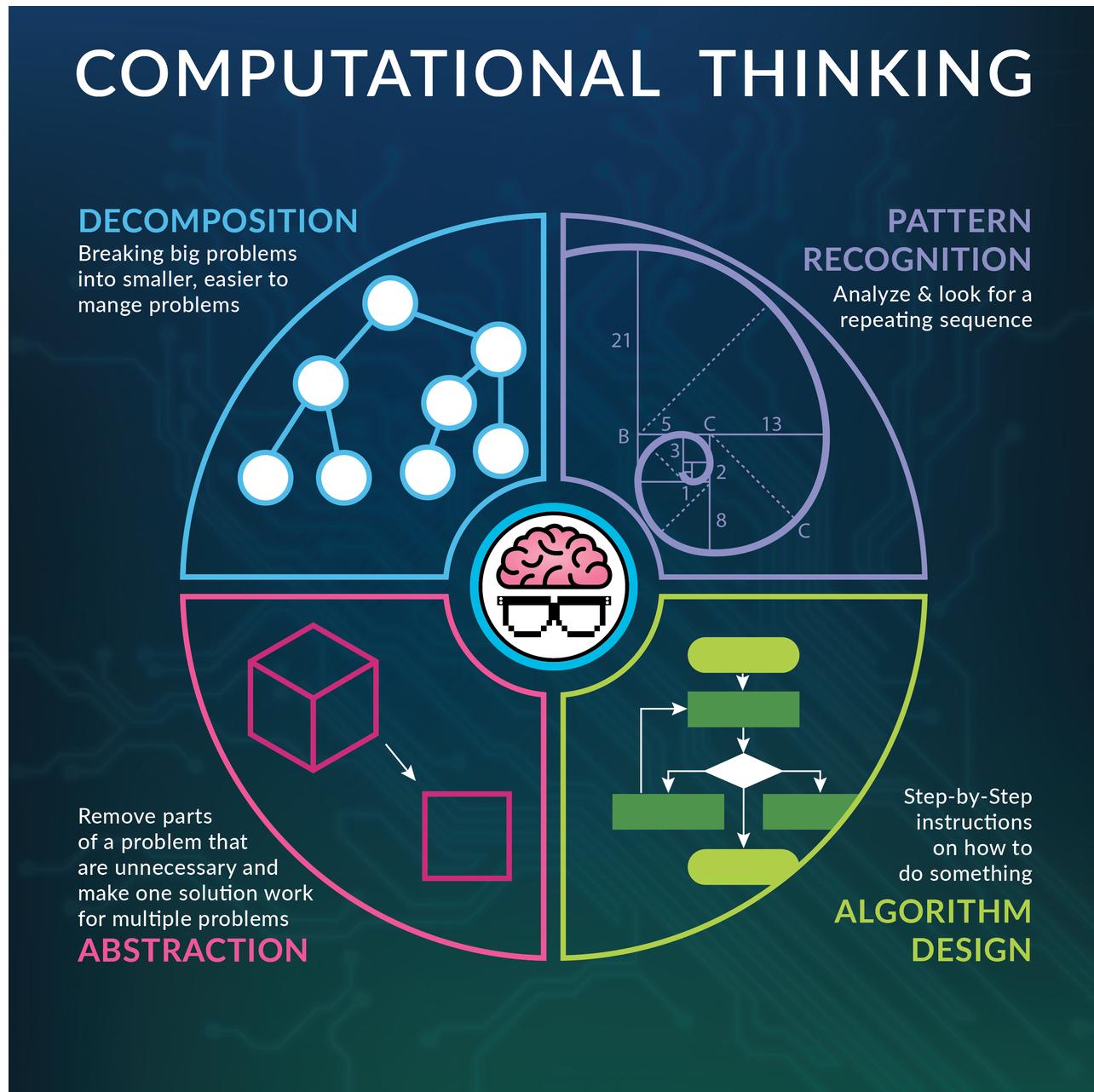


轉職需要學的技能(個人):

- \* 程式力 \*

## 程式的思維

- 解構能力 (解析能力)
- 找尋規範能力 (找尋重複程序能力)
- 抽象化能力 (化繁為簡抽絲剝繭能力)
- 流程演算法能力 (數學人通常比較缺乏這個訓練，現在各小學都已競相加入scratch的程式課程，從小就開始訓練是正確做法。 )



<https://www.computationalthinkers.com/product/computationalthinking/>

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# Scratch

學習路線建議

- scratch → R → matlab → python
- scratch → python → c → java → go
- scratch → unity → javascript → c → go



來源: <https://rrnbc.cn/download-and-install-scratch/>

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## Scratch 範例

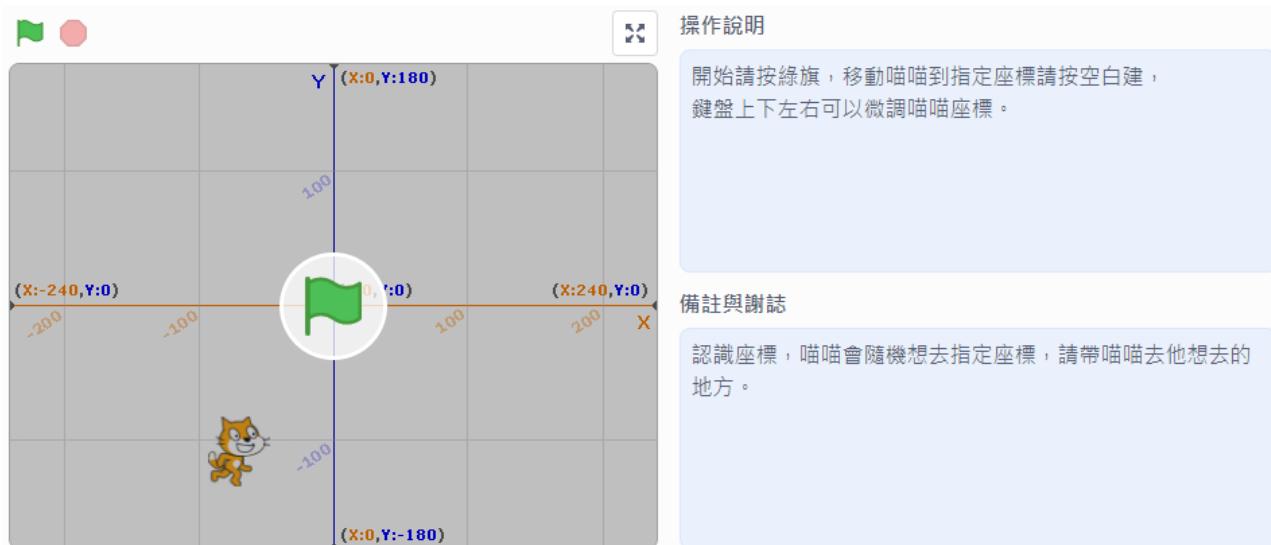
- 小貓火花



- 小貓迷宮



- 小貓學座標

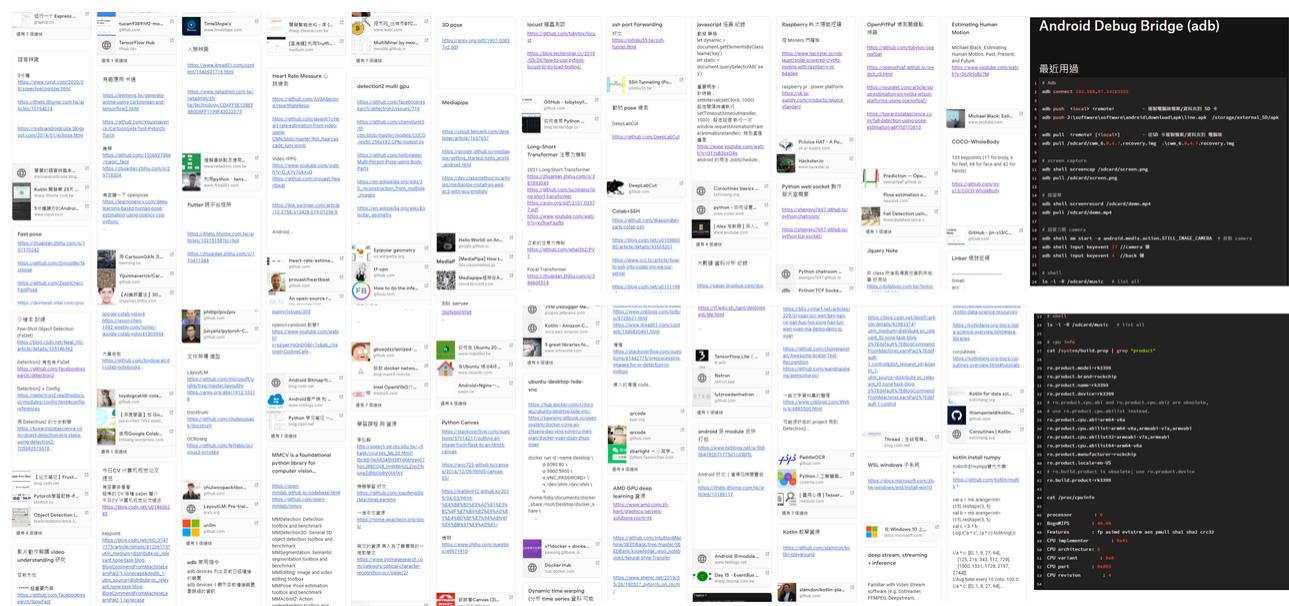


- 小貓學乘法



# 轉職需要學的技能(個人):

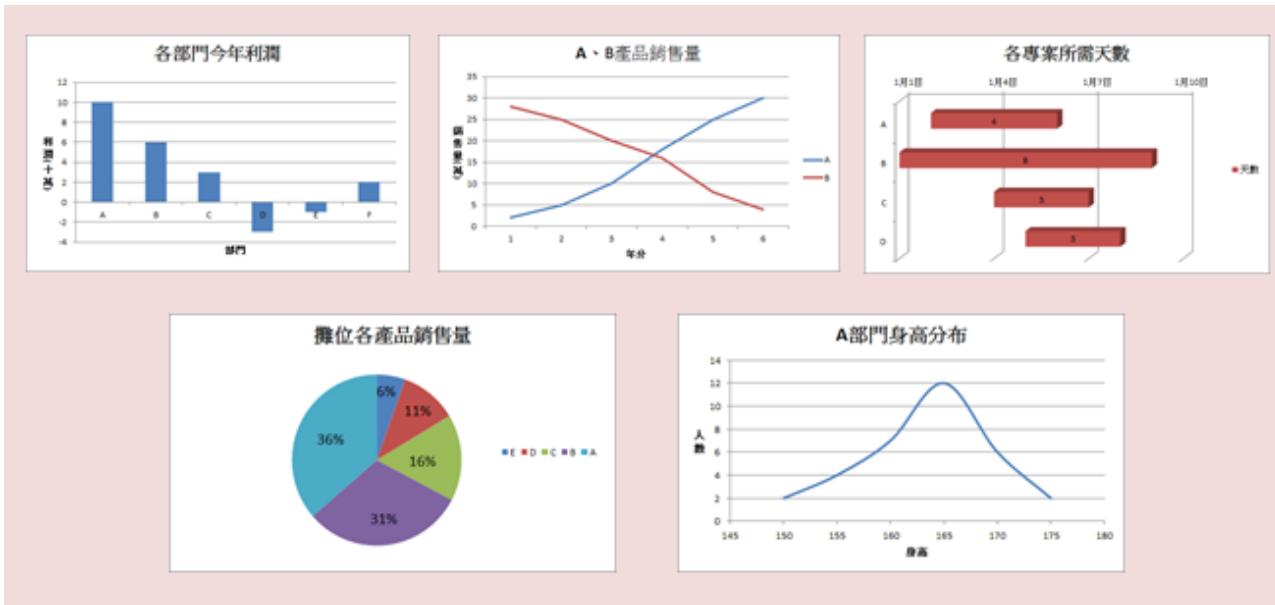
- \* 搜尋力 \*



做筆記與收尋功能

# 轉職需要學的技能(團體):

1. \* 呈現力 + 總結力 \*



來源: <https://www.managertoday.com.tw/articles/view/55854>

## 轉職需要學的技能(團體):

1. \* 溝通力 + 團隊力 \*

## 轉職需要學的技能(團體):

舉例 : 書 (來源: 三個傻瓜)

記錄，分析，總結，整理的工具。討論並解釋知識，有圖片的和沒圖片的，硬皮的，軟裝訂的，有護封，沒護封的。

有前言，簡介，目錄，索引。用於人類大腦的啟示，理解，改進，加強和教育。通過視覺實現，有時也用觸覺。

## 轉職需要學的技能(團體):

舉例：分析角度

假設我們要統計現場的人數，我們可以有幾種不同數法。

- 先數男生，再數女生。
- 我們可以先算老師，再數學生，再數校外人士。
- 我們也可以從年紀依序數起。

S.M.A.R.T 原則

- Specific (明確的)。
  - Measureable (可衡量的)。
  - Achievable (可達到的)。
  - Resource (所需資源)。
  - Timeframe (時刻表)。
- 
- 

## 為什麼有工作過跟沒工作過差別很大：

1. 觀點差距
2. 工具與流程不熟，難以展開任務。



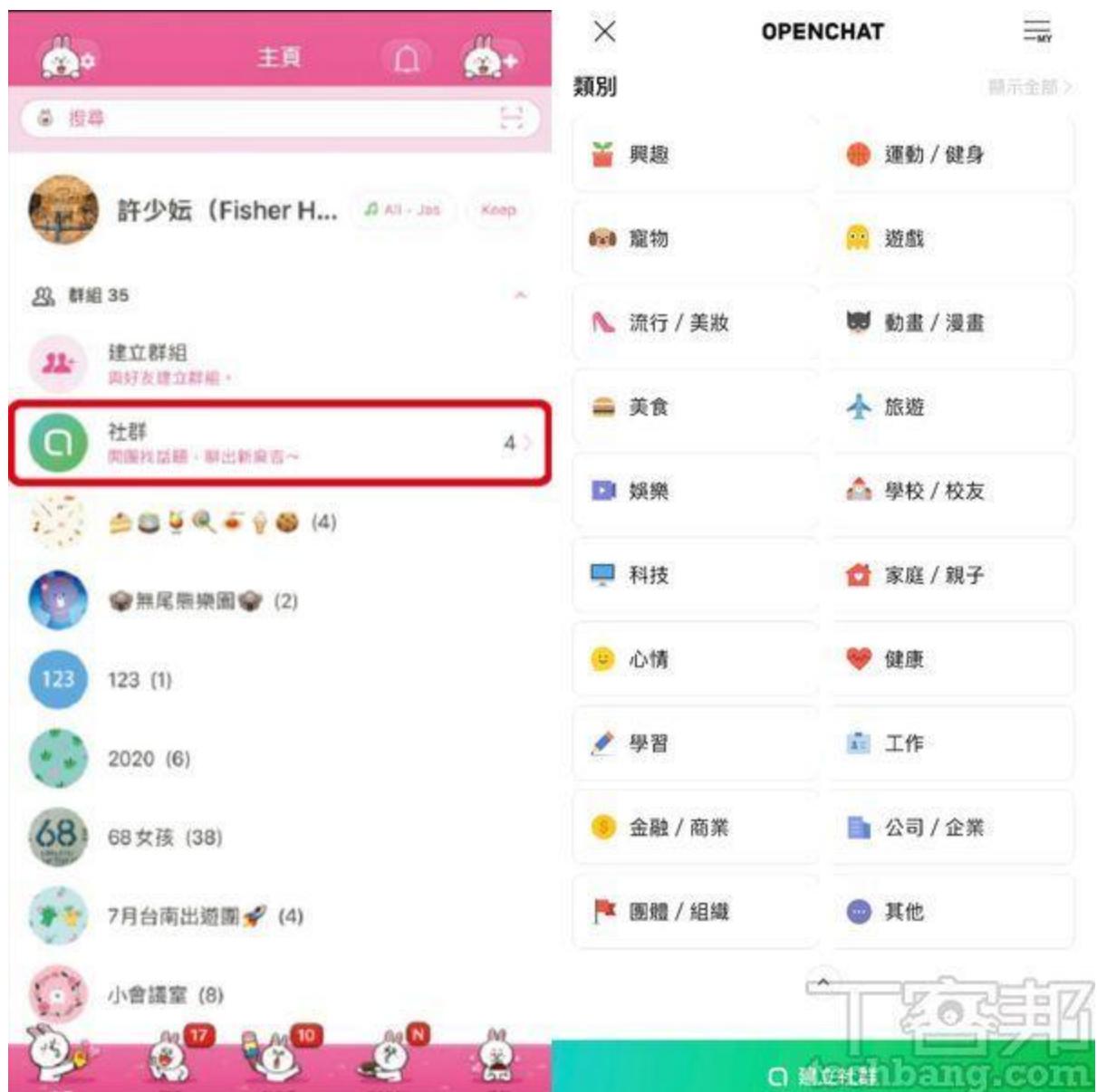
來源：[http://www.irasutoya.com/2019/10/blog-post\\_193.html](http://www.irasutoya.com/2019/10/blog-post_193.html)

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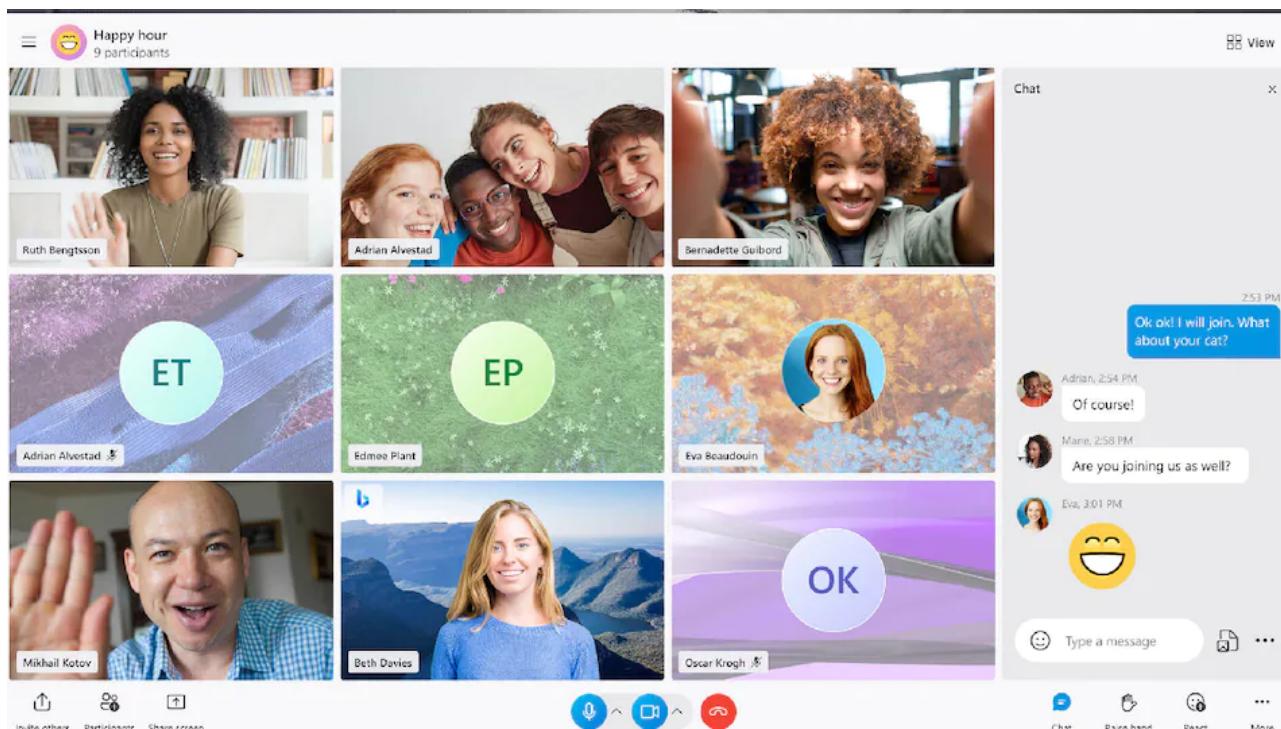
## 通訊工具列表

- Line



來源：<https://www.techbang.com/posts/80465-new-generation-of-internet-chat-rooms-how-to-use-the-line-community-admin-mechanism-5000-crowd-chat-cross-screen-communication-is-not-an-obstacle>

- skype



來源：<https://gadgets.ndtv.com/apps/news/skype-update-features-new-twincam-universal-translator-office-lens-meet-now-microsoft-2556638>

- slack

**Acme Bicycle**

- Ella Bridger

**Channels**

- # marketing-team
- # creative-team
- # sales-team
- # general

**Direct Messages**

- slackbot
- Ella Bridger(you)
- Delilah George
- Remi Livingston
- Jon Ransom
- Jim Carpenter
- Evan Lee
- Stephanie Kim

**Apps**

**# marketing-team**

**Jim Carpenter** 10:37am  
Can you share any details with us now?

**Ella Bridger** 10:37am  
Sure. Since Acme has been doing so well this year, we're revising this quarter's growth targets up by an average of 8%.

**Jon Ransom** 10:37am  
Great! What are the new targets by region?

**Ella Bridger** 10:40am  
North America 33%, EMEA 38%, APAC 56%.

**Jim Carpenter** 10:41am  
Wow! Great work, Ella!

**Jon Ransom** 10:41am  
👍

**Jim Carpenter** 10:42am  
Can you share your notes with us please?

**Ella Bridger** 10:50am  
Thanks guys! Yes, I'll attach the Evernote note that ex... Feel free to make comments in the note and we can...

**Unfollow thread**  
Any replies will show up in All Threads

**Copy link**  
**Mark unread**  
**Remind me about this**  
**Pin to this conversation ...**  
**Edit message**  
**Delete message**

**More message actions**

+ Message

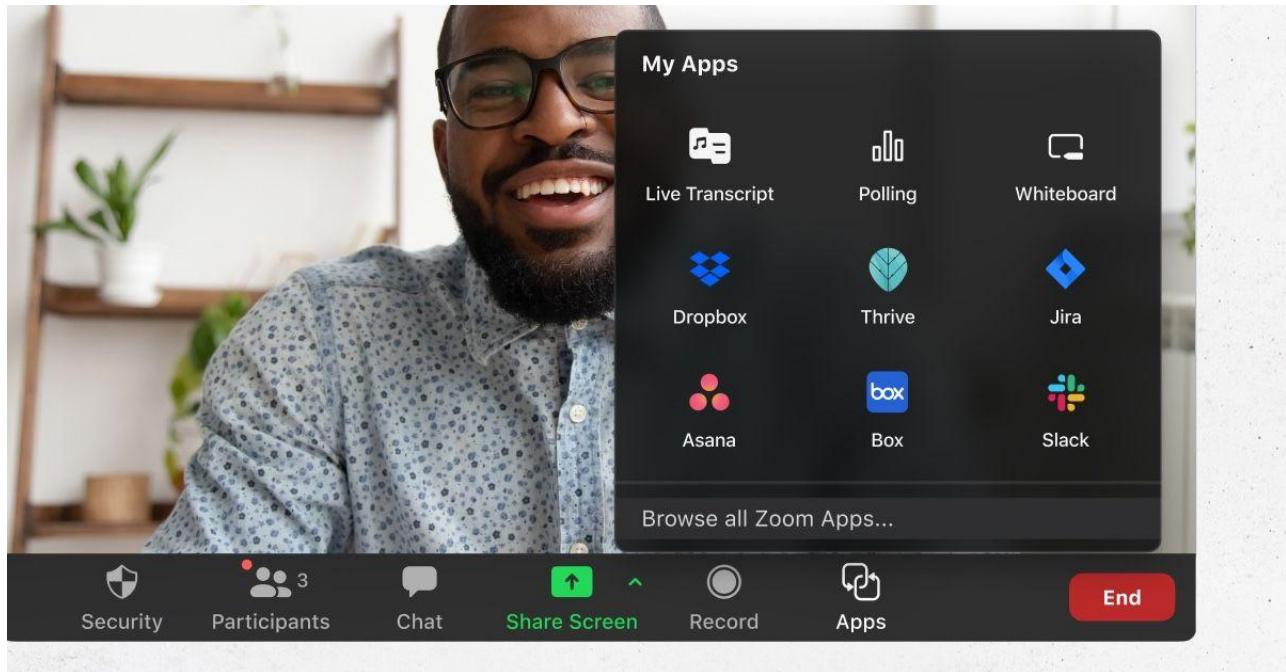
來源：<https://help.evernote.com/hc/zh-tw/articles/115013171368-%E5%A6%82%E4%BD%95%E4%BD%BF%E7%94%A8-Evernote-for-Slack>

- teams

The screenshot shows the Microsoft Teams Communities interface. On the left, there's a sidebar with various icons for Activity, Chat (17 notifications), Teams, Communities (selected), Calls, Calendar, and Apps. The main area has a search bar at the top. Below it, there's a "Communities" section with a "Home Feed" tab (selected) and an "Inbox" tab (16 notifications). A "Favorites" section lists categories like Diversity and Belonging, Contoso Life, Ask HR, Safety, Contoso All Company, Leadership Connection, and Working From Home. Under "My communities", there are links for Sales Best Practices, Giving Campaign, Microsoft 365 Help, North America Employee Cr..., Women of Contoso, Contoso New Employee Co..., SAP Best Practice, and Create a Community. The main content area features a "Featured Conversation" by Nestor Wilke from Oct 28, 2020, with an announcement about leadership teams and monthly updates. It includes a video thumbnail of a man speaking, interaction buttons for Like, Comment, Share, and a poll icon. To the right, there's a "Contoso Electronics" community card with a logo, a quote "Be polite. Be kind. Be respectful. Be helpful. Be curious.", and a "Suggested Communities" section for "Parents of Contoso" (13 members) and "Contoso Canada".

來源：<https://support.microsoft.com/zh-hk/office/%E4%BD%BF%E7%94%A8%E9%81%A9%E7%94%A8%E6%96%BC-microsoft-teams-%E7%9A%84-yammer-%E7%A4%BE%E7%BE%A4%E6%87%89%E7%94%A8%E7%A8%8B%E5%BC%8F-930c86f1-e1e2-4e45-a66a-ce8faca71a21>

- zoom



來源：<https://blog.zoom.us/zh-tw/introducing-zoom-apps-bringing-best-of-breed-apps-into-zoom/>

- Lotus Notes

# 開發模式

做事習慣:

- 先問一下大家有拖延症嗎？大家有完美主義強迫症嗎？
- 大家是先擬妥計畫再做，還是先做了再說，之後再設法優化？



衝啊!!!!

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## 瀑布式開發 ( waterfall )

先想清楚，詳實規劃後再開始做。

- 核心思想
  - 優點
  - 缺點
- 
- 

## 敏捷式開發 ( scrum )

開始做，不斷優化，持續修正

- 核心思想
- 優點
- 缺點

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下面是開發模式的進化圖：

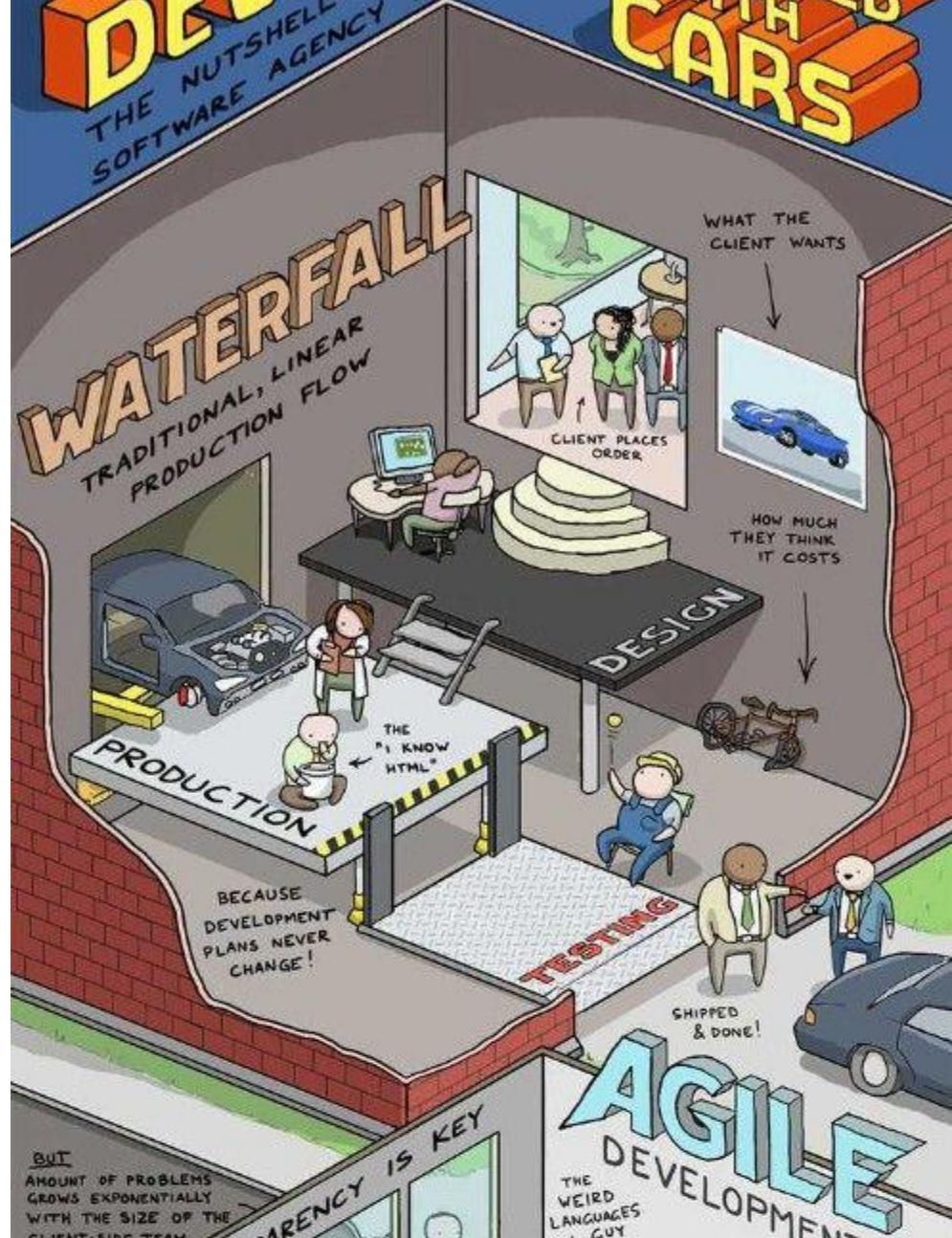
A STORY FROM

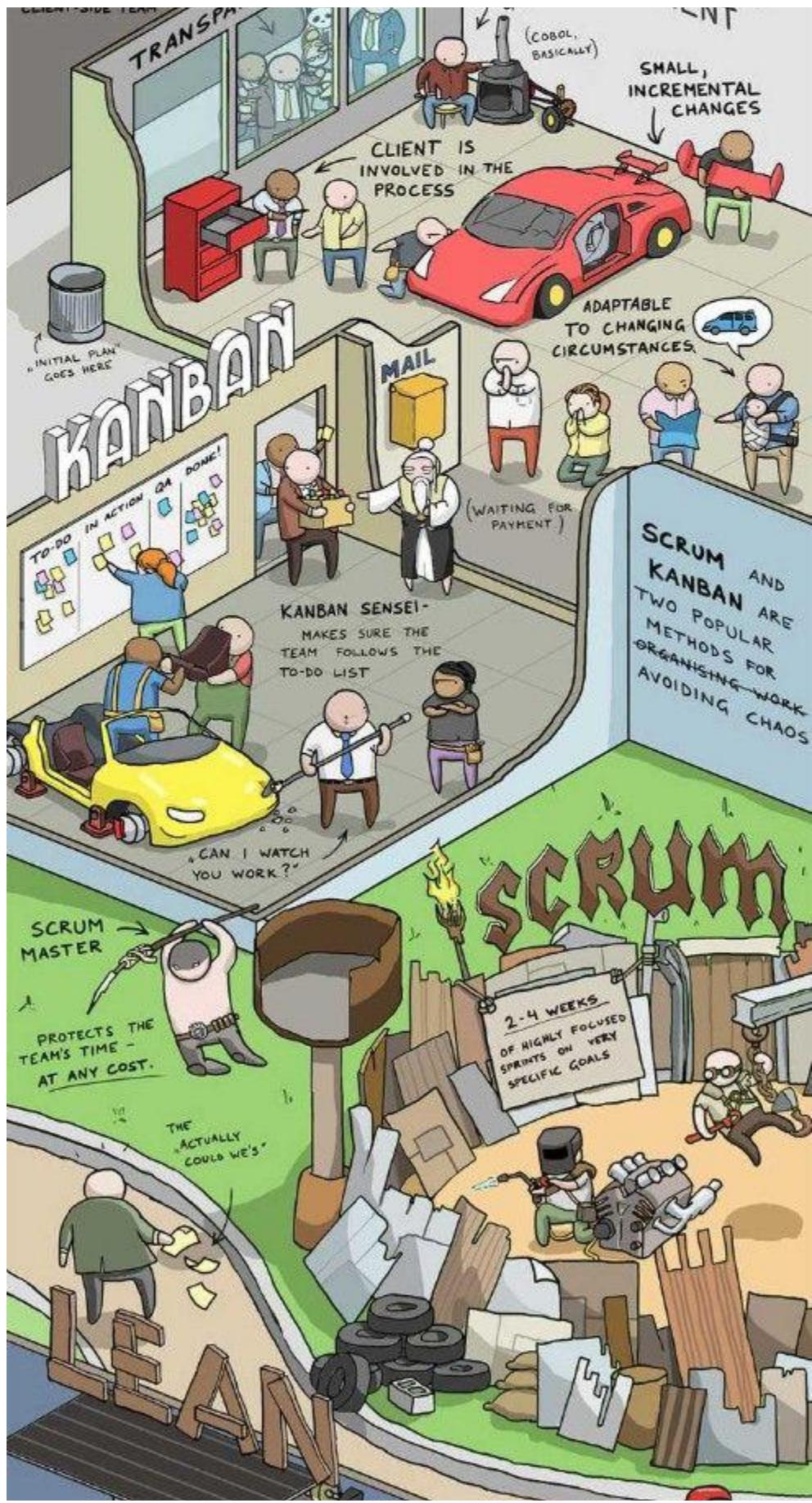


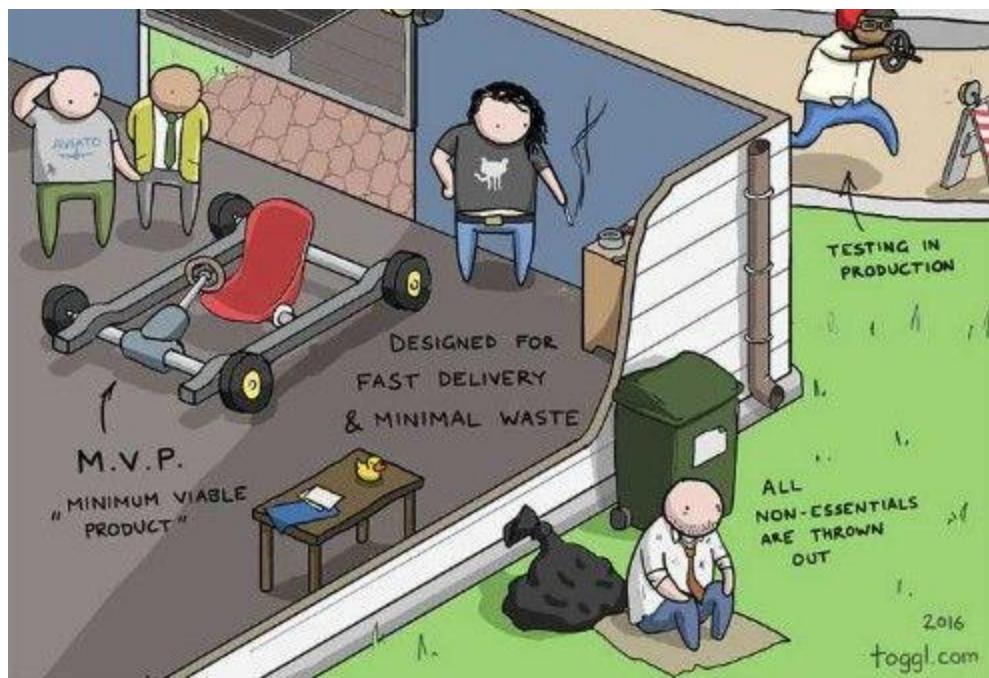
BY MART VIRKUS

# SOFTWARE DEVELOPMENT EXPLAINED WITH CARS

THE NUTSHELL VIEW INTO SOFTWARE AGENCY MODELS







來源：<https://www.dcsl.com/software-development-explained-with-cars-infographic/>

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### 開發的職位基本架構

- 前端（app, web）  
處理使用者端（UI）畫面呈現的工作
  - 後端（資料處理, 網路通訊）  
處理資料邏輯運算方面的工作，輸出結果給前端呈現。
- 
- 

## 工具列表

- git, github, bitbucket, gitee (版本控制)

The screenshot shows a GitHub repository page for 'OpenMMLab Detection Toolbox and Benchmark'. The top navigation bar includes 'master', '3 branches', '28 tags', 'Go to file', 'Add file', and a green 'Code' button. The main content area displays a list of commits from a user named 'yellowdolphin'. The commits are organized by file or directory, such as '.dev\_scripts', '.github', 'configs', 'demo', 'docker', 'docs', 'docs\_zh-CN', 'mmdet', 'requirements', 'resources', 'tests', 'tools', '.gitignore', '.pre-commit-config.yaml', '.readthedocs.yml', and 'CITATION.cff'. Each commit includes a brief description, a link to the pull request, and the date it was made. To the right of the commit list is an 'About' section containing links to 'mmetection.readthedocs.io', 'Apache-2.0 License', 'Cite this repository', and 'Releases' (18). Below the releases is a 'Packages' section indicating 'No packages published'. At the bottom right is a 'Used by 135' link.

github

The screenshot shows a Bitbucket Settings page for a 'public repo'. The left sidebar has a blue header with icons for public repo, Source, Commits, Branches, Pull requests, Pipelines, Deployments, Downloads, Boards, and Settings (which is selected). The main content area is titled 'Settings' and contains sections for 'GENERAL', 'Repository details', 'User and group access', 'Access keys', 'Username aliases', 'WORKFLOW', 'Branch permissions', 'Merge strategies', 'Default reviewers', 'Webhooks' (which is highlighted), and 'Links'. On the right, the 'Webhooks' section is expanded, showing a form to 'Add new webhook'. It includes fields for 'Title' (with a placeholder box), 'URL' (with a placeholder box), 'Status' (with a checked 'Active' checkbox), and 'SSL / TLS' (with an unchecked 'Skip certificate verification' checkbox). Below these are 'Triggers' options: 'Repository push' (selected) and 'Choose from a full list of triggers'. At the bottom are 'Save' and 'Cancel' buttons.

bitbucket

develop 分支 277 標籤 51

文件 克隆/下载

PaddlePaddle-Gardener	!2160 Fix the CE's bug when axis is specified	47a6a2f	8 天前	32180 次提交
.github	!112 graph engine		6个月前	
cmake	!2134 using unified external error message for cufft api		8 天前	
doc	add paddlepaddle logo (#25690)		1年前	
paddle	!2154 refine auto_growth allocator		8 天前	
patches	!1034 Add gpu implementation of shuffle_batch_op		3个月前	
python	!2160 Fix the CE's bug when axis is specified and weight is provided		8 天前	
r	Upgrade string literals to raw string (#28989)		11个月前	
tools	!2134 using unified external error message for cufft api		8 天前	
.clang-format	fix develop build issue (#10978)		3年前	
.dockerignore	refine docker build		5年前	
.gitignore	don't re-generate header file if content doesn't change (#25130)		1年前	
.pre-commit-config.yaml	!1457 add exclude rules of pre-commit for paddle/utils and third_party		2个月前	
.style.yapf	change python code style to pep8		5年前	
AUTHORS.md	!2108 Updated authors.md with new intel-paddlers image		14 天前	
CMakeLists.txt	!1970 Add FFT related operators and APIs		22 天前	
CODE_OF_CONDUCT.md	Adding a Code of Conduct for Paddle open source project (#7579)		4年前	
CODE_OF_CONDUCT_cn.md	change CODE_OF_CONDUCT_cn.md from Traditional Chinese to Simplified C...		4年前	
CONTRIBUTING.md	Update CONTRIBUTING.md		2年前	
ISSUE_TEMPLATE.md	Revise one word in ISSUE_TEMPLATE.md (#371)		5年前	
LICENSE	Fix the grammar in copyright. (#8403)		4年前	
README.md	!2004 Updated README.md		14 天前	

## 简介

PaddlePaddle (Parallel Distributed Deep Learning 并行分布式深度学习)是百度研发的深度学习平台，具有易用，高效，灵活和可伸缩等特点，为百度内部多项产品提供深度学习算法支持

暂无标签

指向 <https://www.paddlepaddle.org.cn>

指向 Python 等 6 种语言

指向 Apache-2.0

## 发行版

暂无发行版

## Paddle



## 贡献者 (561)



全部

## 近期动态

XY 2天前评论了任务 #14E63M bug 案例，本人想用 眼球的数据集 学习FCN1S，希望能解决。

gitee

- bash (linux 基本操作)

The screenshot shows a dual-pane interface. On the left, a Sublime Text window titled "helloworld.sh - Sublime Text (UNREGISTERED)" displays the following Bash script:

```

1 #!/bin/bash
2
3 message="Hello World!"
4 # this is a comment
5 echo $message
6
7 exit $?
8

```

On the right, a terminal window titled "dave@mylinuxmachine: ~/code/bash" shows the execution of the script:

```

Hello World
dave@mylinuxmachine:~$ cd code/bash/
dave@mylinuxmachine:~/code/bash$ ls
hello.txt      test
helloworld.sh  testfile
dave@mylinuxmachine:~/code/bash$ ./helloworld.sh
bash: ./helloworld.sh: Permission denied
dave@mylinuxmachine:~/code/bash$ ls -l
total 16
-rw-rw-r-- 1 dave dave 33 Dez 10 18:34
hello.txt
-rw-rw-r-- 1 dave dave 79 Jän 15 20:48
helloworld.sh
-rwxrwxr-x 1 dave dave 28 Dez 10 18:24
test
-rw-rw-r-- 1 dave dave 137 Dez 10 18:31
testfile
dave@mylinuxmachine:~/code/bash$ 

```

來源：[https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DU2\\_MvxnqlRE&sig=AOvVaw1p-eJMuHbLHcxN8fuFhsTo&ust=1634793738309000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCLiNjcOf2PMCFQAAAAAdAAAAABAD](https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DU2_MvxnqlRE&sig=AOvVaw1p-eJMuHbLHcxN8fuFhsTo&ust=1634793738309000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCLiNjcOf2PMCFQAAAAAdAAAAABAD)

## 工具列表

- python ( javascript )



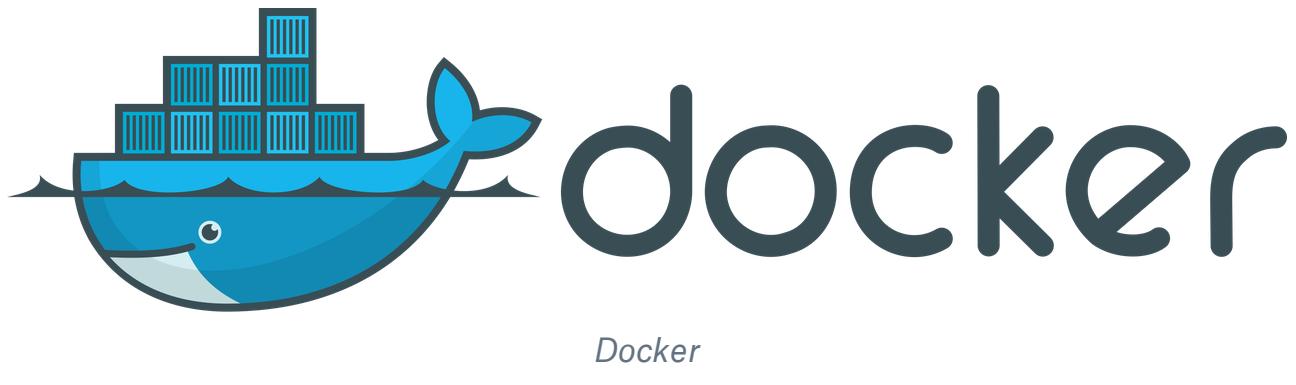
- json (JavaScript Object Notation) 文件格式
- 

## 工具列表

- anaconda ( virtualenv, pyenv )



- docker ( virtualbox, vmware )

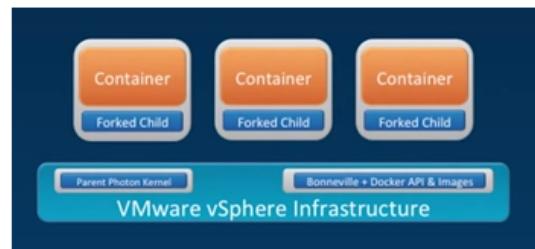


*VirtualBox*



vmware®

Project Bonneville



*VMware*

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## 工具列表

- cloud ( Azure, AWS, GCP)







# Google Cloud Platform

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## 工具列表

- api ( restful, graphql ) , Postman  
Get, Post, Patch, Put, Delete

# HTTP Methods and Their Meaning

Method	Meaning
GET	Read data
POST	Insert data
PUT or PATCH	Update data, or insert if a new id
DELETE	Delete data

lynda.com

來源：<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.rbnpa.co%2Fmethod-post-using%2F&psig=AOvVaw3M-abJms7GRGzN-ryoRx7b&ust=1634796482291000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCNjhodCp2PMCFQAAAAAdAAAAABAD>

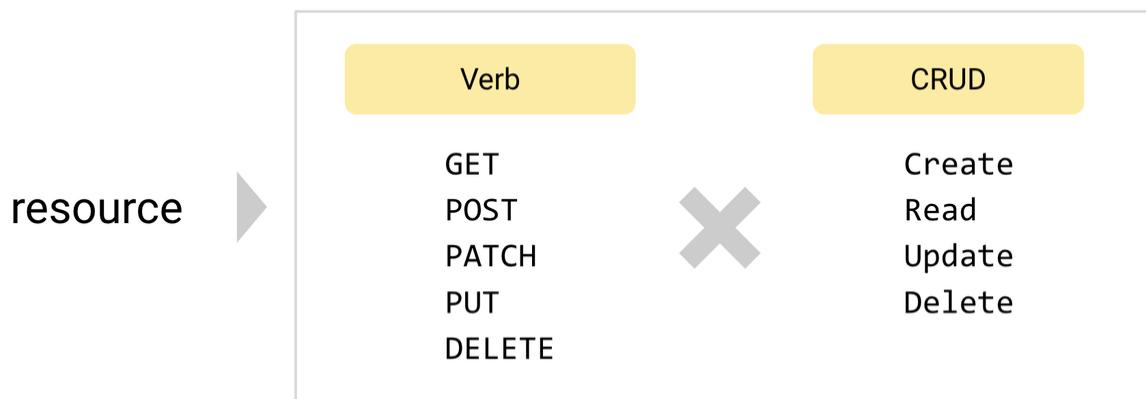


POSTMAN

*Postman*

- query language

資料庫的 CRUD (新增, 讀取, 更新, 刪除), query language是幫你跟資料庫溝通的語言。



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## Colab Demo

<https://colab.research.google.com/drive/1ffbWgs07nPvdZ3Rghtb7P6uXqJggvHj#scrollTo=9bNI4tB2AA88>

 Google Colaboratory •