LearnTech

Tech Career Talks

Create an AI model in 30 minutes with Python

Online

Monday 25 November

12:30pm (30 mins)

Free

Hosted by:

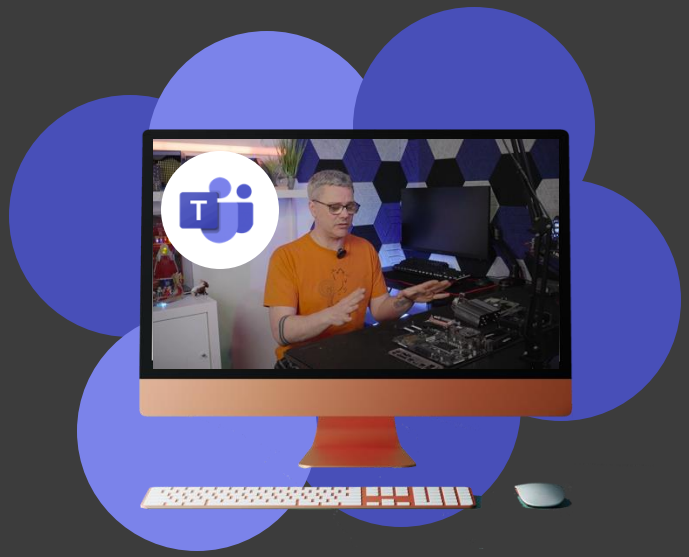
Sally Sam

Who are LearnTech?

LearnTech are a tech-specialist Independent Training Provider

Ofsted Good Provider

We are a regulated provider, rated ‘Good’ by Ofsted



We have been training remotely since 2017, implementing a range of cutting-edge technologies to create engaging learning environments

*Eligibility applies

Who are LearnTech?

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We work with a range of employers across the UK, large and small, to deliver specialist tech training in areas such as software development, networking, cyber security and data analysis

Apprenticeships

Free* Tech Courses (FTCs)

★★★★ Excellent Employer reviews

★★★★ Excellent Apprentice reviews

98.4% Pass Rate

*Eligibility applies

Participation 👨 💻

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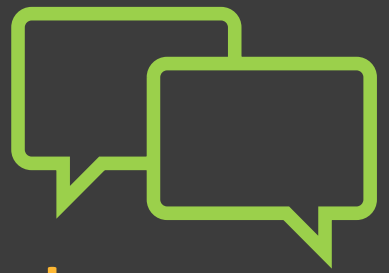
It is your choice if you would like to code along.



I would love to hear from you!
At any time, please share comments, questions or feedback in the chat.

For example:

- “What do you mean by… ?”
- “Can you repeat… ?”
- “How did you… ?”
- “Why is… ?”
- “Where is… ?”

What is Artificial Intelligence (AI)?

Definition of AI

The Cambridge Dictionary defines AI as:

"the use or study of computer systems or machines that have some of the qualities that the human brain has, such as the ability to

- **interpret and produce language** in a way that seems human,
- **recognize or create images**,
- **solve problems**,
- and **learn from data** supplied to them"

An AI tool can mimic the abilities of the human brain.

Artificial intelligence in our day

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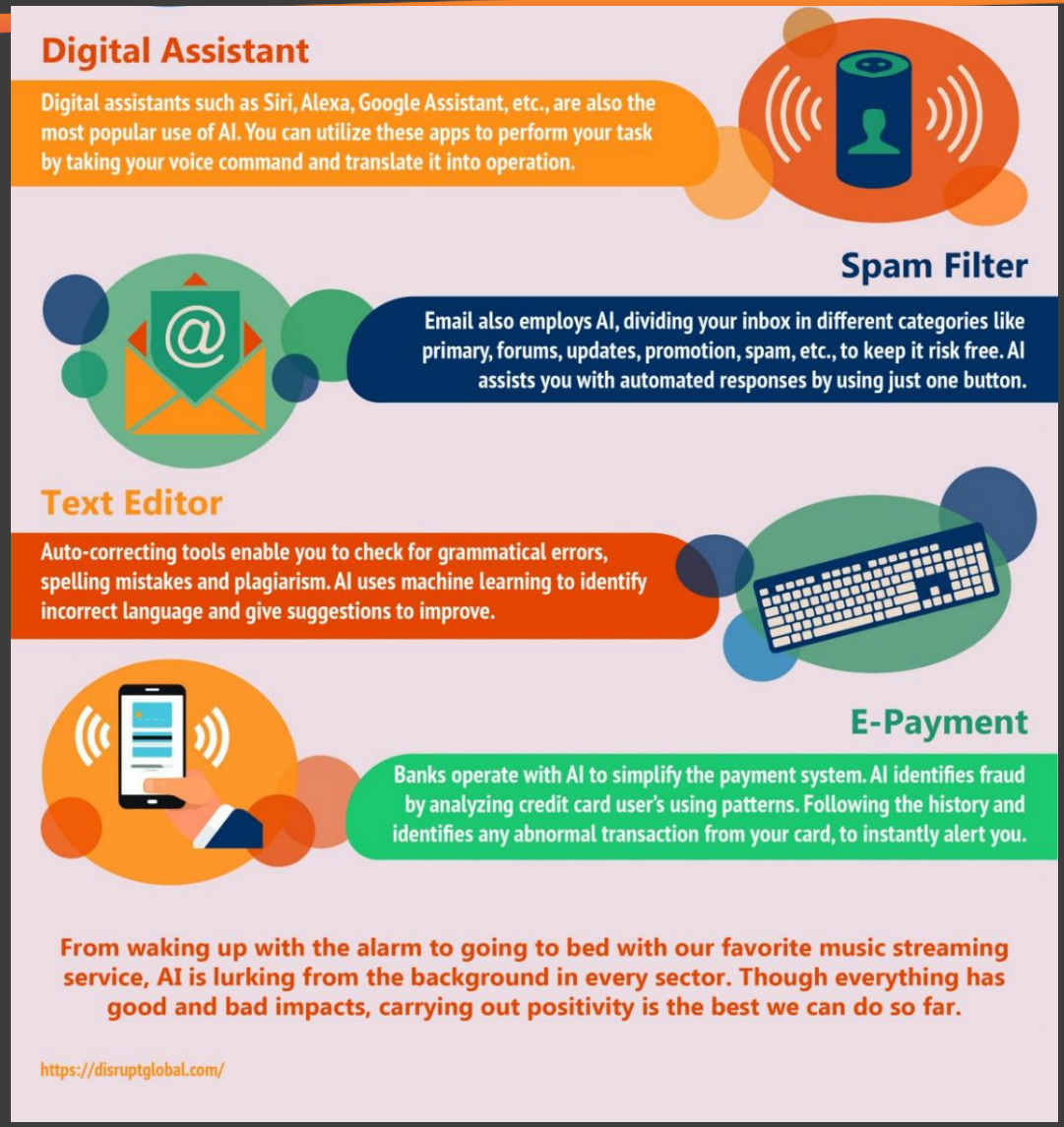

AI in Everyday Life – Disrupt (disruptglobal.com)

Examples of AI uses

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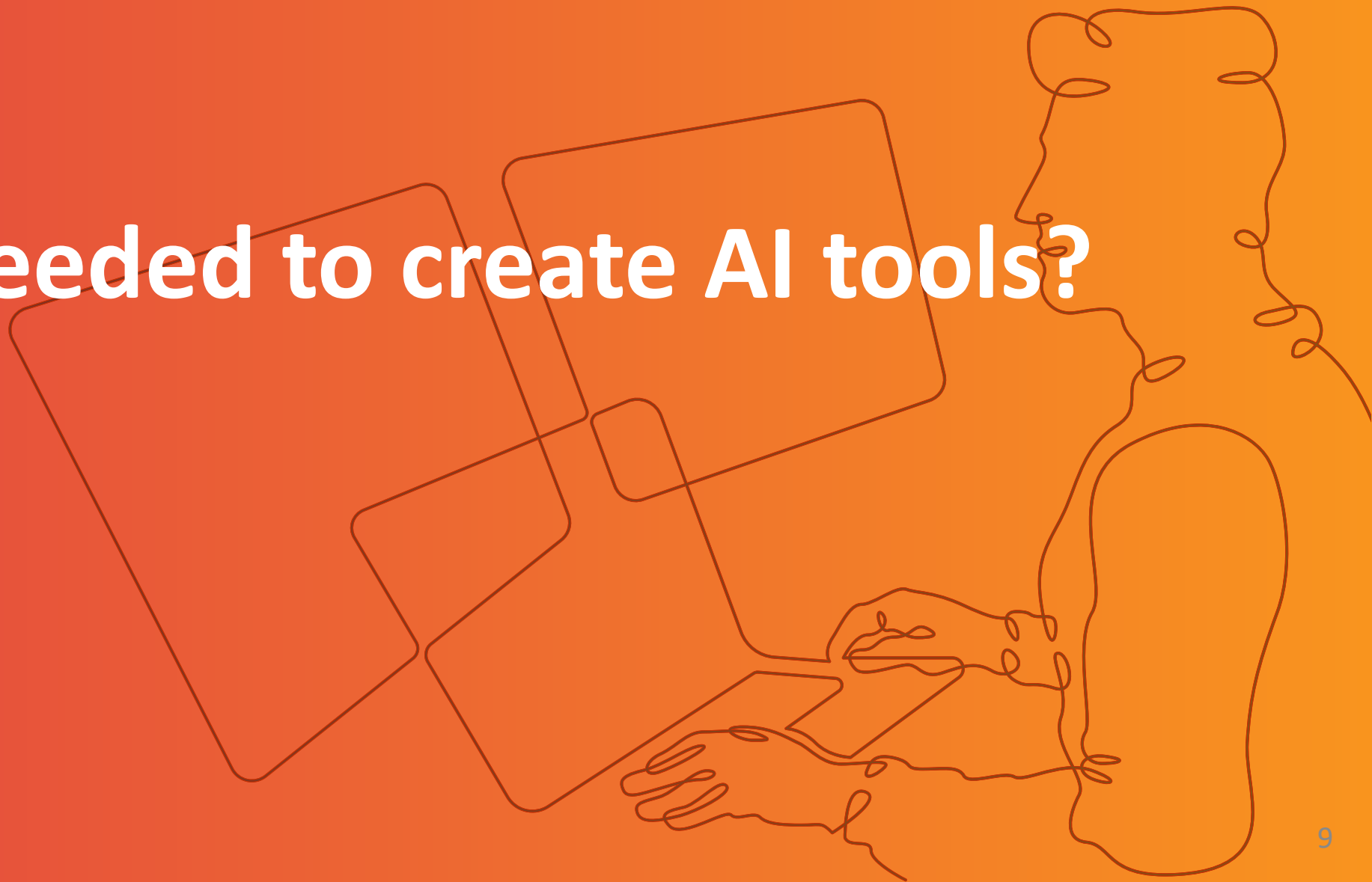
- Speech recognition
- Spam email detection
- Text summarisation
- Customer segmentation
- Facial recognition
- Weather forecast
- Self-driving cars
- Sales forecast
- Medical diagnosis
- Robotic item pickers

What is needed to create AI tools?



Components of an AI tool

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Today, we will create a baseline AI model to diagnose breast cancer by using:

AI use case

e.g.

Breast cancer diagnosis

Skilled team

e.g.

Clinicians, patients, AI Data Specialist, Project Manager, Data Engineer, etc.

Data

e.g.

Breast cell image data

AI algorithms

e.g.

Linear Support Vector Machine

Programming languages

e.g.

Python

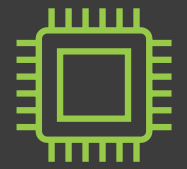
Software

e.g.

Kaggle Notebooks,

Git,

VS Code



Hardware

e.g.

Laptop,

Kaggle servers,

Cloud servers

General model creation steps

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0. Exploratory data analysis

Understand your data and confirm this with subject matter experts!

1. Train/*validation*/test split of data:
   Hold out some data and pretend it is the future
2. Feature manipulation (data manipulation):
   Make sure your data works for your specific algorithm and problem
3. Train using algorithm (mathematical model):
   Make sure the algorithm provides the “best” performing model
4. Evaluate model on test data:
   Quantify or qualitatively explain the performance of the model
5. Explain how the model works

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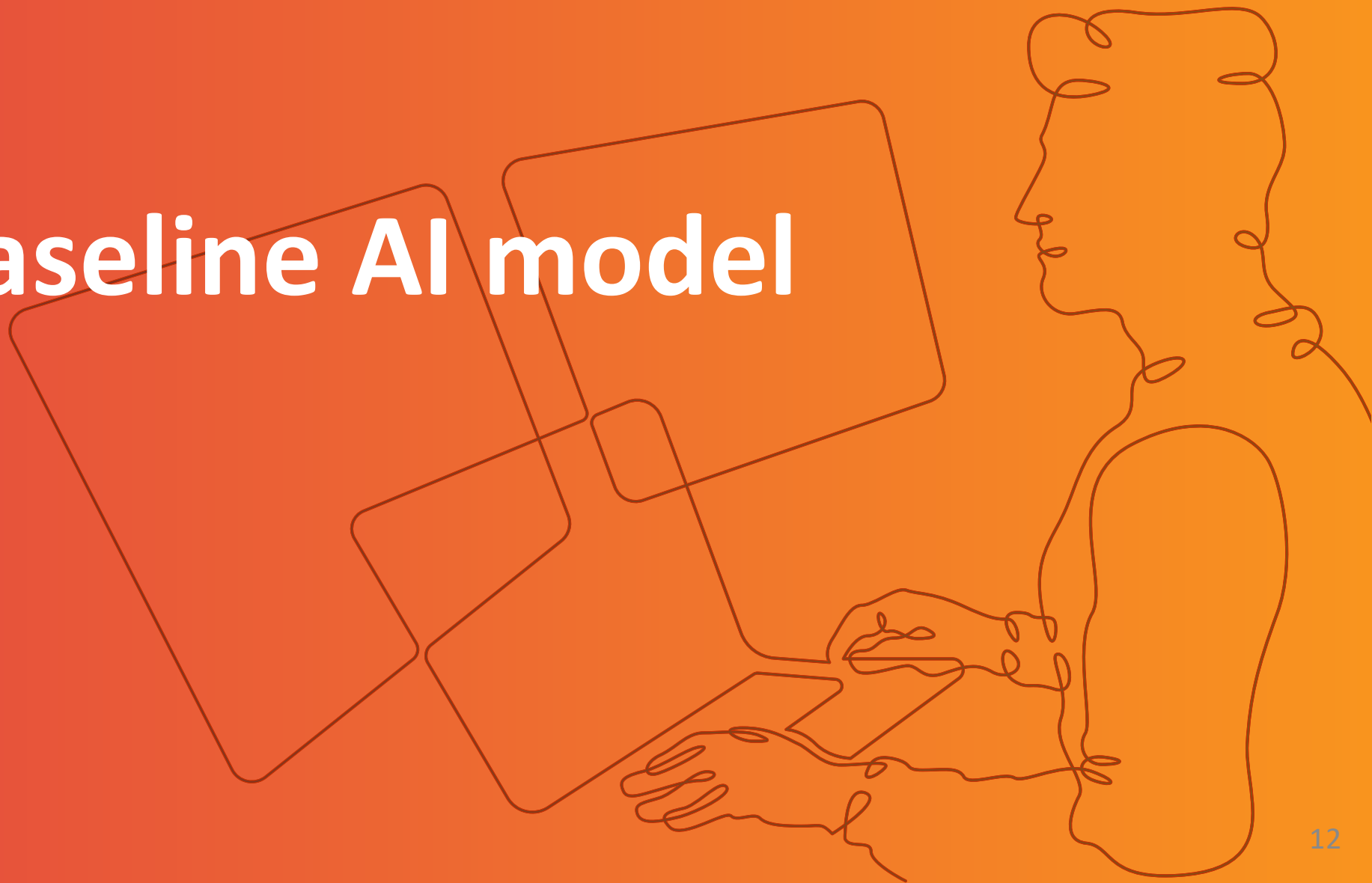
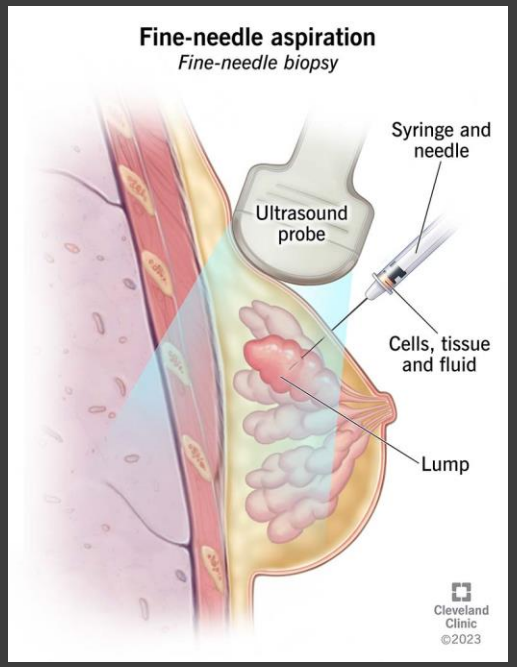
Create baseline AI model



Scenario

Resources: https://github.com/LearnTech-ssam/techtalk_aimodel

- A colleague would like AI to automatically diagnose breast cancer from images of a breast mass.
- They already have some data that you can work with.



https://my.clevelandclinic.org/health/diagnostics/17872-fine-needle-aspiration-fna

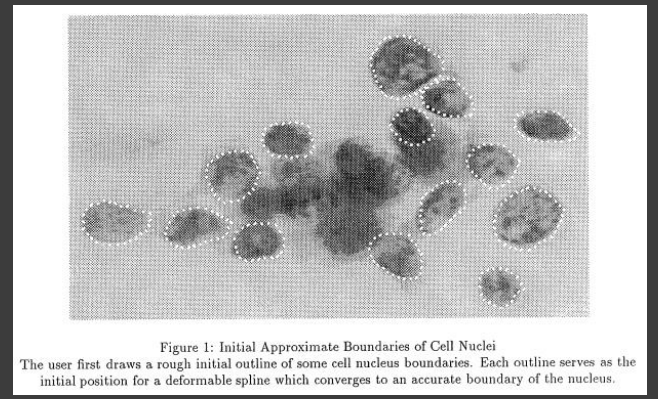


Figure 1: Initial Approximate Boundaries of Cell Nuclei
The user first draws a rough initial outline of some cell nucleus boundaries. Each outline serves as the initial position for a deformable spline which converges to an accurate boundary of the nucleus.

https://doi.org/10.24432/C5DW2B

mean concave points	mean symmetry	mean fractal dimension	...
0.14710	0.2419	0.07871	...
0.07017	0.1812	0.05667	...
0.12790	0.2069	0.05999	...

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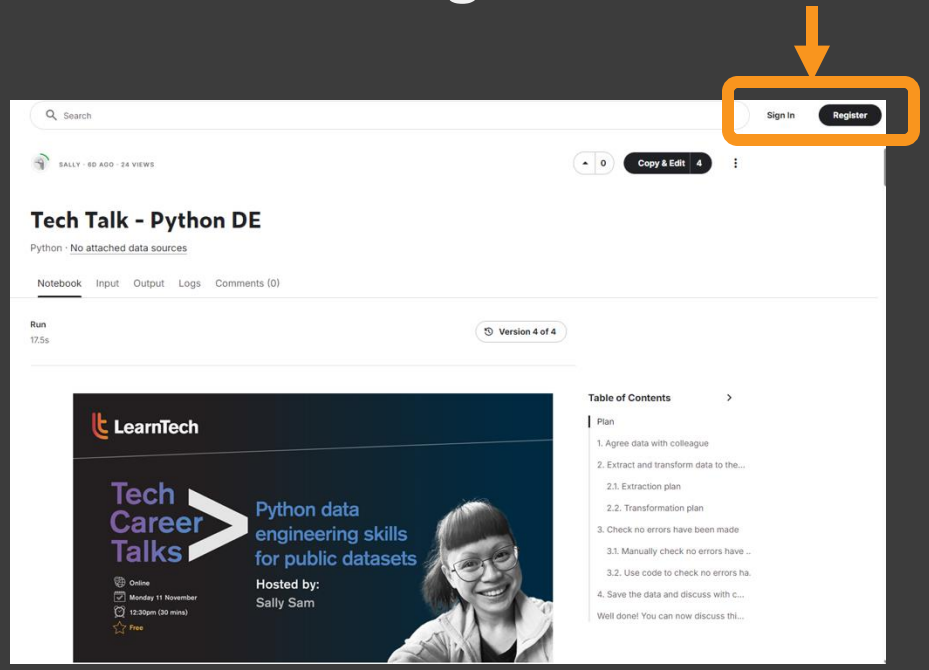
If you are coding along

If you are coding along: sign into Kaggle

Resources: https://github.com/LearnTech-ssam/techtalk_aimodel

Kaggle: https://www.kaggle.com/code

- Sign in or create a free account using an email address



If you are coding along: create new notebook

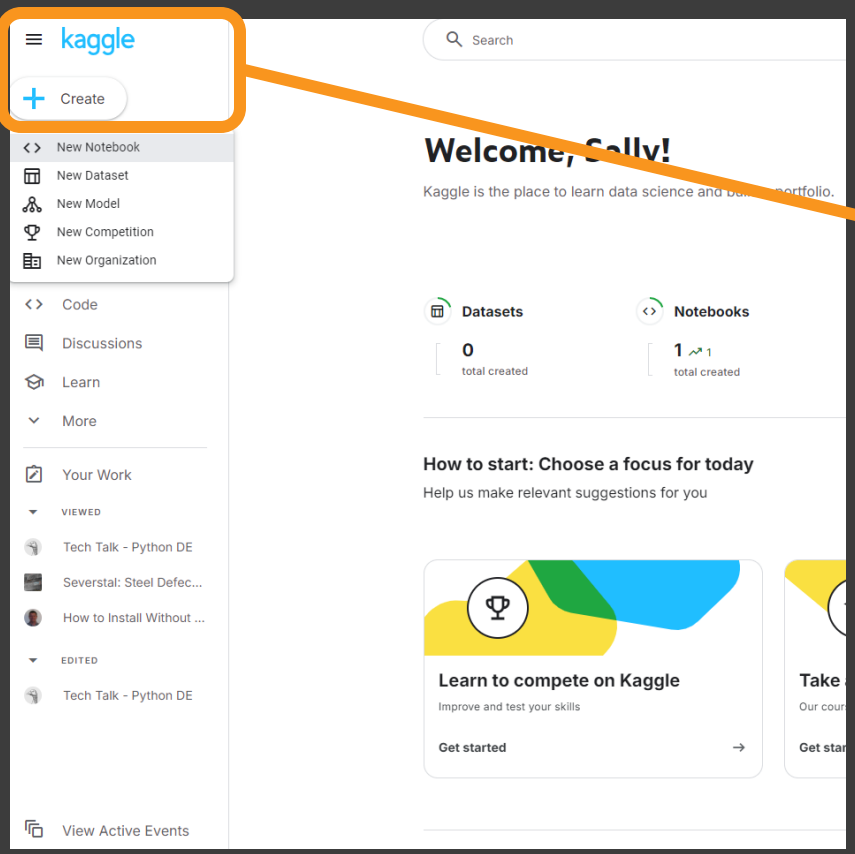
Resources: https://github.com/LearnTech-ssam/techtalk_aimodel

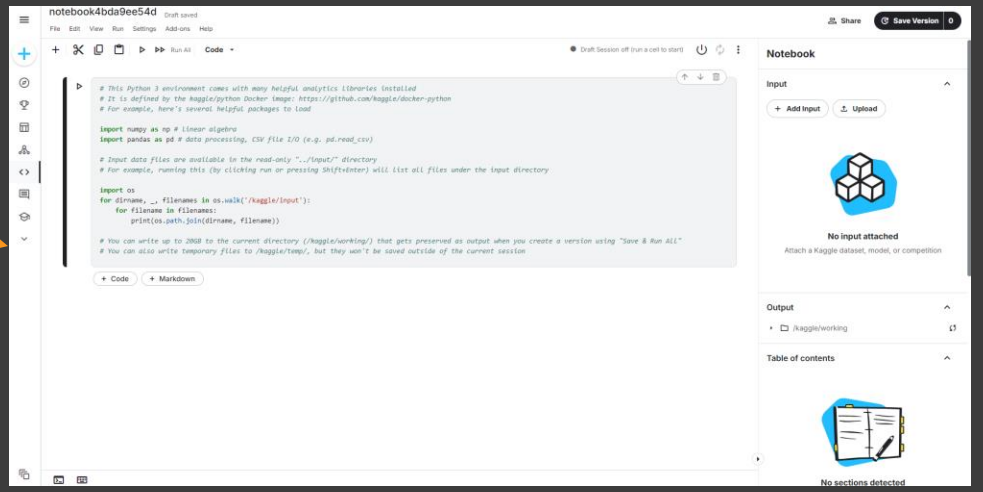
Kaggle: https://www.kaggle.com/code

Click "+ Create"

then

click "New Notebook"





If you want to follow along

If you want to follow along

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Resources: https://github.com/LearnTech-ssam/techtalk_aimodel

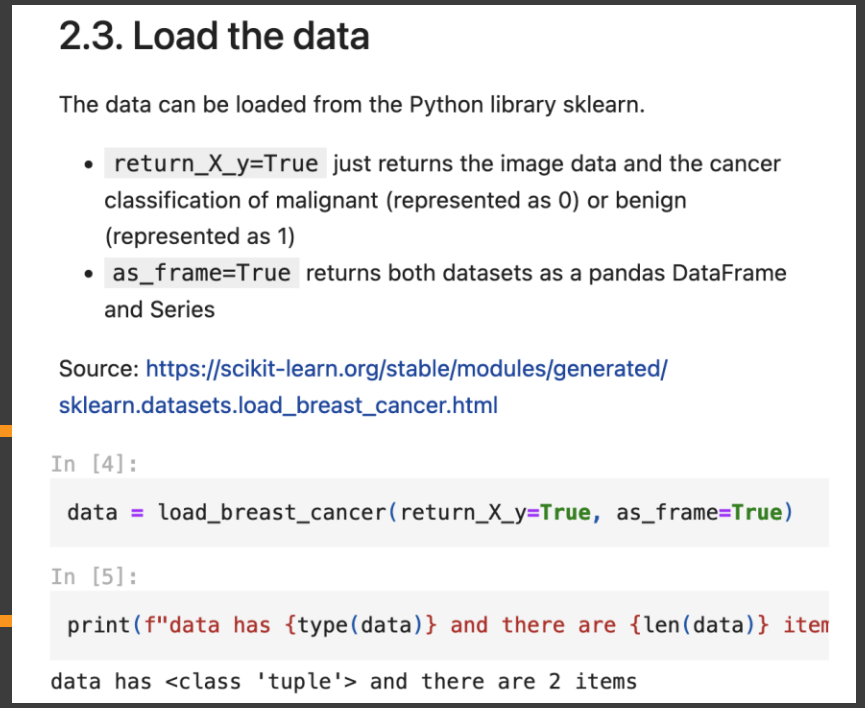
Materials

- images contains images shown in this repository.
- README.md is the file you are currently reading.
- Tech_Talk_AI_Model (subset of code only).html is a html version of the .ipynb file and is screen reader compatible. You will need to download the file and open it in a browser.
- Tech_Talk_AI_Model (subset of code only).ipynb contains Python code to create an AI model without explanation of the steps.
- Tech_Talk_AI_Model.html is a html version of the .ipynb file and is screen reader compatible. You will need to download the file and open it in a browser.
- Tech_Talk_AI_Model.ipynb contains Python code to create an AI model with explanation of the steps.

"In" are code cells that have run.

"Out" are the outputs of any code cells.

The number in square brackets, e.g. [4], is the order the cell was run.



2.3. Load the data

The data can be loaded from the Python library sklearn.

- `return_X_y=True` just returns the image data and the cancer classification of malignant (represented as 0) or benign (represented as 1)
- `as_frame=True` returns both datasets as a pandas DataFrame and Series

Source: https://scikit-learn.org/stable/modules/generated/sklearn.datasets.load_breast_cancer.html

```
In [4]:
data = load_breast_cancer(return_X_y=True, as_frame=True)

In [5]:
print(f"data has {type(data)} and there are {len(data)} item

data has <class 'tuple'> and there are 2 items
```

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Let’s code!

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What next?

Free Tech Courses

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FREE*

Kickstart your tech career with our FREE* online qualifications

- Live virtual learning
- 8, 12 and 16 week courses
- Optional Cisco & Other Certifications
- Monthly start dates
- W3Schools Certificate Programme Included (Level 3s)
- £ Free subject to eligibility

Web Design & Development

Cyber Security

Data Analysis

Coding Practices

Free Tech Courses

Eligibility

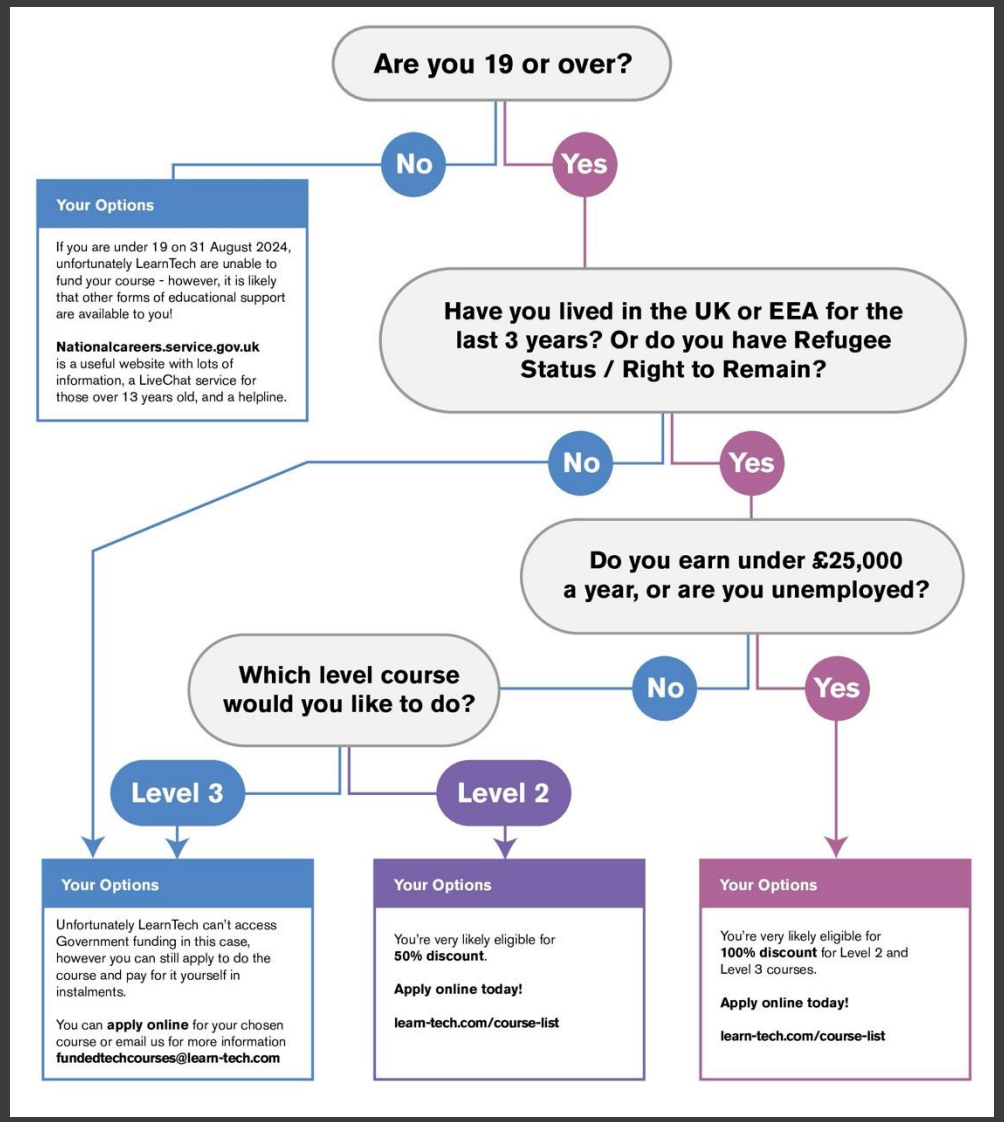
Step 1 – Check Your Postcode Eligibility

Please enter your postcode below to check if your area is eligible for funding...

Enter Postcode | Check Postcode

If you live in London, the Combined Authorities of Greater Manchester, West Midlands, South or West Yorkshire, unfortunately we are currently unable to access government funding for you to do this course for free.

See the full list of courses here:
Course List - LearnTech (learn-tech.com)



Previous Tech Career Talk

Last session was…

For more details and recordings visit
learn-tech.com/news-events

Connect with us

Keep up-to-date with the latest news and celebrations!

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Recordings are posted on socials and our website

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If you would like more information on data engineering or AI, you can email:

Sally Sam
Technical Trainer Mentor
s.sam@learn-tech.com

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Any Questions?

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