



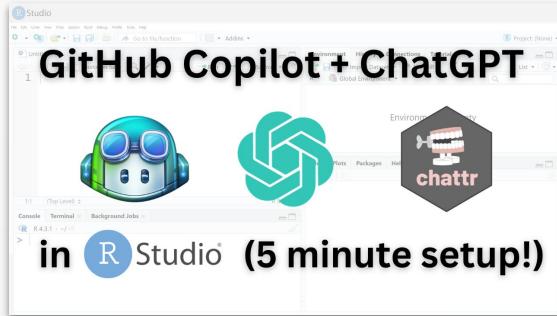
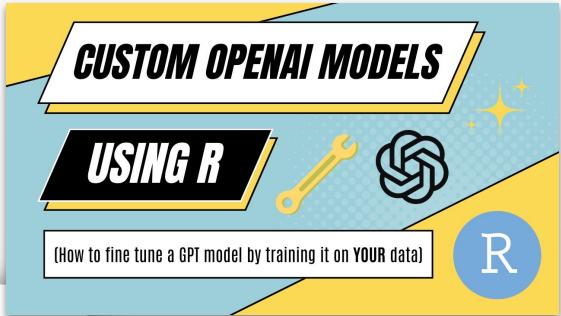
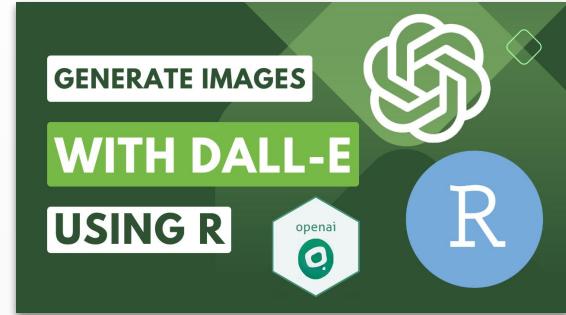
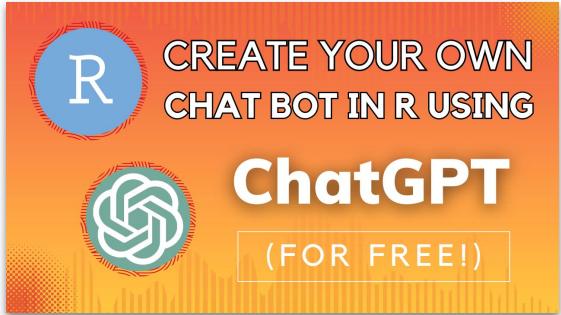
(scan me for the slides)

Practical Tips for Using Generative AI In Data Science Workflows

posit::conf(2024)
Melissa Van Bussel

Senior Data Analyst, Statistics Canada

Have any questions? Go to sli.do and use #posit-keynote





I was GenAI-Fearful.

I became a GenAI-Fanatic.

I ended up becoming
GenAI-Fatigued.

“Upskill now or be left behind!”

“The **only** course you’ll need
to become an **AI Engineer!**”

“Double your salary **overnight**
with this one simple trick!”

“The **Age** of **Generative AI...**”

I'm still (mostly) a
GenAI-Fanatic.

1. GenAI-Fanatic

2. GenAI-Fatigued

3. GenAI-Fearful

1. GenAI-Fanatic

2. GenAI-Fatigued

3. GenAI-Fearful (or GenAI-Hesitant)

1. GenAI-Fanatic

2. GenAI-Fatigued

3. GenAI-Fearful

1. GenAI-Fanatic

2. GenAI-Fatigued

3. GenAI-Fearful

The latest and greatest, and why you might care as someone who works with data

1. GenAI-Fanatic
2. GenAI-Fatigued
3. GenAI-Fearful

Creative use cases
to hopefully (?) get
you excited about
Gen-AI again

1. GenAI-Fanatic

2. GenAI-Fatigued

3. GenAI-Fearful

Best practices for
working with
Gen-AI responsibly

For the GenAI-Fanatics





GO SENS GO

Bell

GO SENS GO

GO SENS GO

GO SENS

Mobil

FACES

do Mitel

SAP

CHICAGO TIRE

PIZZA PIZZA

bolt.com

OTTAWA

canadian tire

Scotiabank

GO SENS GO

innovations

cruba cruba

CANADA

CISCO

GO SENS GO



loveisblindnetflix • [Follow](#)

loveisblindnetflix New season, new cast, new connections! Tag who you're watching the premiere with on February 14th!

29w

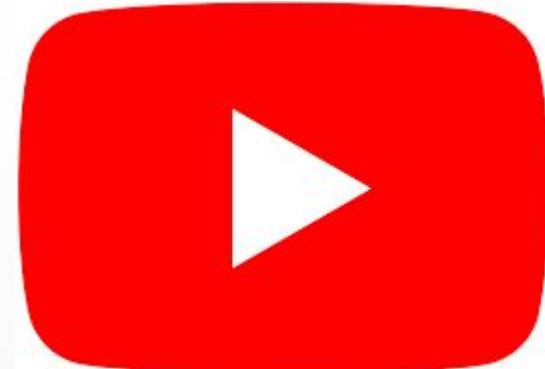


January 17



Add a comment...

[Post](#)



Reels ▾



LOVE IS
❤️ BLIND



Likes



615

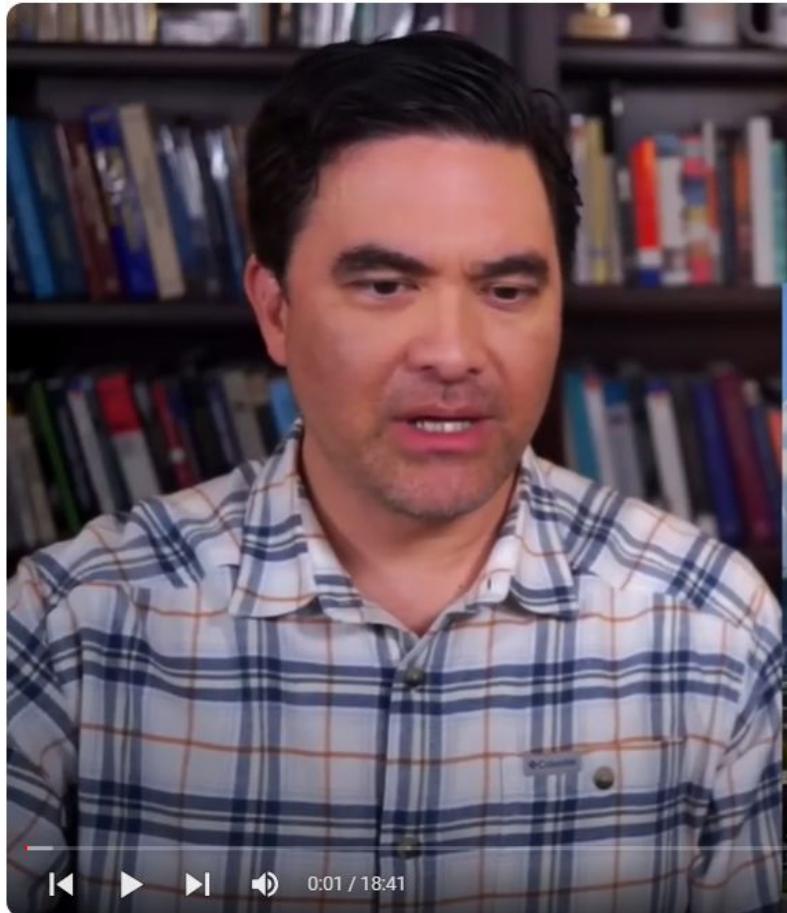


64.1K

CUTEST
COUPLES

Psychology in Seattle

LOVE
IS
BLIND



0:01 / 18:41



Love Is Blind - Season 4 - #49 - (Codependent) - Therapist Reacts



Psychology In Seattle
366K subscribers

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1K



Share

Download

Thanks

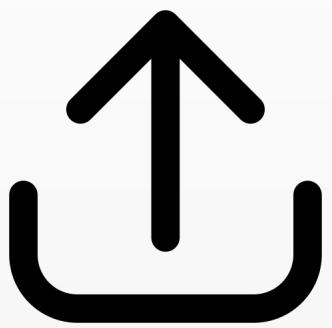


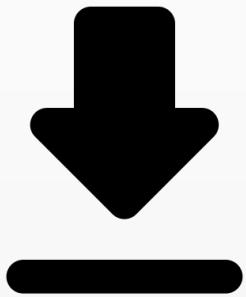
Being a fan == always wanting more



OpenAI

Text, vision, and audio

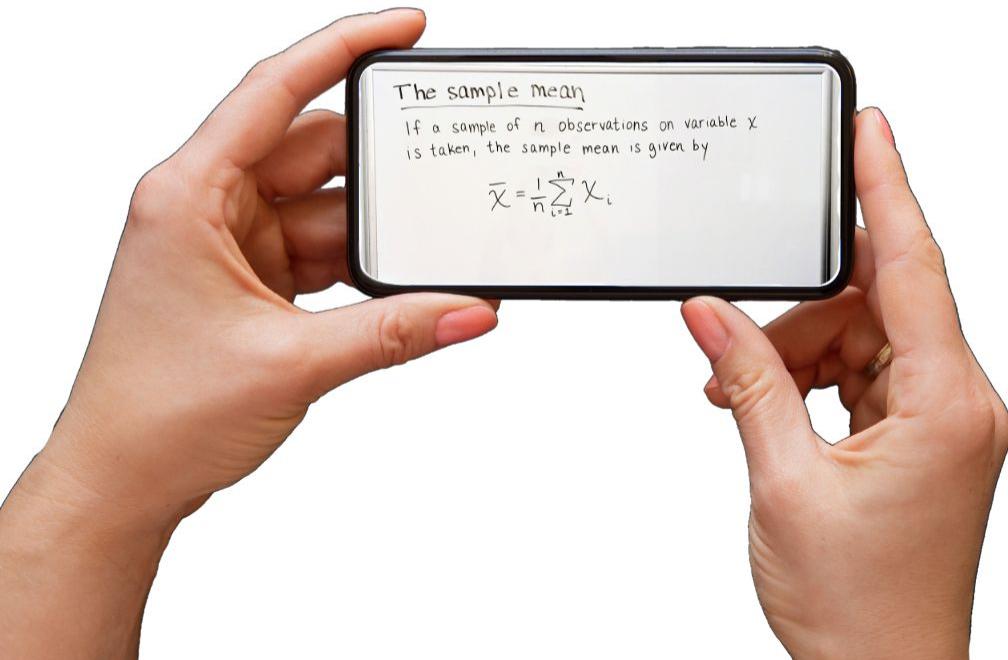






Step 2: Upload in chat

Step 1: Take a photo



The sample mean

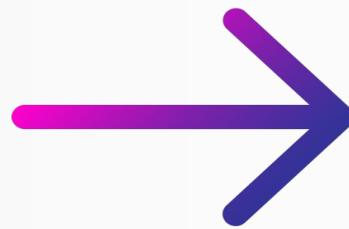
If a sample of n observations on variable X is taken, the sample mean is given by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

The sample mean

If a sample of n observations on variable X is taken, the sample mean is given by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$



The sample mean

If
is

Convert the text in the image into a Quarto document, using `format: html`, and keep the same text formatting (bold, italic, underline, etc.)

format: html

The sample mean

If a sample of n observations on variable X is taken, the sample mean is given by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

The sample mean

If a sample of n observations on variable X is taken, the sample mean is given by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

Problem 1

The number of chocolate bars sold by a store was recorded each week for 10 weeks:

47, 48, 41, 47, 29, 40, 42, 41, 40, 46

Find the sample mean.

Solution 1

The sample mean is given by:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

$$\bar{x} = \frac{1}{10} (47 + 48 + 41 + 47 + 29 + 40 + 42 + 41 + 40 + 46)$$

$$\bar{x} = \frac{1}{10} (421)$$

$$\bar{x} = \frac{421}{10}$$

$$\bar{x} = 42.1$$

∴ The sample mean is 42.1

Problem 1

Convert the text in the image into a Quarto document, using format: `html`, and use styling to make sure that the font styles (e.g., bold, italic) and colours match the image, where possible. Align the math around the equals signs.

\therefore The sample mean is 42.1.

Problem 1

The number of chocolate bars sold by a store was recorded each week for 10 weeks:

47, 48, 41, 47, 29,
40, 42, 41, 40, 46

Find the sample mean.

Solution 1

The sample mean is given by:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

$$\bar{x} = \frac{1}{10} (47 + 48 + 41 + 47 + 29 + 40 + 42 + 41 + 40 + 46)$$

$$\bar{x} = \frac{1}{10} (421)$$

$$\bar{x} = \frac{421}{10}$$

$$\bar{x} = 42.1$$

Therefore, the sample mean is **42.1**.

Job Role	Industry	Annual Salary
Consultant	Healthcare	73900
Engineer	Technology	85800
Designer	Manufacturing	94400
Consultant	Finance	73500
Engineer	Retail	60100
Manager	Finance	88700
Analyst	Finance	74100
Analyst	Retail	104200
Analyst	Healthcare	28200
Consultant	Manufacturing	46500
Manager	Technology	88400
Consultant	Education	74200
Designer	Technology	93900
Consultant	Education	79500
Manager	Technology	92700
Manager	Retail	79700
Designer	Manufacturing	55300
Manager	Education	76000
Manager	Healthcare	54500
Analyst	Technology	83000
Designer	Technology	115900
Salesperson	Education	83100
Salesperson	Healthcare	77600
Manager	Healthcare	70400
Salesperson	Retail	103600

Job Role	Industry	Annual Salary
Consultant	Healthcare	73900
Engineer	Technology	85800
Designer	Manufacturing	68500
Salesperson	Retail	103600

Convert the table in
the image into a
downloadable CSV.

Job Role	Industry	Annual Salary
Salesperson	Healthcare	77600
Manager	Healthcare	70400
Salesperson	Retail	103600



I have converted the table into a CSV file. You can download it using the link below:

Download [job_salaries.csv](#)



	Job Role	Industry	Annual Salary
1	Consultant	Healthcare	73900
2	Engineer	Technology	85800
3	Designer	Manufacturing	94400
4	Consultant	Finance	73500
5	Engineer	Retail	60100
6	Manager	Finance	88700

Here is a preview of the job salaries dataset. Let me know if you need further assistance.



“Annual Salaries” column

X



Please format this column as a dollar value.

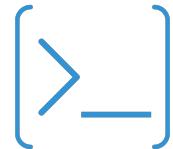


Simulate additional observations so that there are 1000 rows. Create two additional variables, "Years of Experience" and "Education level". Ensure that the generated information and salaries are realistic.

Here is a preview of the job salaries dataset.

View analysis

Let me know if you need further assistance.



python



Copy code

```
# Define ranges for years of experience and their corresponding salary ranges
experience_salary_ranges = {
    (1, 5): (30000, 50000),
    (6, 10): (50001, 70000),
    (11, 15): (70001, 90000),
    (16, 20): (90001, 110000),
    (21, 25): (110001, 130000),
    (26, 30): (130001, 150000),
    (31, 35): (150001, 170000),
    (36, 40): (170001, 190000)
}

# Define education level salary adjustments
education_salary_adjustments = {
    'High School': (0.9, 1.0),
    'Bachelor': (1.0, 1.1),
    'Master': (1.1, 1.2),
    'PhD': (1.2, 1.3)
}
...
...
```





Connect to Google Drive



Connect to Microsoft OneDrive



Upload from computer

Provide a short overview of the dataset, including the data types for each variable.



Total Rows: 1000

Columns and Data Types:

1. **Job Role** (*string*): The role of the employee
2. **Industry** (*string*): The industry in which the employee works
3. **Annual Salary** (*float*): The annual salary of the employee
4. **Years of Experience** (*int*): The number of years the employee has been working, ranging from 1 to 40 years
5. **Education level** (*string*): The highest level of education attained by the employee

Provide summary statistics.



Here are the summary statistics for each column in the dataset:

Summary Statistics:

Annual Salary:

- **Count:** 1000
- **Mean:** ~\$100,000
- **Standard Deviation:** ~\$34,000
- **Min:** \$30,000
- **25th Percentile:** \$67,500
- **Median (50th Percentile):** \$100,000



Analyze the dataset and extract interesting facts. Use data storytelling techniques to weave together a short (75 word) paragraph that pulls together key insights.



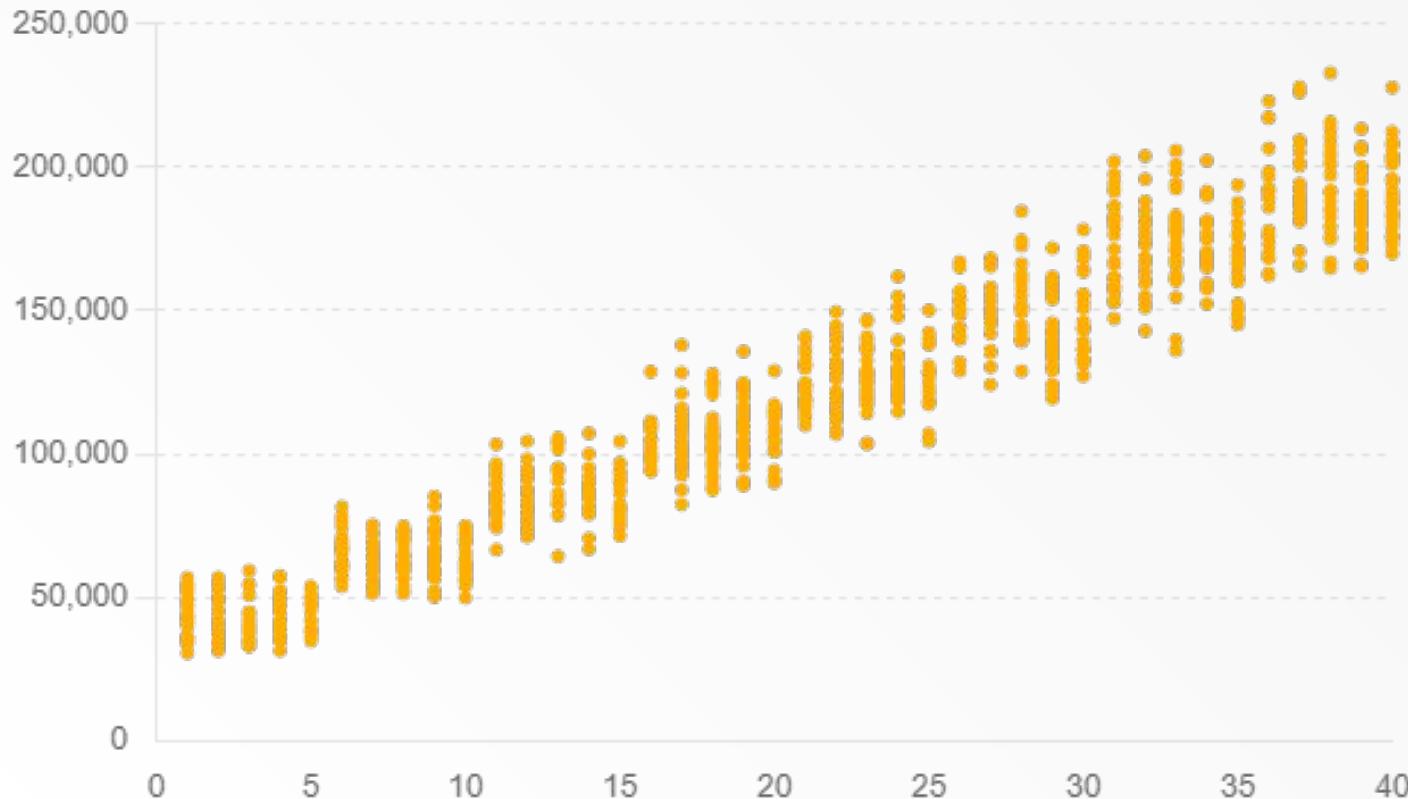


The dataset showcases a skilled and seasoned workforce with an **average of 20.5 years of experience**, primarily in technology and consultancy roles. The **technology sector leads in compensation**, reflecting its high demand, with an average salary of \$100,000. **Most employees hold Bachelor's degrees**, underscoring the importance of higher education. Notably, **"Consultant" is the most prevalent job role**, highlighting the industry's reliance on specialized expertise. This diverse workforce exemplifies the intersection of education, experience, and high-paying tech jobs.

Scatterplot of Years of Experience Vs Annual Salary



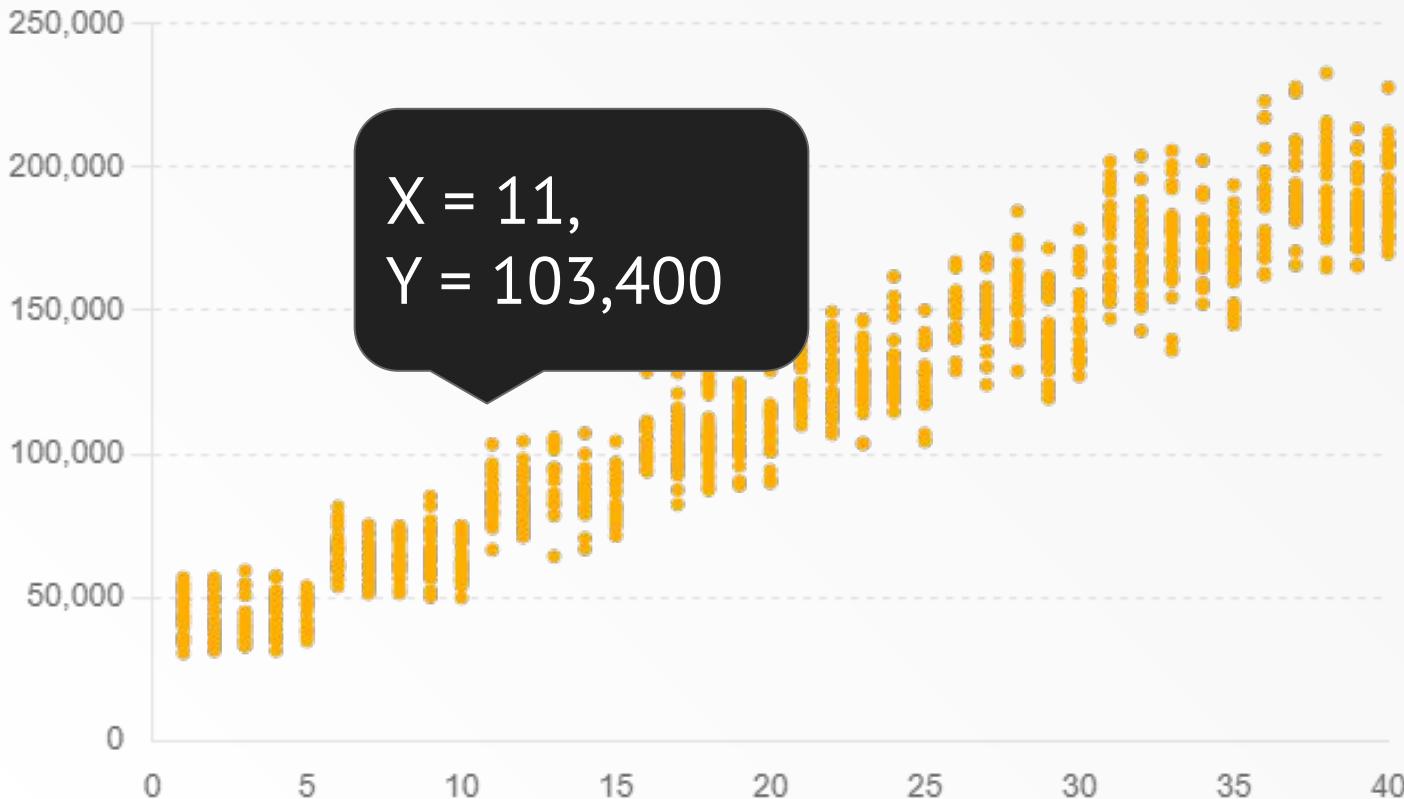
Y Annual Salary by X Years of Experience



Scatterplot of Years of Experience Vs Annual Salary



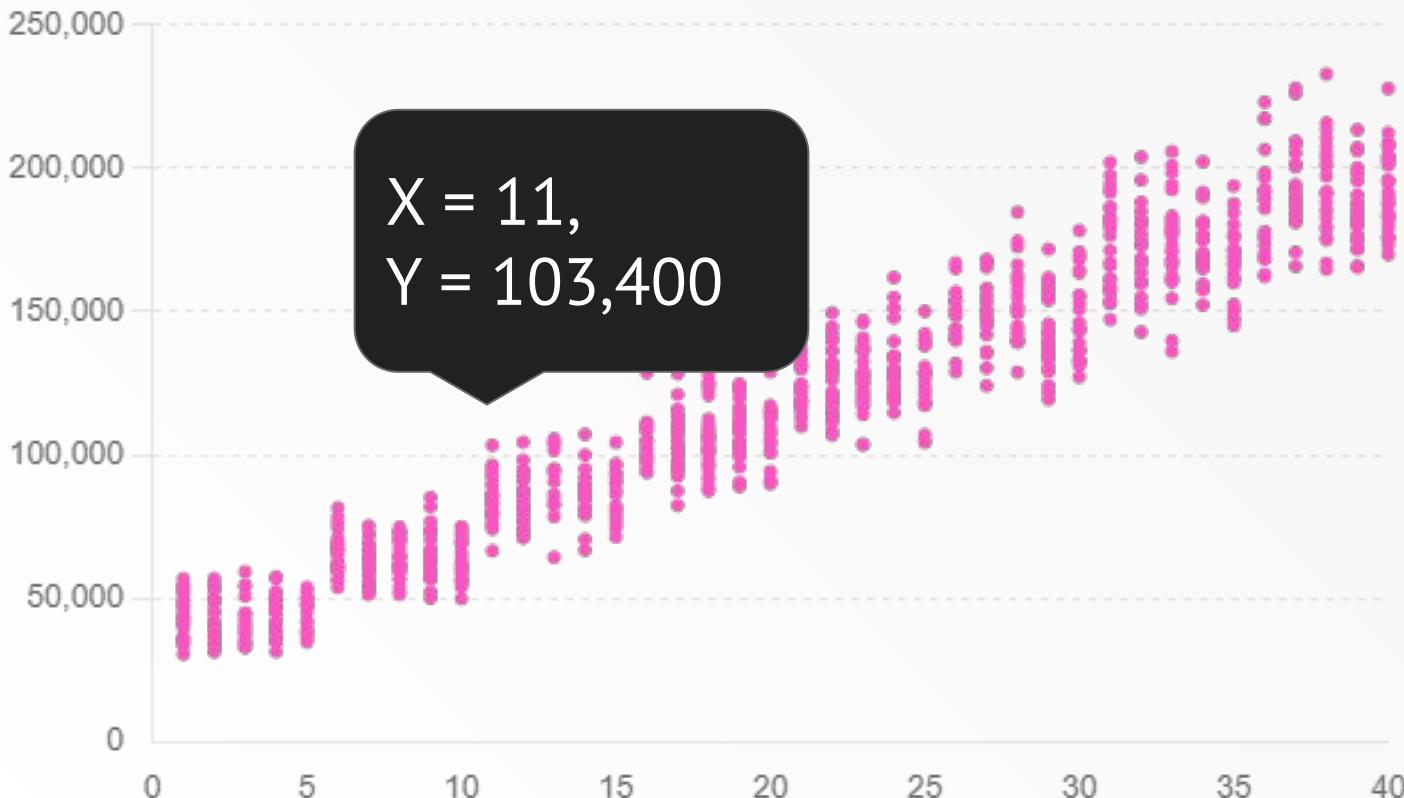
Y Annual Salary by X Years of Experience



Scatterplot of Years of Experience Vs Annual Salary



Y Annual Salary by X Years of Experience

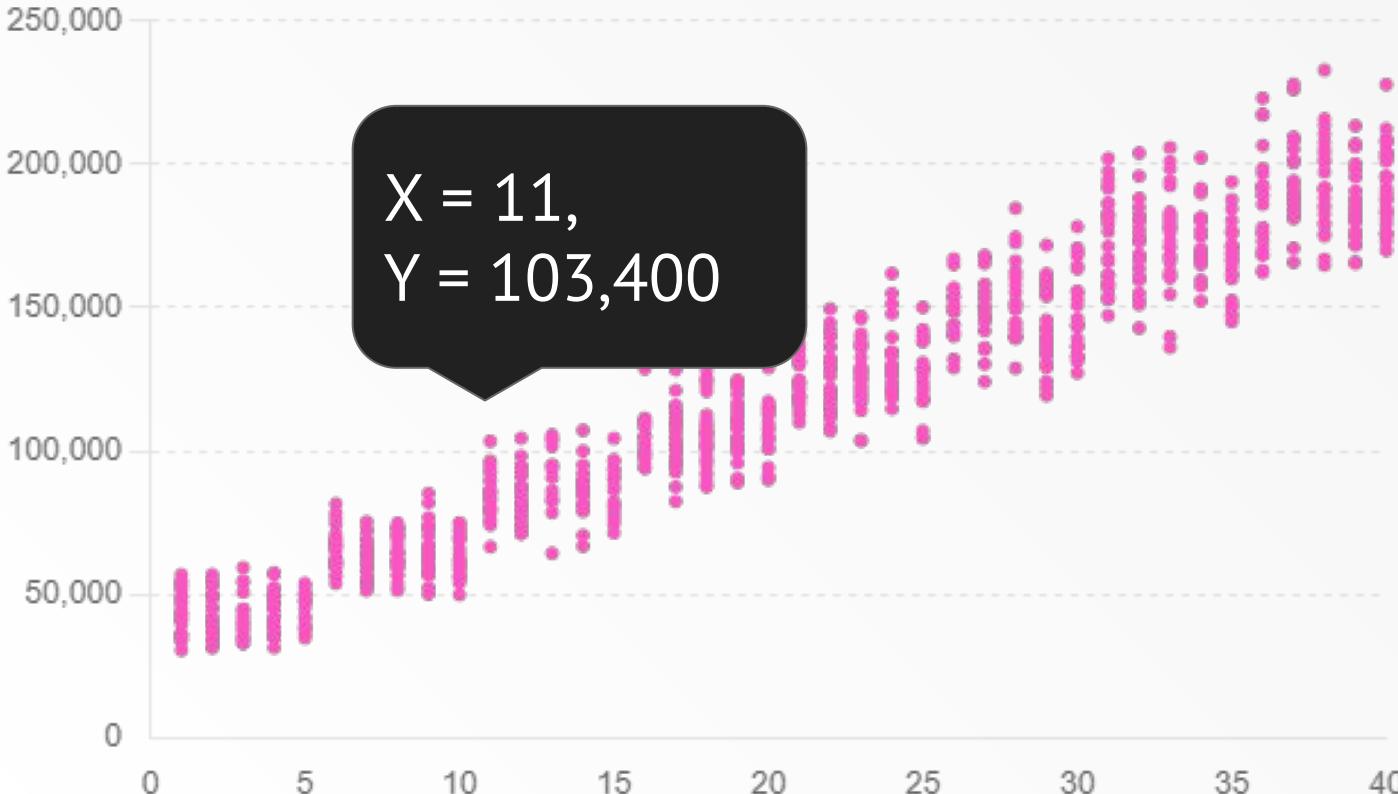


Scatterplot of Years of Experience Vs Annual Salary

Y Annual Salary by X Years of Experience

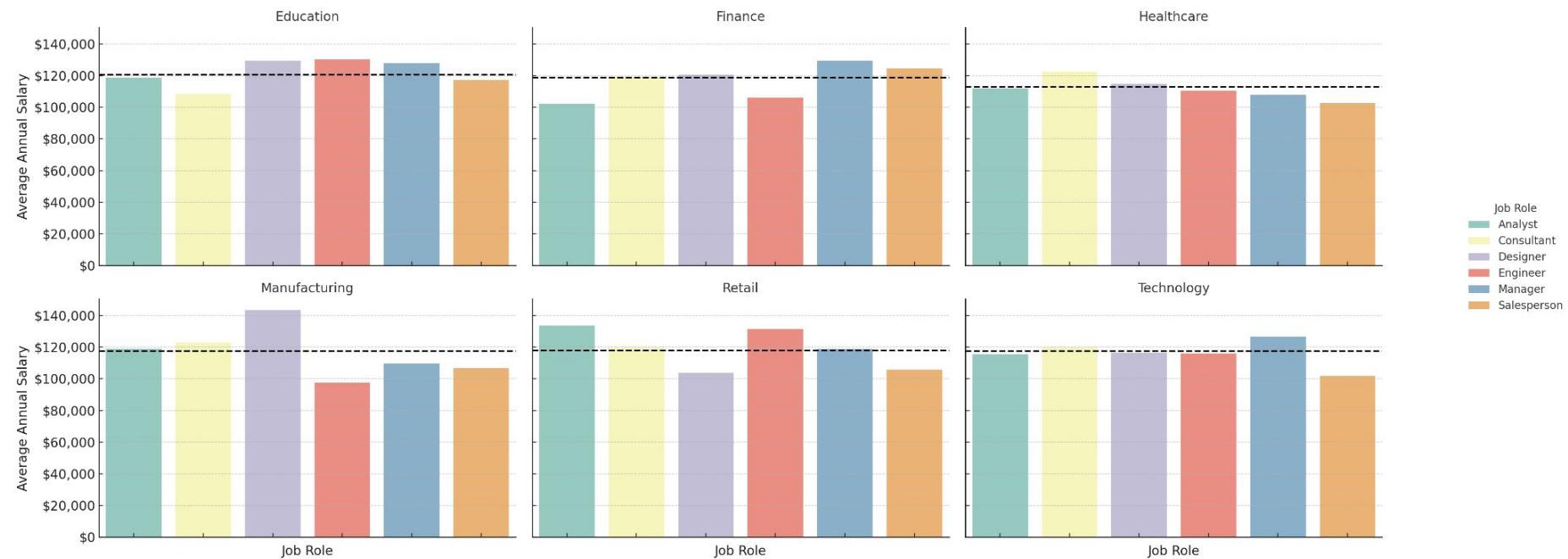


X = 11,
Y = 103,400

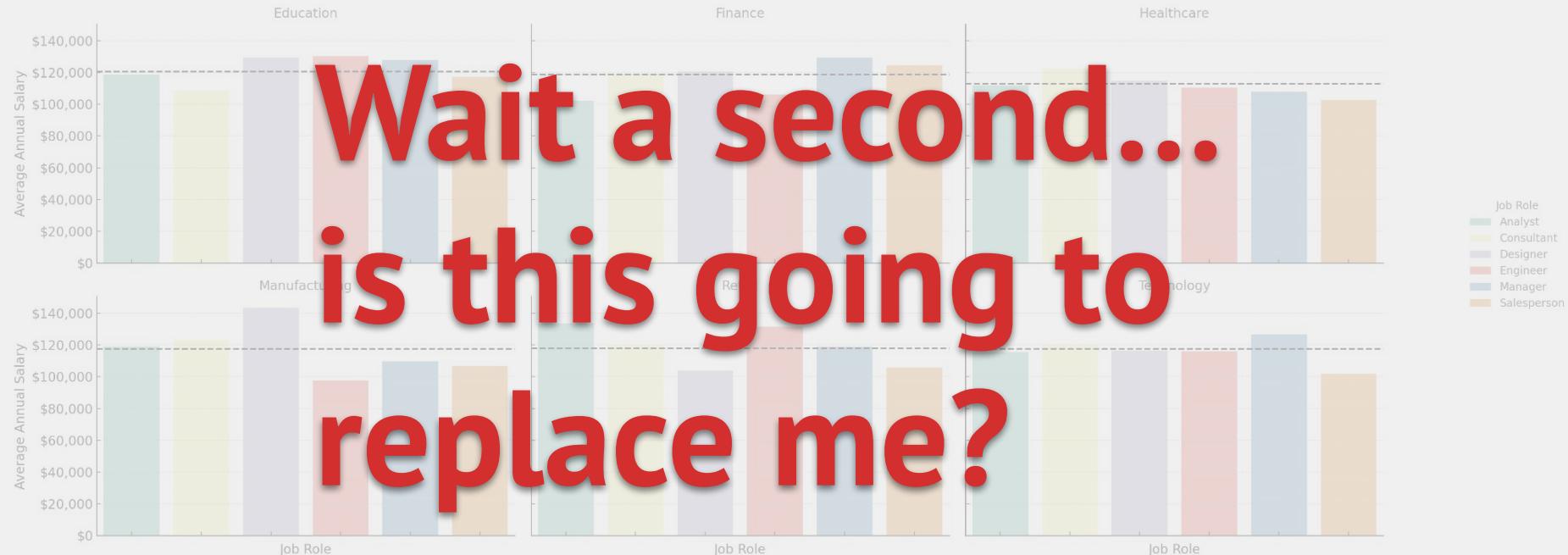


Download
as image

Average Annual Salary by Job Role and Industry



Average Annual Salary by Job Role and Industry

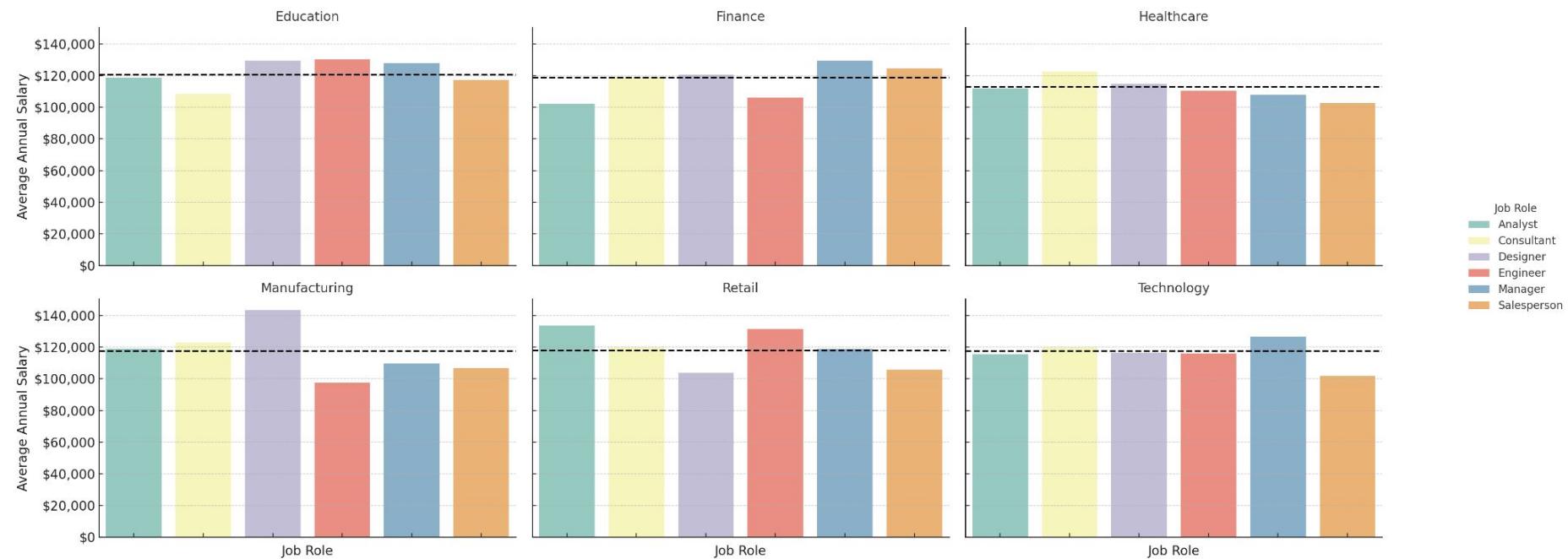


Writing effective prompts

Your existing expertise



Average Annual Salary by Job Role and Industry



“Upskill now or be left behind!”

“The **only** course you’ll need
to become an **AI Engineer!**”

“Double your salary **overnight**
with this one simple trick!”

“The **Age** of **Generative AI...**”

Natural language description:

Create a data visualization using the salaries dataset.

Code equivalent*:

```
salaries |>  
  ggplot()
```

Grammar of graphics:

Data

*=assuming some extra summary variables were added to salaries

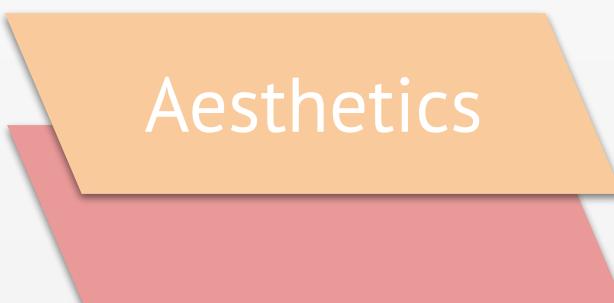
Natural language description:

Put **average salary** on the **y-axis**,
and **job role** on the **x-axis**. Use a
different **colour** for each **job role**.

Code equivalent:

```
salaries |>  
  ggplot(aes(x = job,  
             y = avg_salary,  
             fill = job))
```

Grammar of graphics:



Aesthetics

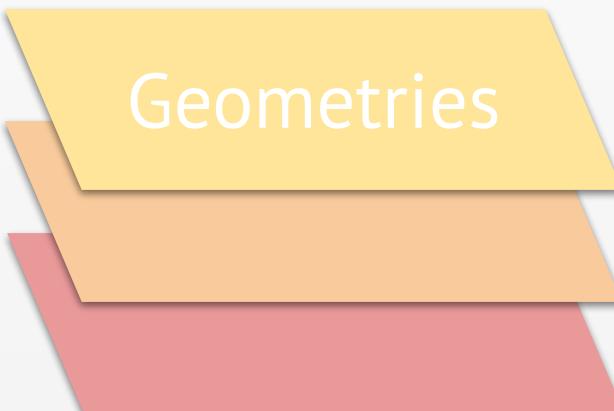
Natural language description:

Create a **bar chart**...

Code equivalent:

```
geom_bar(  
  stat = "identity",  
  position = "dodge"  
)
```

Grammar of graphics:



Geometries

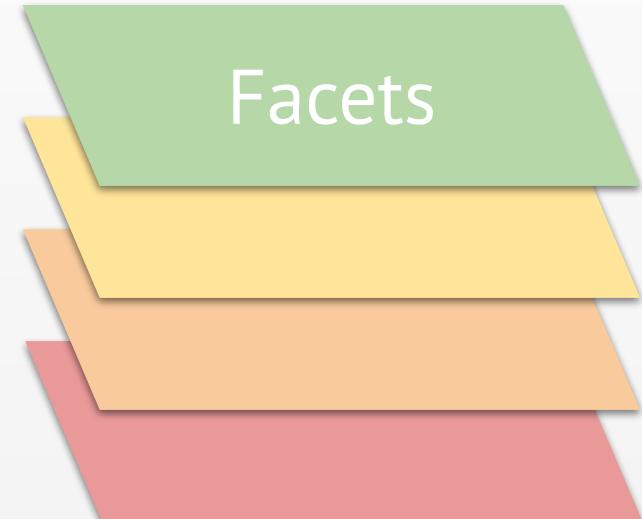
Natural language description:

...that's **faceted** by the
industry variable

Code equivalent:

```
facet_wrap(~industry)
```

Grammar of graphics:



Facets

Natural language description:

Add a **horizontal black line** showing the **average salary** for each industry.

Code equivalent:

```
geom_hline(  
  industry_avg_salary,  
  color = "black",  
  linetype = "dashed"  
)
```

Grammar of graphics:

Statistics

Natural language description:

Format the **y-axis** as **dollar amounts**. Use a **modern colour palette**...

Code equivalent:

```
scale_y_continuous(  
    labels = scales::dollar_format()  
) +  
scale_fill_brewer(palette = "Set3")
```

Grammar of graphics:

Coordinates



Natural language description:

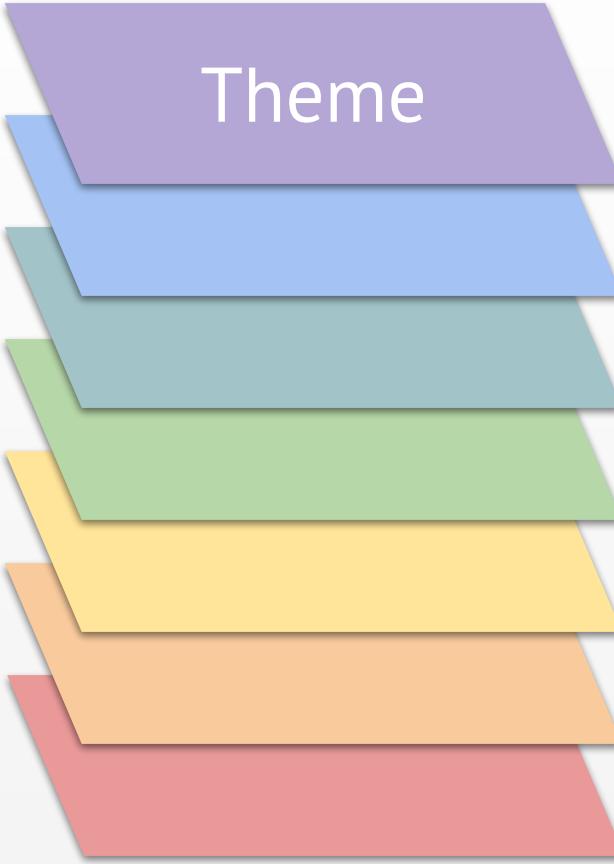
...and a **minimal theme**. Display a **legend** on the **right**.

Code equivalent:

```
theme_minimal() +  
theme(legend.position = "right")
```

Grammar of graphics:

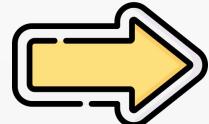
Theme



Create a data visualization using the salaries dataset. Put average salary on the y-axis, and job role on the x-axis. Use a different colour for each job role. Create a bar chart that's faceted by the industry variable. Add a horizontal black line showing the average salary for each industry. Format the y-axis as dollar amounts. Use a modern colour palette and a minimal theme. Display a legend on the right.

Input: Prompt

Create a data visualization using the salaries dataset. Put average salary on the y-axis, and job role on the x-axis. Use a different colour for each job role. Create a bar chart that's faceted by the industry variable. Add a horizontal black line showing the average salary for each industry. Format the y-axis as dollar amounts. Use a modern colour palette and a minimal theme. Display a legend on the right.

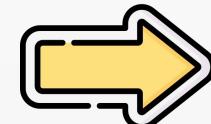
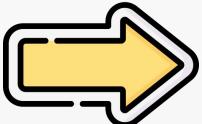


Output: Python code

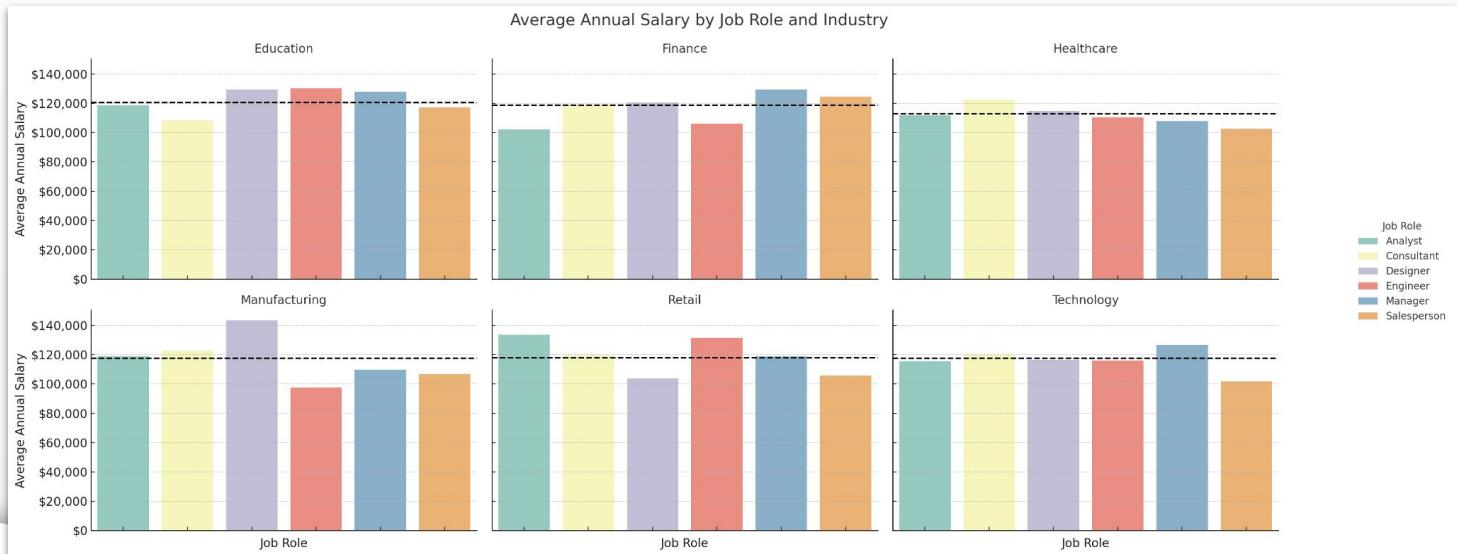
```
python
```

 Copy code

```
# Create the plot using seaborn
g = sns.catplot(
    data=average_salary_by_role,
    x='Job Role',
    y='Annual Salary',
    hue='Job Role',
    kind='bar',
    col='Industry',
    col_wrap=3,
    height=4,
    aspect=1.5,
    palette='Set3',
    dodge=False,
    ci=None
)
# Add horizontal lines for average salary in each industry
...
```



Python code is executed to produce: Image



You can now run Python code directly within the chat...

- See if there's errors right away
- No longer need to copy-paste into IDE
- Less switching back and forth between windows

<https://openai.com/index/hello-gpt-4o/>

For the GenAI-Fatigued

Ice Cream Maker



Ready in
20 minutes!

After putting the
“freezer bowl” in the
freezer for 24 hours



Amount of time required:

Using the Ice Cream Maker:

Total time required: **24.33 hours**

- Pre-freezing the bowl: 24 hours
- Making the ice cream: 20 minutes

Buying store-bought ice cream:

Total time required: **24.33 hours**

- Working up the energy to do groceries: 24 hours
- Buying the ice cream: 20 minutes

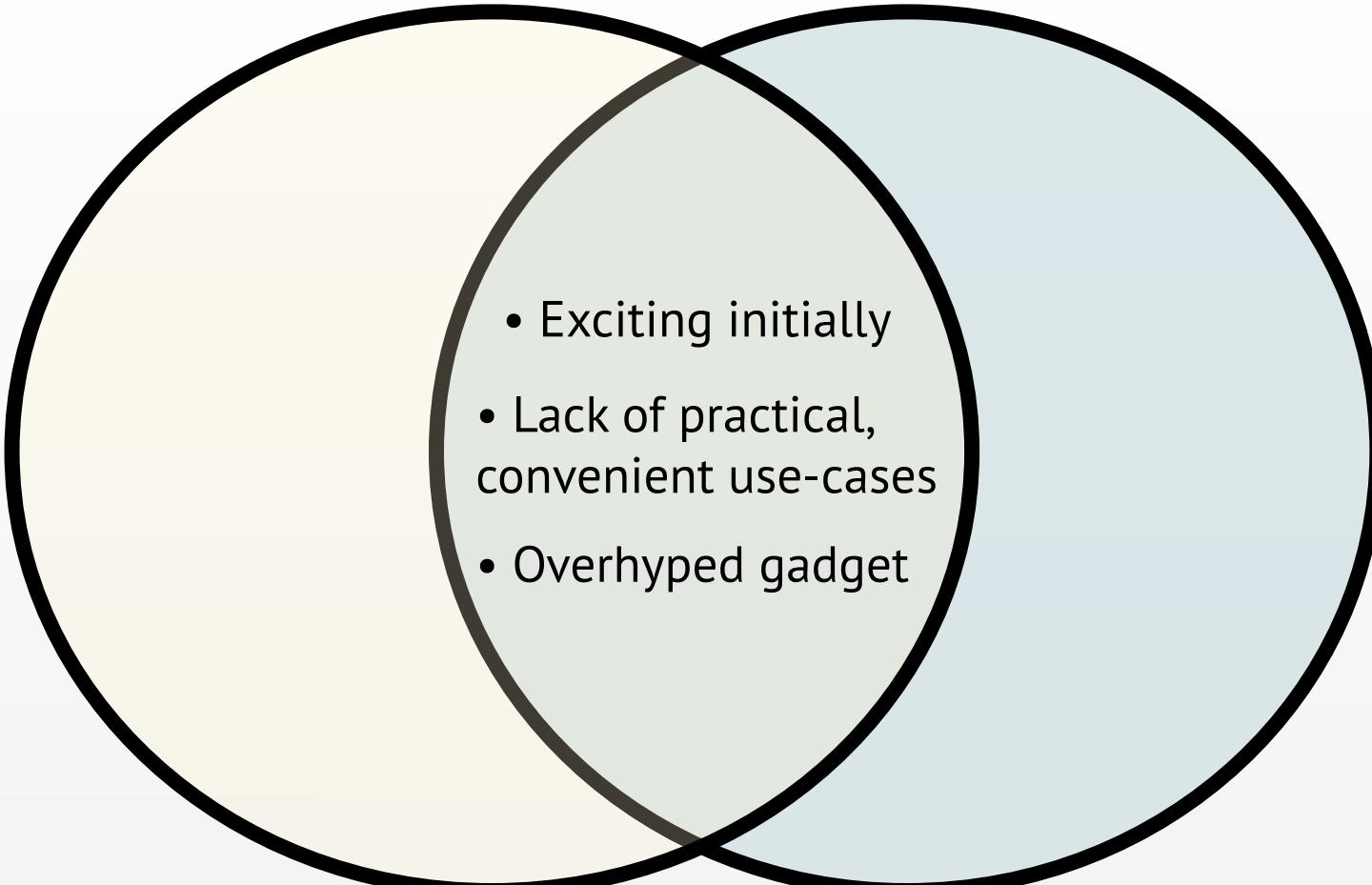
Ice Cream Maker



Ready in
20 minutes!

Ice Cream Maker

Generative AI

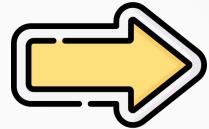
- 
- A Venn diagram consisting of two overlapping circles. The left circle is light beige and labeled 'Ice Cream Maker'. The right circle is light blue and labeled 'Generative AI'. The intersection of the two circles contains a list of three bullet points.
- Exciting initially
 - Lack of practical, convenient use-cases
 - Overhyped gadget

**A quick preview
before we get into
technical stuff...**

A Quarto revealjs theme generator...

Enter a phrase
for the theme:

abstract
purple minimal



Presentation Title

Your Name Goes Here

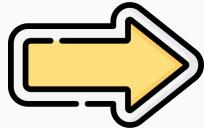
Generate A white mouse cursor icon pointing at the "Generate" button.

A way to generate hex sticker designs...

Enter a phrase
for the sticker:

cute baby
python

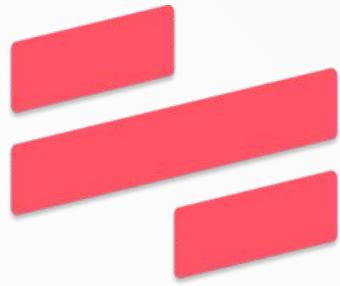
Generate 



pkgname



Some tools that make teaching/communicating about data a bit easier...

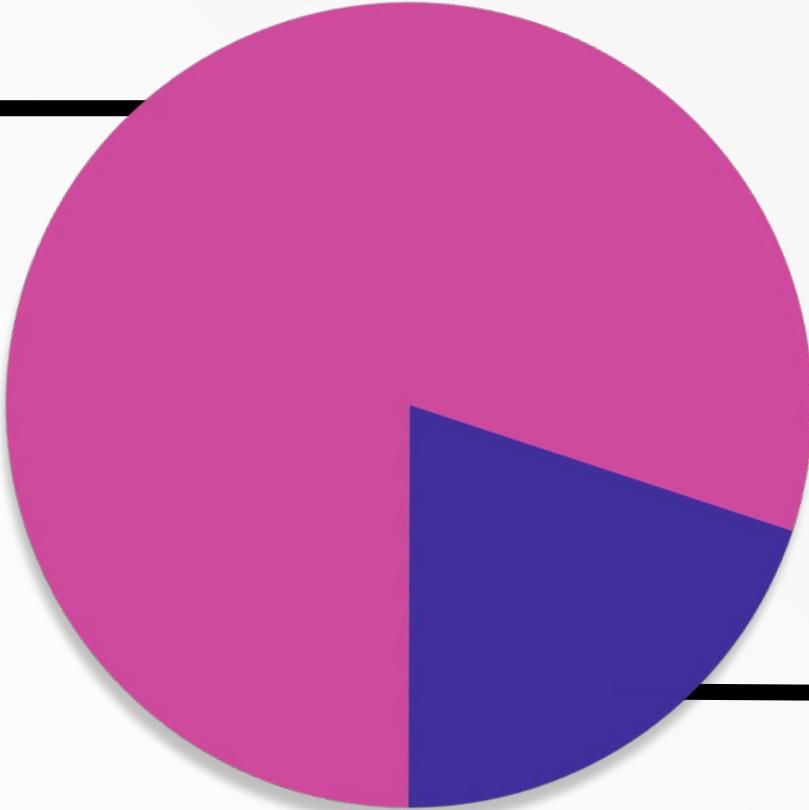


Scribe



descript

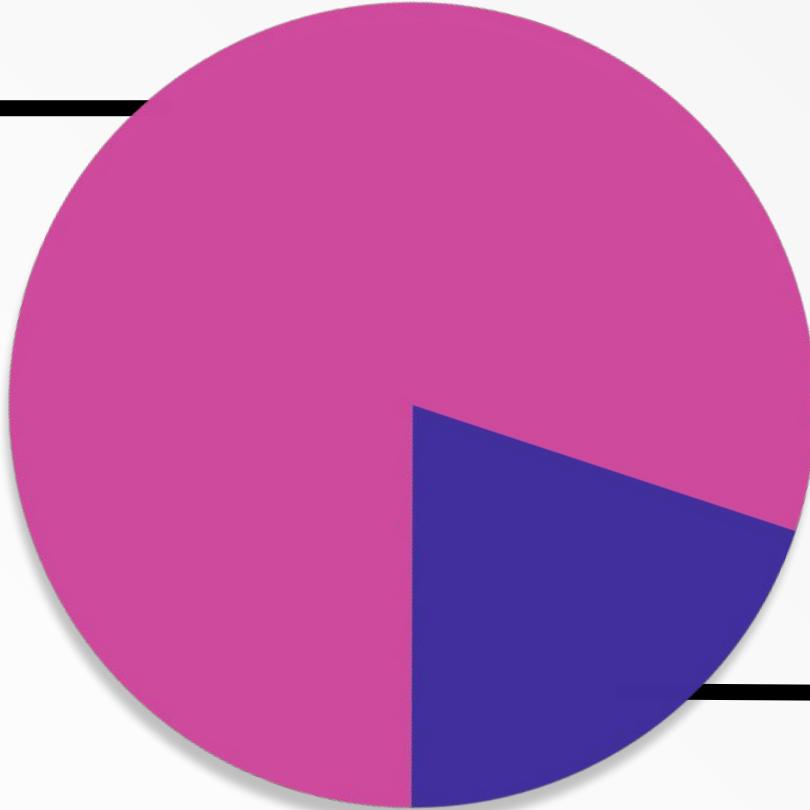
Data —————
Cleaning



**Everything
Else**

~~Data
Cleaning~~

**Making
Things
Look
Pretty**



**Everything
Else**

Making things look pretty is something that this particular community is really good at, e.g.,



Allison Horst's
Data Science
Illustrations



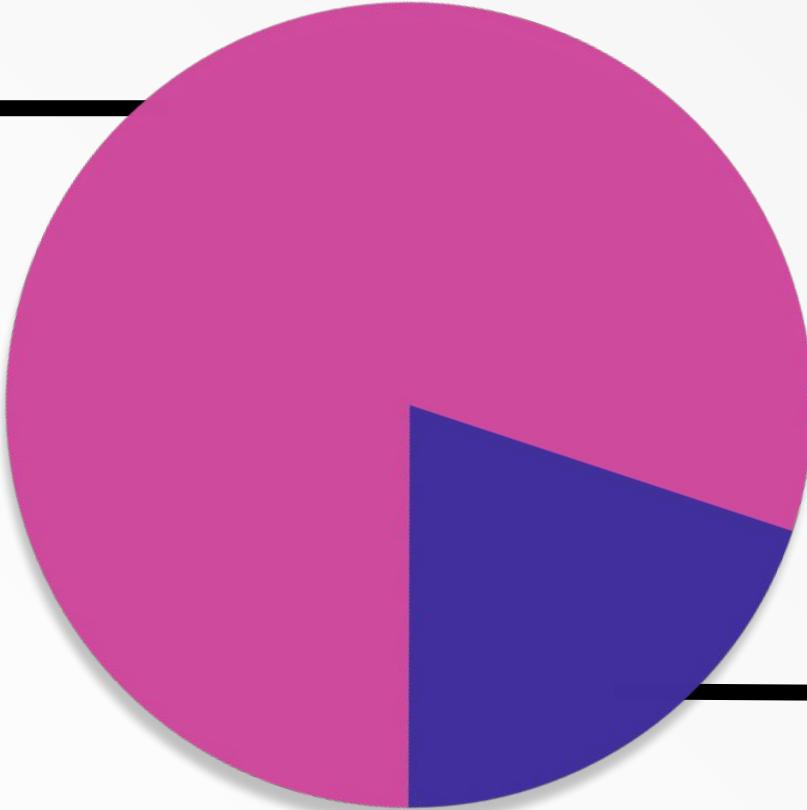
Meghan Harris'
Generative Art
using R

A screenshot of a presentation slide titled "Slidecraft 101: plot backgrounds". The slide shows a scatter plot with a grid background that has been changed to a vibrant orange-blue color. Below the main title, there are two smaller sections: "hi-orange-blue" which shows a snippet of CSS code for nested loops, and "prismatic with asciicast" which shows a color palette and a snippet of CSS using sass interpolation.

Emil Hvitfeldt's
Slidecraft 101
series

~~Data
Cleaning~~

**Making
Things
Look
Pretty**

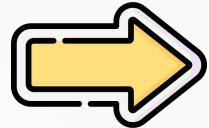


**Everything
Else**

A Quarto revealjs theme generator...

Enter a phrase
for the theme:

abstract
purple minimal



Presentation Title

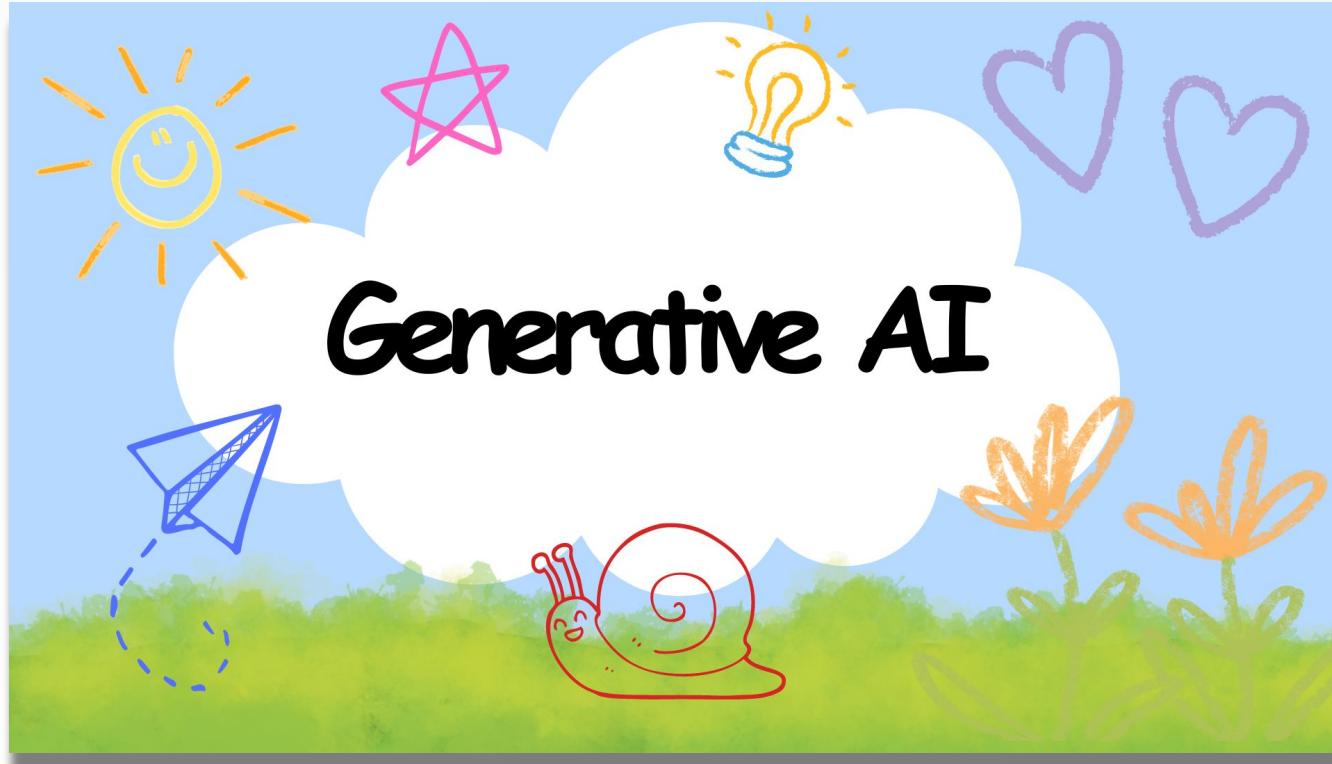
Your Name Goes Here

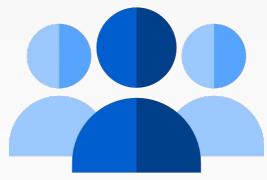
Generate A white mouse cursor icon pointing at the "Generate" button.

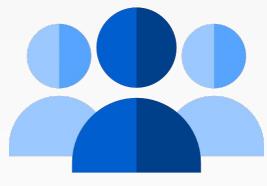
I want a new slide
theme for every talk I
give

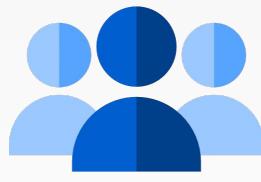


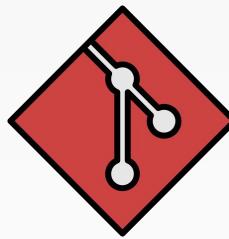
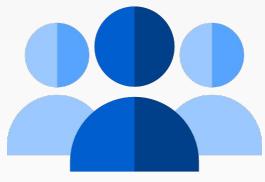
Not OK for a talk about AI:

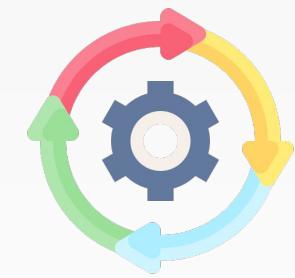
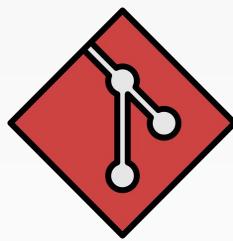
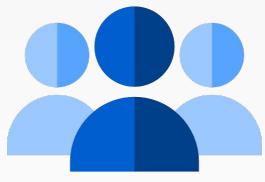






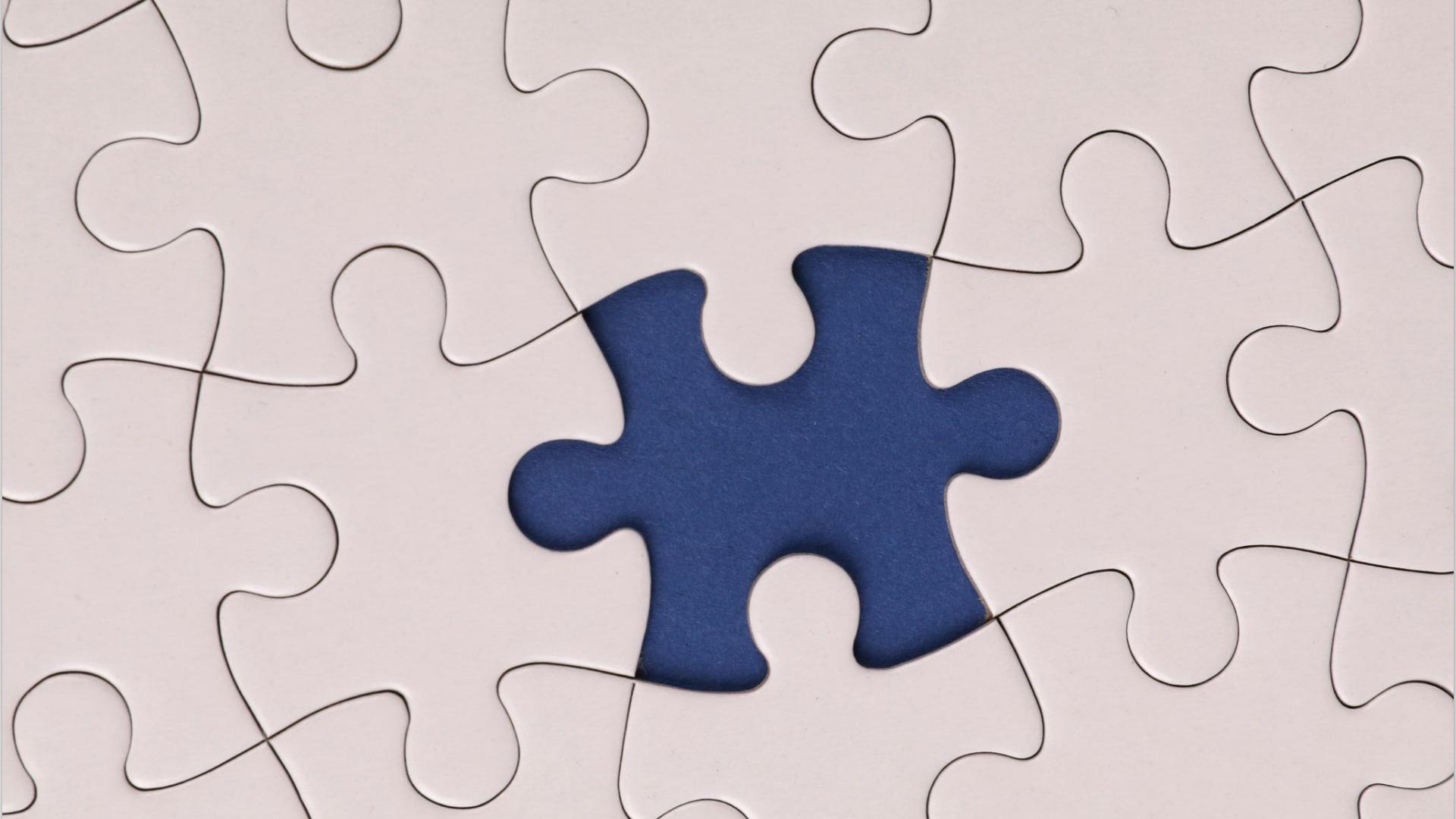


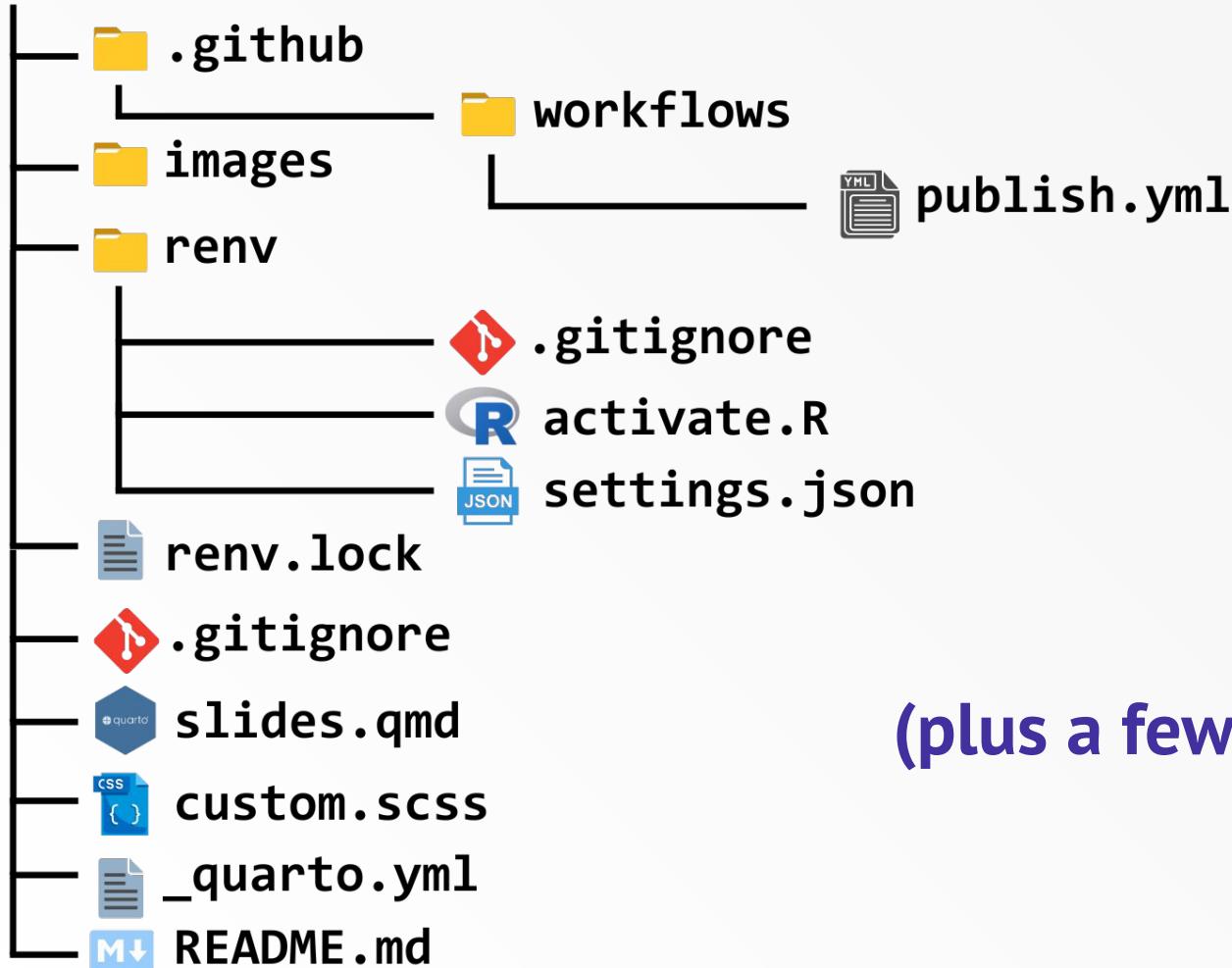




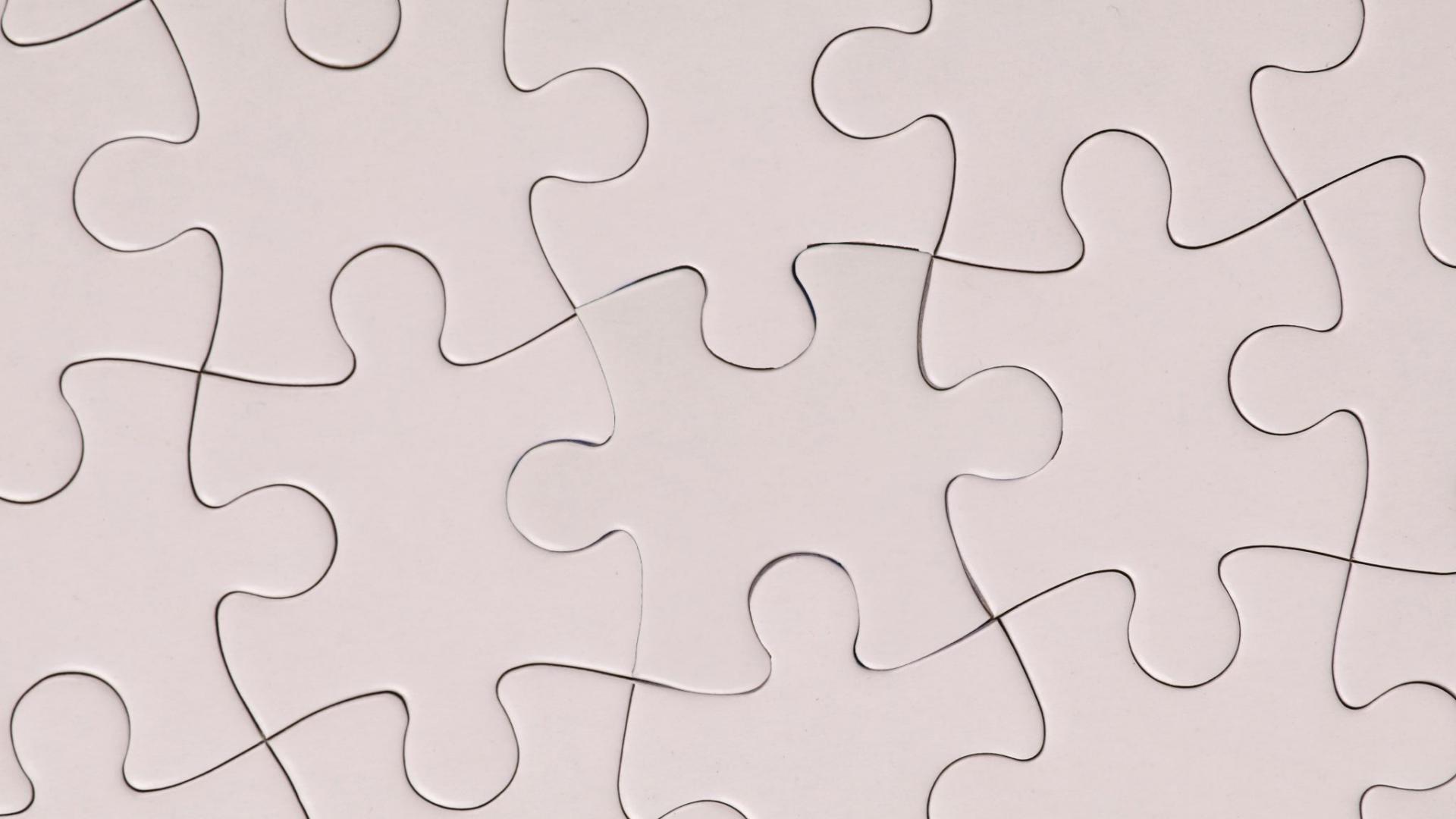


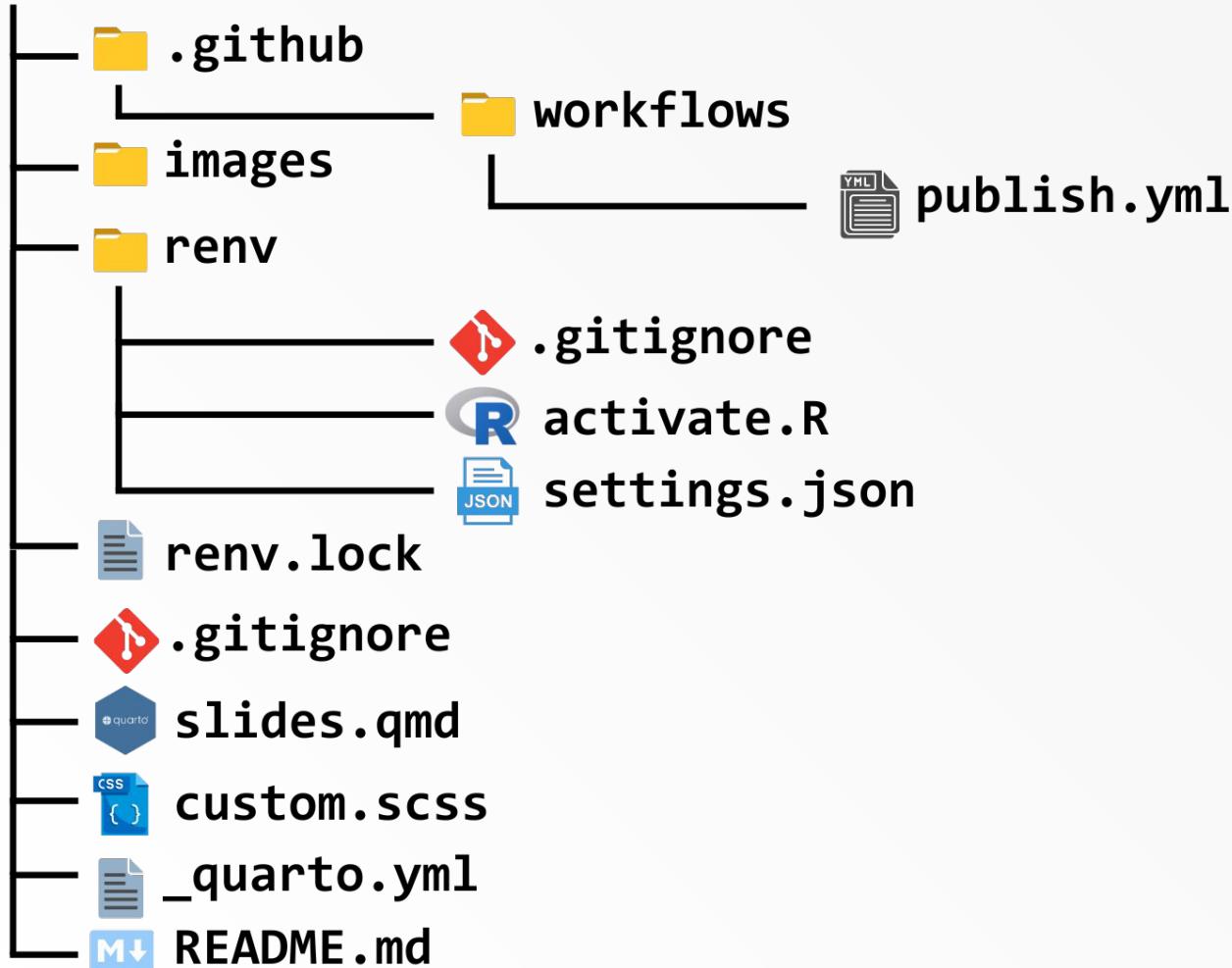
(or GitLab Pages...
same idea!)

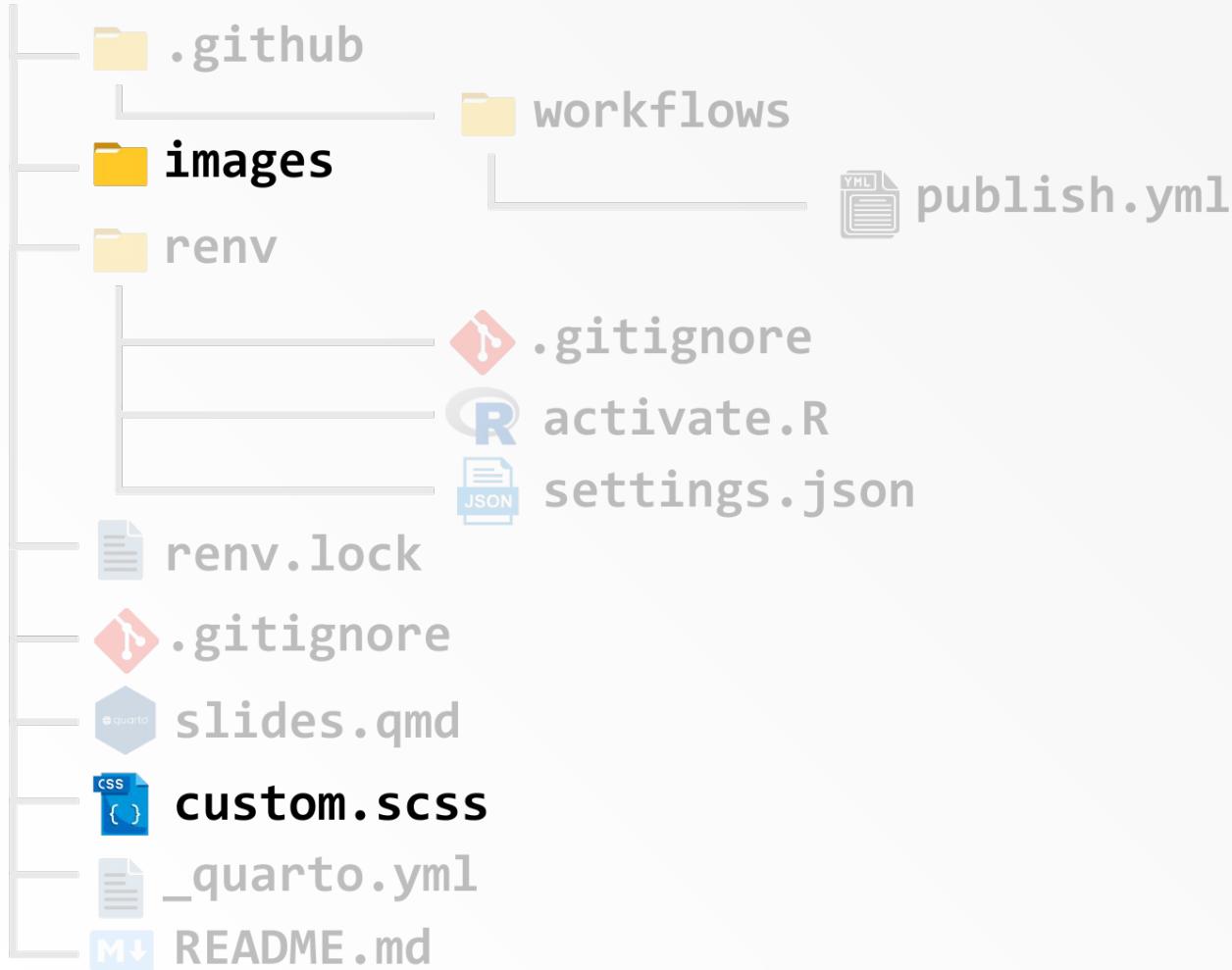




(plus a few more files...)







custom.scss



```
/*-- scss:defaults --*/
$primary-color: #800080;
$secondary-color: #BF00BF;
$tertiary-color: lighten($secondary-color, 15%);
$accent-color: #F6851B;
$theme-white: #fff;
$theme-black: #000;

@import url('https://fonts.googleapis.com
            /css2?family=Poppins&display=swap');

$font-family-sans-serif: 'Poppins', sans-serif;
```

custom.scss



```
/*-- scss:defaults --*/
$primary-color: #800080;
$secondary-color: #BF00BF;
$tertiary-color: lighten($secondary-color, 15%);
$accent-color: #F6851B;
$theme-white: #fff;
$theme-black: #000;

@import url('https://fonts.googleapis.com
            /css2?family=Poppins&display=swap');

$font-family-sans-serif: 'Poppins', sans-serif;
```

Folder structure stays the same

Folder structure stays the same

+

Making a new Quarto theme means getting new background images and making minimal styling changes

Folder structure stays the same

+

Making a new Quarto theme means getting new background images and making minimal styling changes

+

Gen AI is good* at generating images and writing code

* = good enough

Folder structure stays the same

+

Making a new Quarto theme means getting new background images and making minimal styling changes

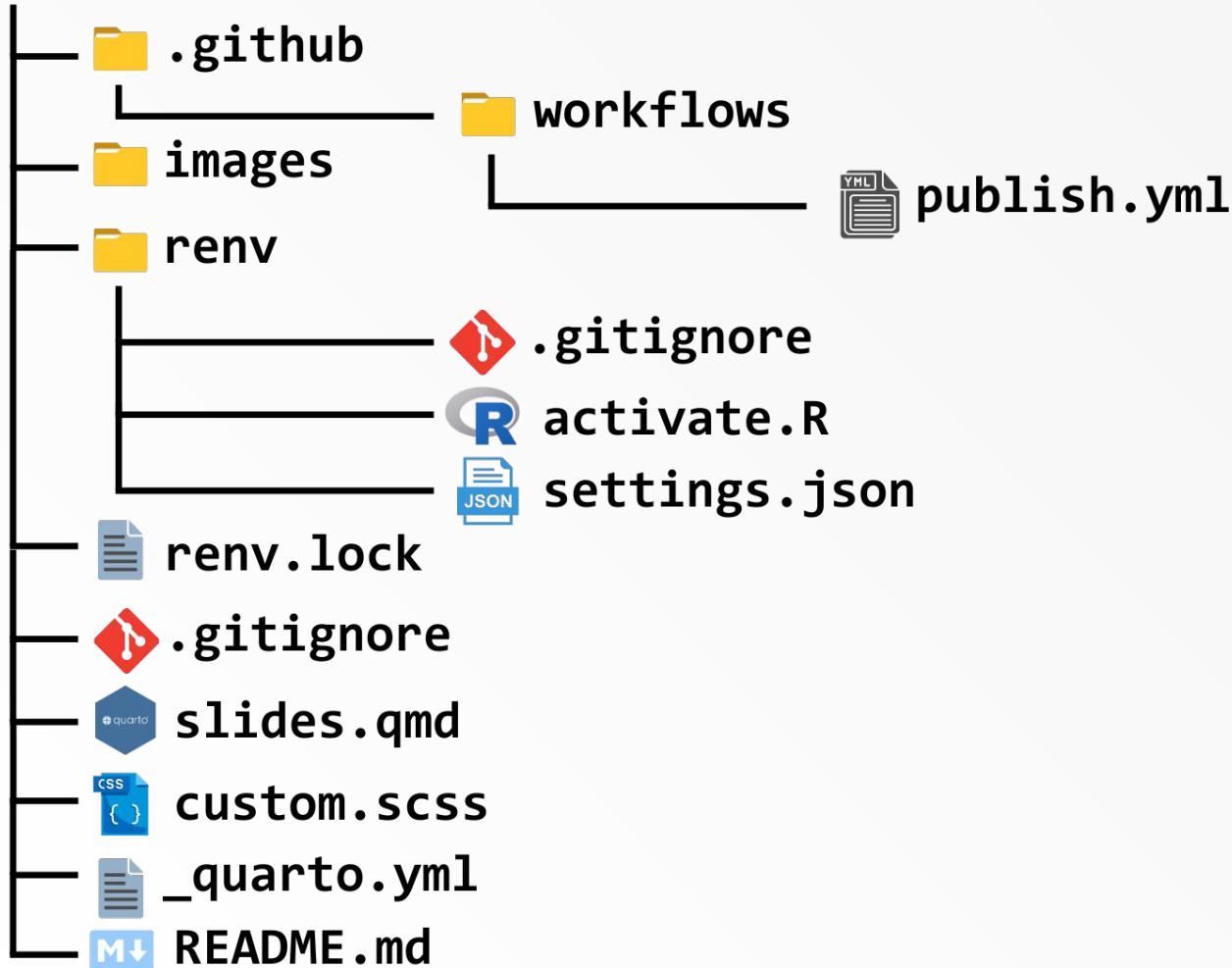
+

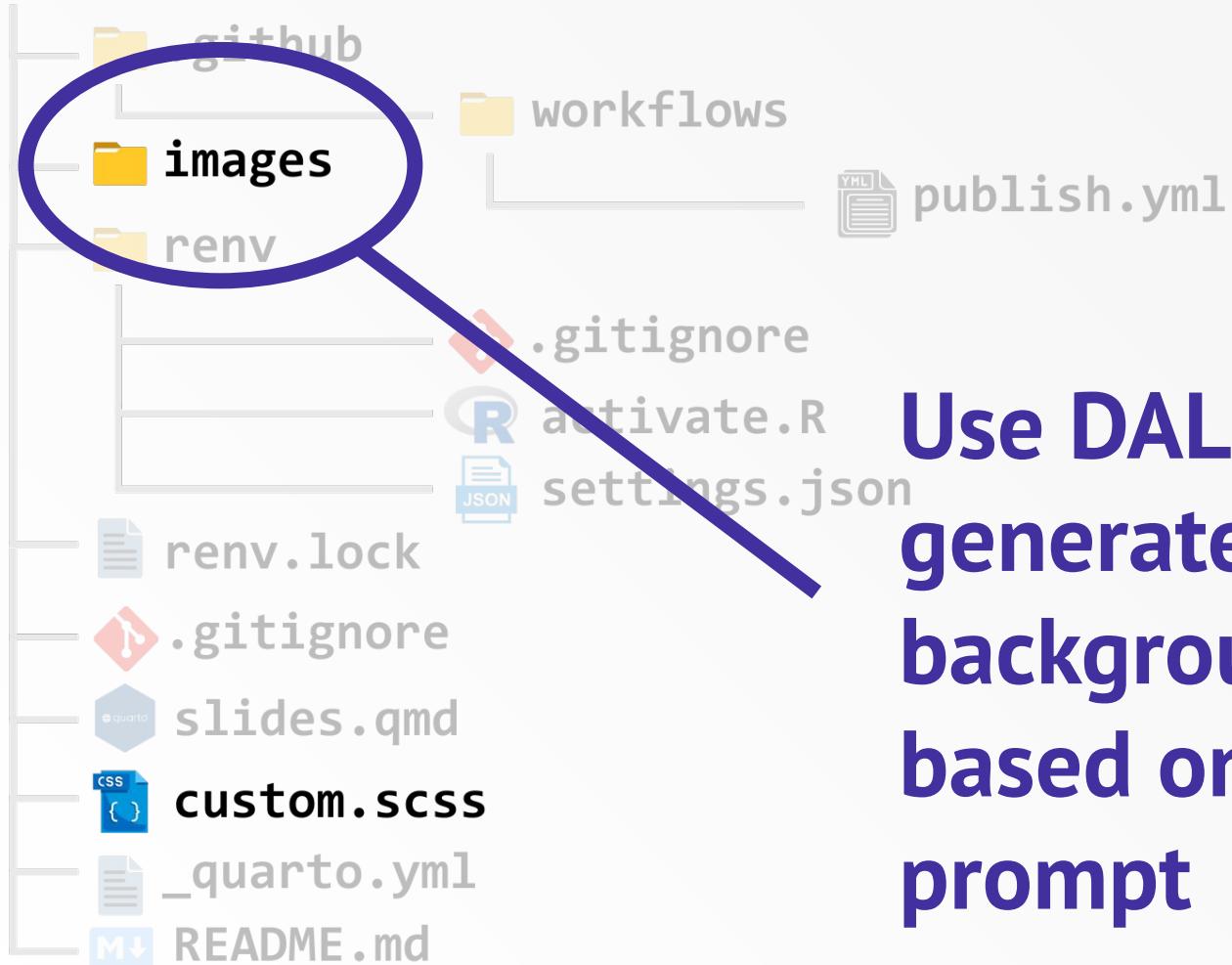
Gen AI is good* at generating images and writing code

=

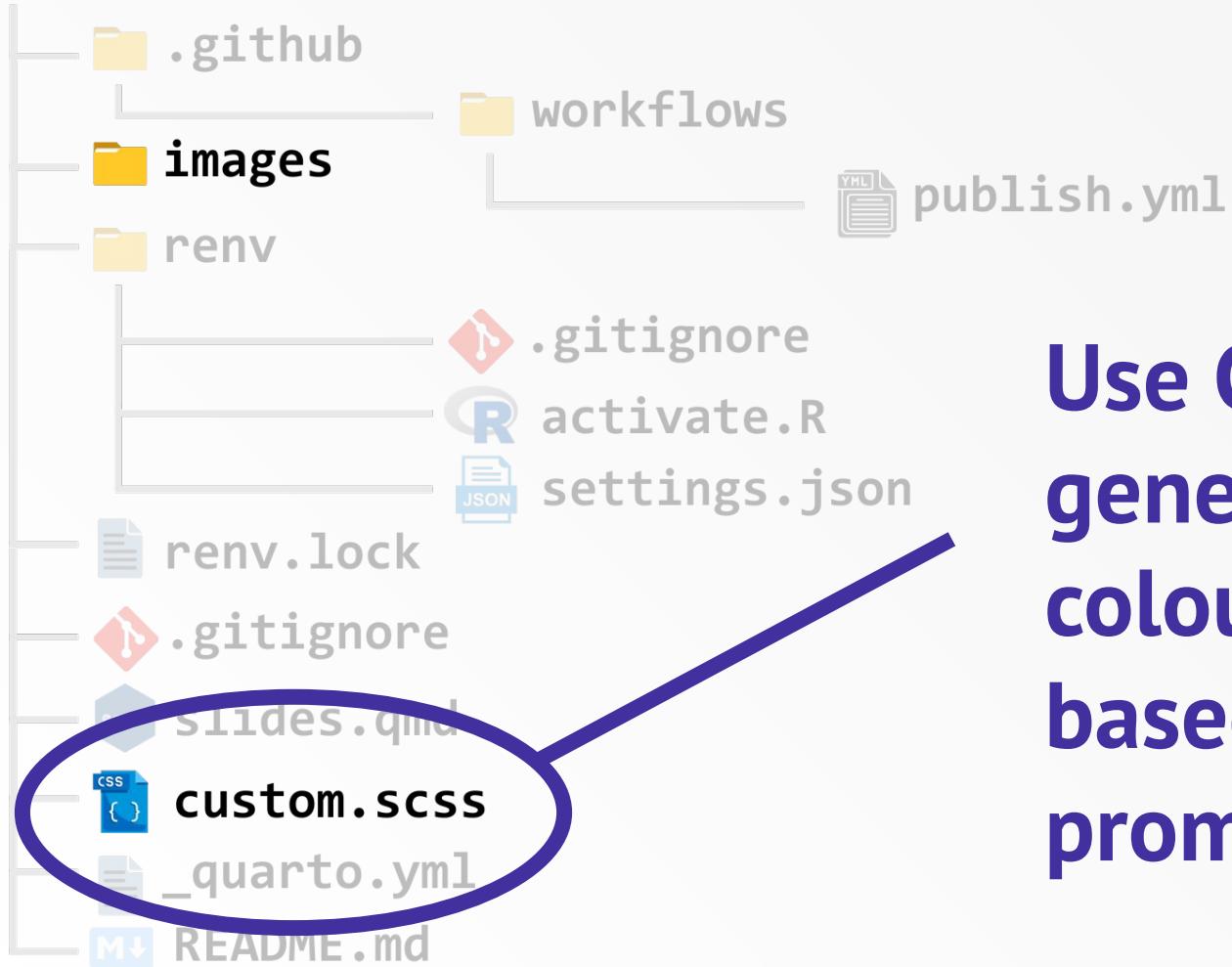
Perfect use case for Generative AI

* = good enough





**Use DALL-E 3 to
generate slide
background images
based on user
prompt**



Use ChatGPT to
generate
colours/fonts
based on user
prompt

GENERATIVE AI QUARTO THEME GENERATOR

Enter a phrase for the theme:

Abstract purple minimal

Enter your OpenAI API key

To generate images for slide backgrounds, use the checkbox below. Note that you must run it locally and not from shinyapps.io to generate images, as the app will time out in the browser. Download the app from [my GitHub](#) to run it locally.

Generate images in addition to CSS?

GENERATE MY THEME

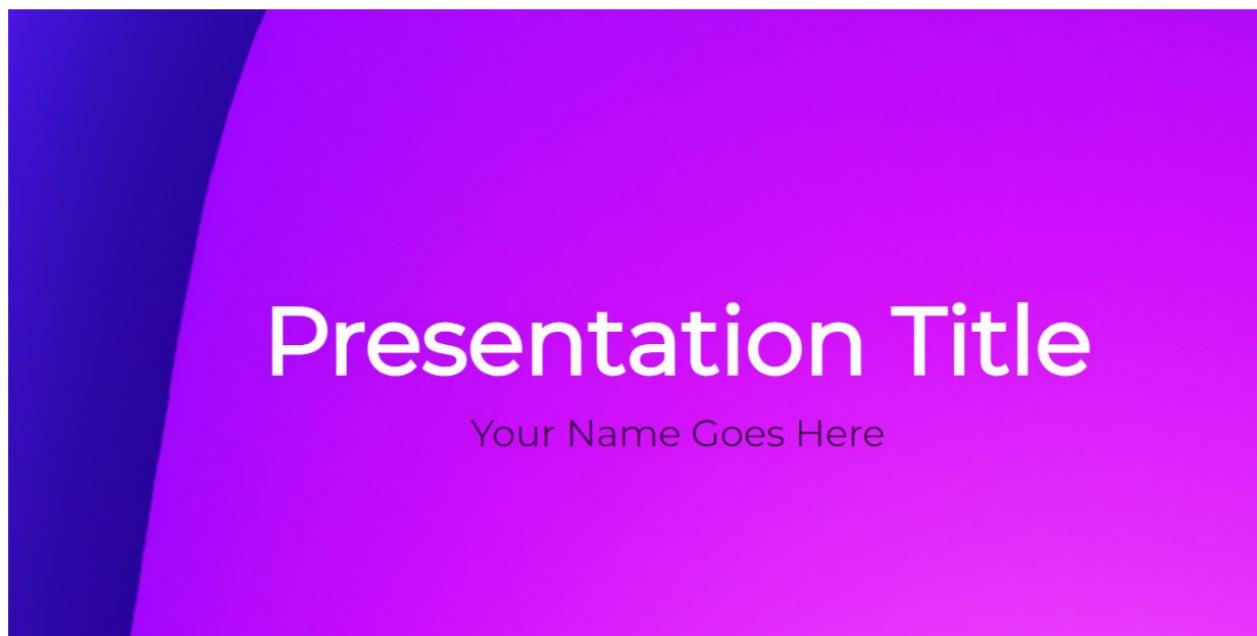
Once you see a message highlighted in purple saying "Theme generated successfully!", you may download all the generated files.

 **DOWNLOAD ALL FILES**

© 2024 [Melissa Van Bussel](#)

Theme has not yet been generated, so there are no files to download.

This app will take your phrase, and pass it to ChatGPT to choose fonts and colours that the app will then use to generate a Quarto revealjs theme. If the "generate images" checkbox is checked off, 10 images will be generated by the image generation endpoint as part of this process. Please see the [OpenAI API pricing page](#) to determine the cost of using this feature (approximately \$0.40 as of June 2024). If the "generate images" checkbox is not checked, the cost of running the app will be less than a penny based on June 2024 API pricing.



Presentation Title

Your Name Goes Here

Section 1

Section 2

Section 3

Slide 1

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



Slide 2

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



Slide 3

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



Slide 4

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



Slide 5

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



Slide 6

This is some regular text, and this is some **bold text**, and this is a hyperlink. This is some `inline_code`.

- This is a list item
- So is this
- And this

```
1 print('This is some code')
```



...

```
request("https://api.openai.com/v1") |>  
  req_url_path_append("/images/generations") |>  
  req_auth_bearer_token(input$api_key) |>  
  req_body_json(list(  
    prompt = paste(user_input, "desktop background")) |>  
  req_perform() |>  
  resp_body_json()
```

...

...

```
request("https://api.openai.com/v1") |>  
req_url_path_append("/images/generations") |>  
req_auth_bearer_token(input$api_key) |>  
req_body_json(list(  
  prompt = paste(user_input, "desktop background")) |>  
req_perform() |>  
resp_body_json()
```

...

...

```
request("https://api.openai.com/v1") |>  
req_url_path_append("/images/generations") |>  
req_auth_bearer_token(input$api_key) |>  
req_body_json(list(  
  prompt = paste(user_input, "desktop background")))) |>  
req_perform() |>  
resp_body_json()
```

...

User input:
“Pastel chalk”

Prompt passed to DALL-E 3:
“Pastel chalk desktop background”

“Pastel chalk”:



“Pastel chalk desktop background”:



```
background-image: url('slide1.png');  
@include background-full;  
opacity: 0.2;
```

...

```
request("https://api.openai.com/v1") |>  
req_url_path_append("/chat/completions") |>
```

...



...

```
messages = list(  
  list(  
    role = "system",  
    content = "You are a design assistant."  
)  
,  
  list(role = "user", content = prompt_to_send)  
)
```

...

ser

paste("Based on the theme", user_input, ", recommend a Google font family and three colors for primary, secondary, and accent. The accent color should contrast the other colors. The font family should be the full name used by Google Fonts. Also recommend a pandoc highlight-style name that matches. Provide the recommendations in JSON format with keys: 'font_family', 'primary_color', 'secondary_color', 'accent_color', and 'highlight_style'."

ser

paste("Based on the theme", user_input, " recommend
a Google font family and three colors for primary,
secondary, and accent. The accent color should
contrast the other colors. The font family should be
the full name used by Google Fonts. Also recommend
a pandoc highlight-style name that matches. Provide
the recommendations in JSON format with keys:
'font_family', 'primary_color', 'secondary_color',
'accent_color', and 'highlight_style'."

paste("Based on the theme", user_input, " recommend
a Google font family and three colors for primary,
secondary, and accent. The accent color should
contrast the other colors. The font family should be
the full name used by Google Fonts. Also recommend
a pandoc highlight-style name that matches. Provide
the recommendations in JSON format with keys:

'font_family', 'primary_color', 'secondary_color',
'accent_color', and 'highlight_style'."



```
...
scss_content <- paste0(
  "/**-- scss:defaults --*/\n",
  "$primary-color: ", recommendations$primary_color, ";\n",
  "$secondary-color: ", recommendations$secondary_color, ";\n",
  "$tertiary-color: lighten($secondary-color, 15%);\n",
  "$accent-color: ", recommendations$accent_color, ";\n",
  "$theme-white: #fff;\n",
  "$theme-black: #000;\n",
  \n
  font_url,\n
  \n
  "$font-family-sans-serif: '", recommendations$font_family,
  "'", sans-serif;\n"
  ...
)
```

Try the app on shinyapps.io:



melissavanbussel.shinyapps.io/quarto_theme_generator

My YouTube channel:



youtube.com/c/ggnot2



Ha I think the crowd would really love some applications of genai in data science - so far it's not entirely clear what a cat picture generator can do there (at least to me).



R/Python User Group (RPUG)





R/Python User Group (RPUG)



JB

Jude Bashto, 9:02 AM

Happy new year, everyone!



17



12





R/Python User Group (RPUG)



JB

Jude Bashto, 9:36 AM

Welcome back, everyone!



Why does this pug
have two ties?!

9



11





Ha I think the crowd would really love some applications of genai in data science - so far it's not entirely clear what a cat picture generator can do there (at least to me).

pkgname



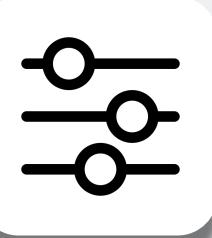
laserpointer





<https://www.recraft.ai>

Art
style

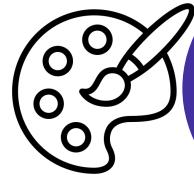
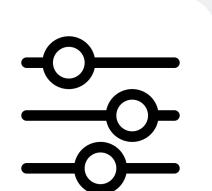


W: 1024
H: 1024

cute kitten

Generate

Art
style

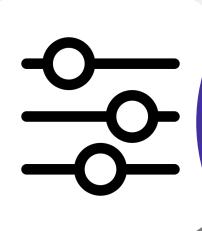


W: 1024
H: 1024

cute kitten

Generate

Art
style

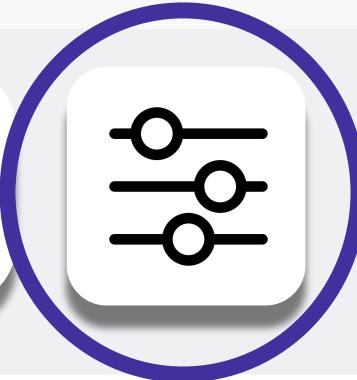


W: 1024
H: 1024

cute kitten

Generate

Art
style

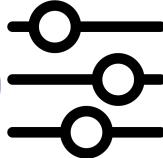


W: 1024
H: 1024

cute kitten

Generate

Art
style



W: 1024
H: 1024

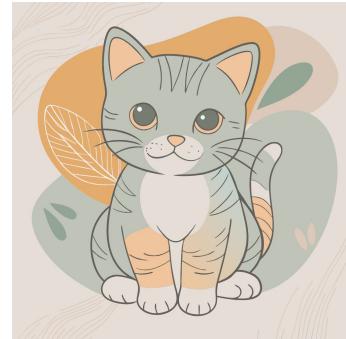
cute kitten

Generate

Seamless



Colour blobs



Kawaii



Doodle line



Cartoon



Offset doodle



Seamless



Colour blobs



Kawaii



Doodle line



Cartoon

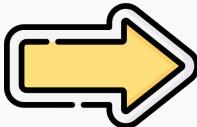


Offset doodle





recolour



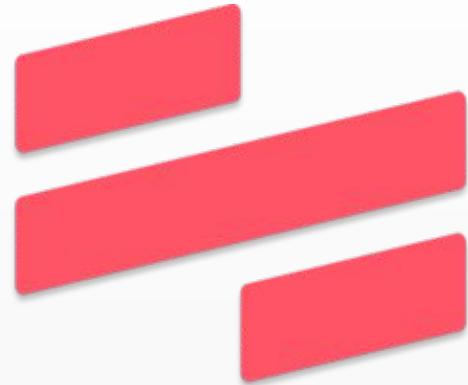
laserpointer



Recraft AI: Mock-ups



**Two tools that use
Generative AI to make
teaching and communicating
about data easier**



Scribe

**Automatically create
step-by-step
tutorials without
copy-pasting
screenshots or
recording videos**



<https://posit.cloud>



Start capture

1

Navigate to <https://posit.cloud>

2

Click "New Project"

The screenshot shows the Posit Cloud workspace interface. At the top, there is a navigation bar with a menu icon, the text "Your Workspace", a dropdown for "Menu", and a user name "Melissa Van Bussel". On the right side of the header, there are three circular icons: a pencil, a plus sign, and the text "ALT". Below the header, the main area is titled "Your Content" with a count of "(2)". A search bar at the top of this section includes filters for "TYPE", "ACCESS", "SORT", and a search input field. A prominent blue button labeled "New Project" with a dropdown arrow is located in the upper right corner of the content area. This button is circled in orange. The content area lists two projects: "Example Project" and "My Example Project". Each project entry includes a thumbnail, the project name, a type indicator (RStudio Project), a lock icon indicating it's private, and the creation date. Below the content area is a dark footer bar featuring the "posit Cloud" logo, social media links for Facebook, LinkedIn, Instagram, and GitHub, and the copyright notice "© 2022 Posit Software, PBC". There are also links for "Terms" and "Status".

3

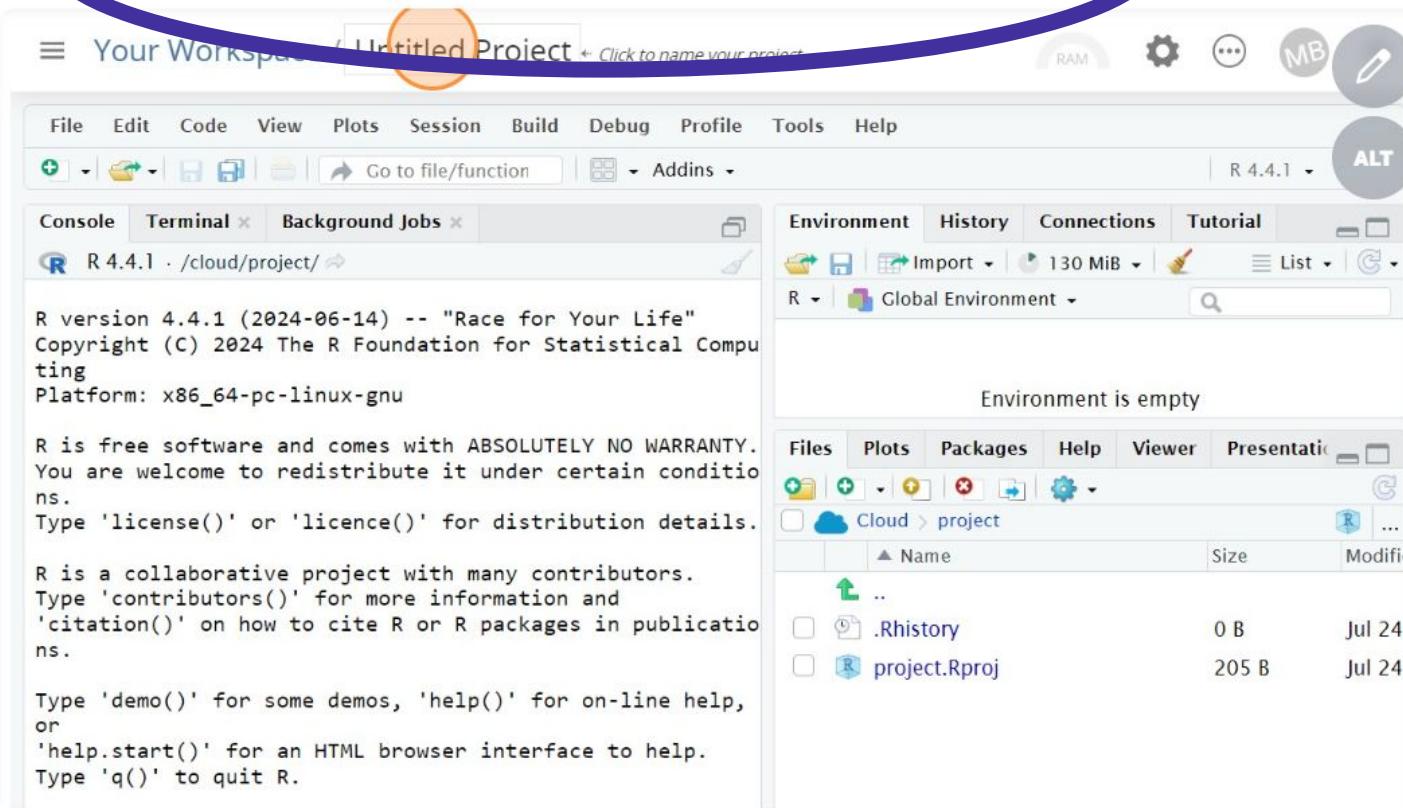
Click "New RStudio Project"

The screenshot shows the RStudio interface with the following elements:

- Header:** Your Workspace, Menu, Melissa Van Bussel.
- Content Area:** Your Content (2). It lists two projects:
 - Example Project:** RStudio Project, Private, Created May 30, 2024 5:53 PM.
 - My Example Project:** RStudio Project, Private, Created Jul 24, 2024 10:31 AM.
- Toolbar:** TYPE, ACCESS, SORT.
- Context Menu (opened over 'New RStudio Project'):** New Project dropdown menu with options:
 - New Project from Template
 - New RStudio Project** (highlighted with an orange circle)
 - New Jupyter Project
 - New Project from Git Repository
- Keyboard Shortcuts:** MB, ALT.

4

Click "Untitled Project" and rename the project.





Create a New RStudio Project and Name it

This guide provides step-by-step instructions on how to create a new RStudio project and give it a custom name. It is helpful for individuals who want to organize their R code and data into separate projects and need guidance on setting up a new project in RStudio.

Melissa | 3 steps | 29 seconds



Posit

[Share](#)[Embed](#)[Export](#)

Share link over email/chat or send directly to specific people.

[Add emails to share](#) M

Melissa

Owner  Not shared ▾ Copy Link

Embed as an iframe, for example on a Quarto website:

The screenshot shows a user interface for creating a new RStudio project. At the top is a circular icon with a blue 'X' symbol. Below it is the title 'Create a New RStudio Project and Name it'. A descriptive text block follows, stating: 'This guide provides step-by-step instructions on how to create a new RStudio project and give it a custom name. It is helpful for individuals who want to organize their R code and data into separate projects and need guidance on setting up a new project in RStudio.' Below the text, the author 'Melissa' is mentioned along with '4 Steps' and '29 seconds'. A progress bar with five dots indicates the steps completed. A 'Get Started' button is prominent in a blue box. At the bottom, it says 'Made with Scribe' next to a logo.

Create a New RStudio Project and Name it

This guide provides step-by-step instructions on how to create a new RStudio project and give it a custom name. It is helpful for individuals who want to organize their R code and data into separate projects and need guidance on setting up a new project in RStudio.

Melissa | 4 Steps | 29 seconds

Posit

Get Started

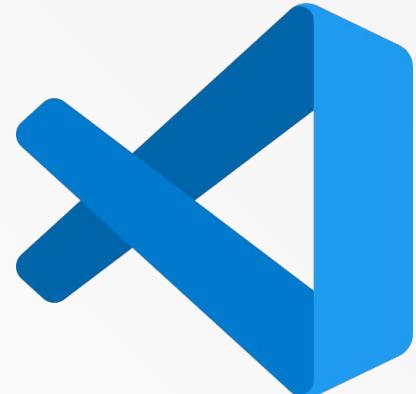
Made with Scribe



<https://posit.cloud>



Start capture

A blue circle containing a white uppercase letter 'R', followed by the word 'Studio' in a large, dark gray sans-serif font, with a registered trademark symbol (®) at the top right of 'Studio'.

R Studio®

[Share](#)[Embed](#)[Export](#)

View in other formats. These options do not automatically update.



Export as PDF PRO ⚡

[Preview](#)

Export as HTML PRO ⚡

Works well with Microsoft Word, Google Docs and other apps.

[Export](#)

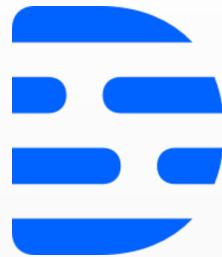
Export as Markdown PRO ⚡

Works well with Notion, GitHub and other apps.

[Export](#)

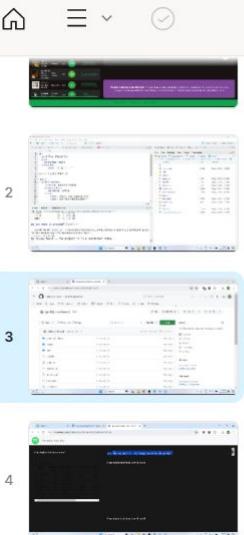
Export to Confluence PRO ⚡

[Export](#)



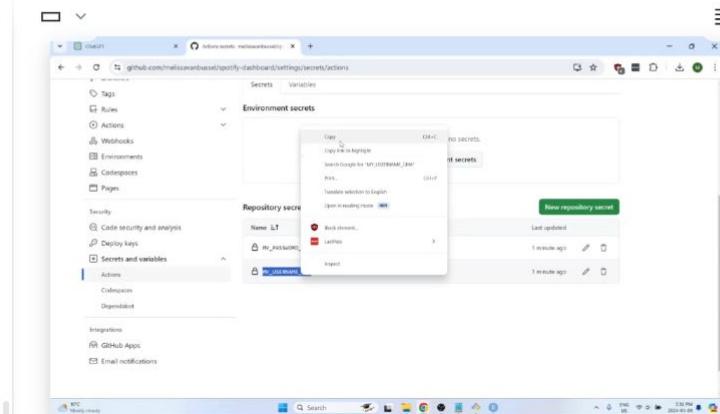
descript

**Edit videos and audio/podcasts as if
you're editing a Word document**



Write

scripts. On the left we're going to say the name of the environment variable and this is going to be the name that we use when we run the sys.getenv function. So I'm going to call this one my username and then just like the syntax above, I'm going to copy and paste that and then instead of it saying GitHub token, this is where you're going to put that name that you had defined here.



Hide timeline

07:04.5 / 07:37.4



5

7:03.0

7:03.5

7:04.0

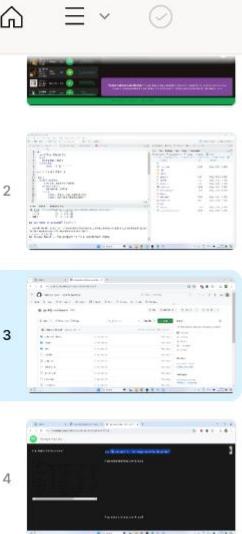
7:04.5

7:05.0

7:05.5

7:06.0





29w | 8.25s

scripts. On the left we're going to say the name of the environment variable and this is going to be the name that we use when we run the sys.getenv function. So I'm going to call this one my username and then just like the syntax above, I'm going to copy and paste that and then instead of it saying GitHub token, this is where you're going to put that name that you had defined here.

```
22: - name: Install R
  uses: r-lib/actions/setup-rbv2
  with:
    r-version: '4.2.0'
23: - name: Install R dependencies
  uses: r-lib/actions/setup-remdV2
  with:
    cache-version: 1
24: - name: Render and publish
  uses: quarto-dev/quarto-actions/publishDv2
  with:
    target: gh-pages
    env:
      GITHUB_TOKEN: ${{ secrets.GITHUB_TOKEN }}
      MY_USERNAME: ${{ secrets.MY_USERNAME }}
```

Hide timeline

06:56.2 / 07:37.4



6:56

6:57

6:58

6:59

7:00

7:01

7:02

7:03

7:04





What would you like to do?



Remove filler words...



| A | Shorten word gaps...



Jump to...



Search in script...

Remove
awkward
silences



What would you like to do?



Remove filler words...



Shorten word gaps...



Jump to...



Search in script...

**Get rid of
stuff like
“um”, “uh”,
“you know”**

**Clone your own voice in
as little as 60 seconds**



Regenerate



Overdub

AI Features

Market / Promote

Look Good

Sound Good

Create clips

Eye Contact

Edit for clarity

YouTube
descriptions

Green Screen

Studio Sound

Show notes

Automatic multicam

Remove filler
words

Translation

Video Regenerate SOON

Remove retakes

Regenerate
speech

AI Features

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Studio Sound

Show notes

Automatic multicam

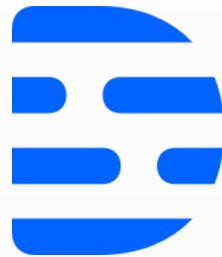
Remove filler
words

Translation

Video Regenerate SOON

Remove retakes

Regenerate
speech



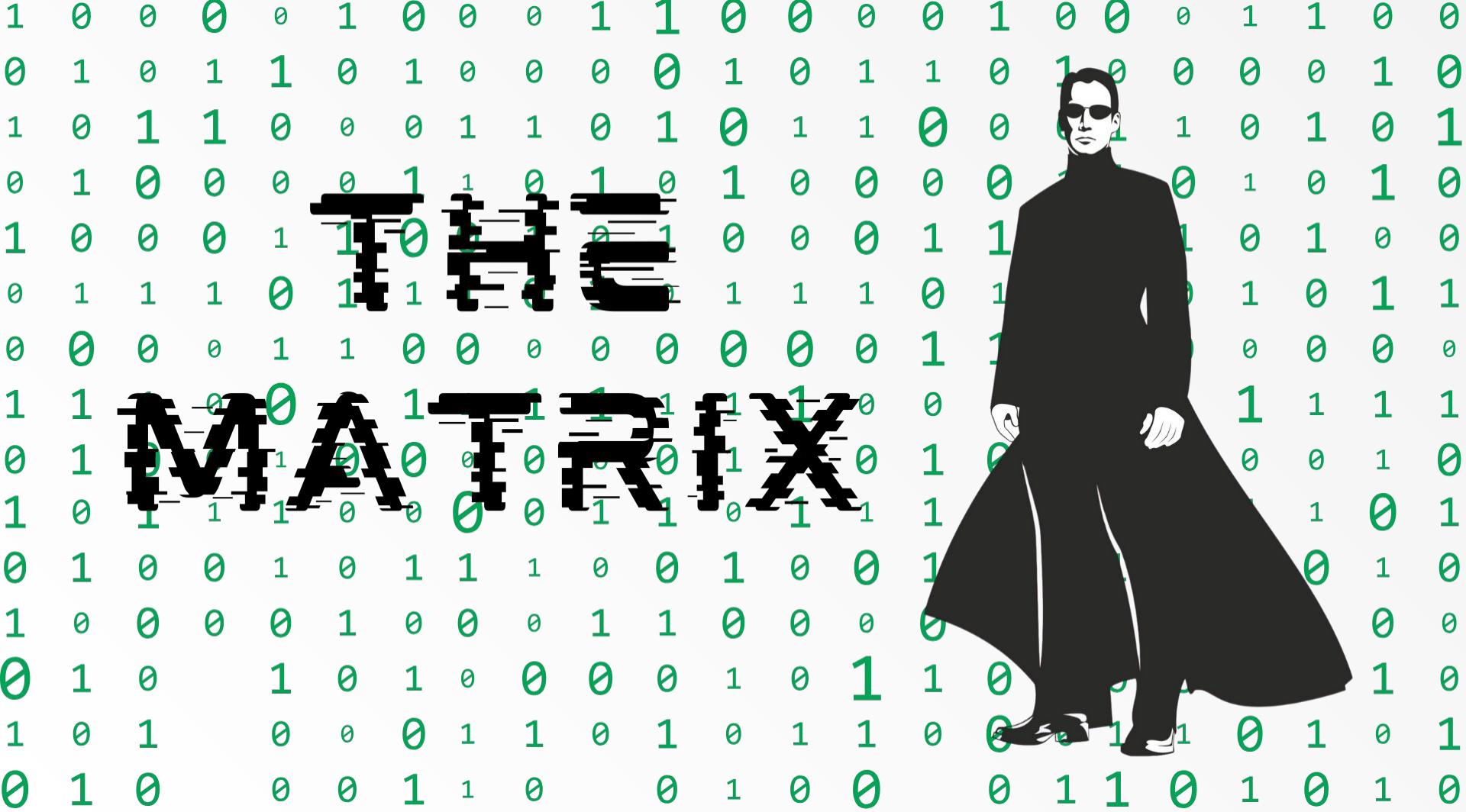
descript

**Edit videos and audio/podcasts as if
you're editing a Word document**

For the GenAI-Fearful

- 1. Fanatic**
- 2. Fatigued**

- 1. Fanatic**
- 2. Fatigued**
- 3. Fearful**



- 1. Fanatic**
- 2. Fatigued**
- 3. Fearful**

1. Fanatic
2. Fatigued

~~3. Fearful~~

3. Hesitant



Guidelines for responsible use



Search on Google: “Guide on the use of Generative AI Government of Canada”

<https://www.canada.ca/en/government/system/digital-government/digital-government-innovations/responsible-use-ai/guide-use-generative-ai.html>

FASTER
stands for...

Fair
Accountable
Secure
Transparent
Educated
Relevant

Fair

Fair

- Determine what was used as training data

Fair

- Determine what was used as training data
- Always review outputs; remove biased, non-inclusive or discriminatory content

Fair

- Determine what was used as training data
- Always review outputs; remove biased, non-inclusive or discriminatory content
- Don't use Generative AI to make decisions that could legally or materially impact an individual

Fair

OpenAI Terms of Use:

“You **must not** use any Output relating to a person for any purpose that could have a legal or material impact on that person, such as making **credit, educational, employment, housing, insurance, legal, medical,** or other important decisions about them.”

Fair

Google's Generative AI Prohibited Use Policy:

“You **must not** use the Google services that reference this policy to...[Make] automated decisions in domains that affect material or individual rights or well-being (**e.g., finance, legal, employment, healthcare, housing, insurance, and social welfare**)”

Accountable

- Accurate
- Legal
- Ethical

Accountable

- Accurate
- Legal
- Ethical

Accountable

- Accurate
- Legal
- Ethical
- Outputs should always be verified by a human

Accountable

- Accurate
- Legal
- Ethical
- Outputs should always be verified by a human
- Don't use a LLM as a search engine

Accountable

- Accurate
- Legal
- Ethical
- Outputs should always be verified by a human
- Don't use a LLM as a search engine
- Never use LLMs for a skill you don't already possess

Accountable

- Accurate
- Legal
- Ethical
- Consult your legal department

Accountable

- Accurate
- Legal
- Ethical
- Consult your legal department
- Determine if the training data were obtained legally+ethically

Accountable

- Accurate
- Legal
- Ethical
- Consult your legal department
- Determine if the training data were obtained legally+ethically
- Edit/improve content you wrote, rather than generating from scratch

Secure

Question I *want* to ask:

Use the [attached CSV](#) to create a scatterplot, with `year` along the x-axis and `company_revenue` along the y-axis.

Prompt I actually use:

Write code to read in a file called “[my_data.csv](#)”. Create a scatterplot, with the `x_var` variable along the x-axis and the `y_var` variable along the y-axis.

Secure

- (Actually) read the terms of service
- Opt-out of using your conversations to train future models, where possible

Transparent

Transparent

- Keep a detailed record about usage

Transparent

- Keep a detailed record about usage
- Inform users when Gen-AI is used

Transparent

- Keep a detailed record about usage
- Inform users when Gen-AI is used
 - Exact tool used and version
 - How it works
 - Why it's being used
 - To what extent content was reviewed or modified

Educated

- Understanding strengths, limitations, and responsible use

Educated

- Understanding strengths, limitations, and responsible use
- Writing effective prompts

Educated

- Understanding strengths, limitations, and responsible use
- Writing effective prompts
- Keeping up-to-date

This Session Was Not Generated by AI

Wednesday, August 14th | 2:40 PM - 4:00 PM PDT

- **Rafi Kurlansik:** Elevating enterprise data through open source LLMs
- **Mark Wang:** Using GitHub Copilot in R Shiny Development
- **Laura Gast:** Uniquely Human: Data Storytelling in the Age of AI
- **Alok Pattani:** Using Generative AI to Increase the Impact of Your Data Science Work

Relevant

Always ask yourself:

Is Generative AI the
best tool for the
task?

Relevant

Or is it just...

- Overkill
- Time-consuming
- Messy



FASTER
stands for...

Fair
Accountable
Secure
Transparent
Educated
Relevant

1. GenAI-Fanatic

2. GenAI-Fatigued

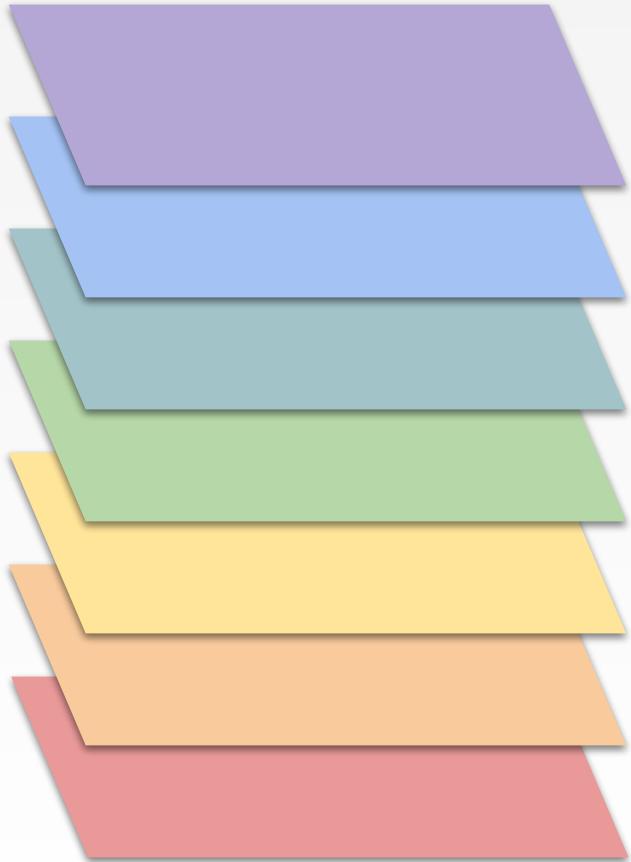
3. GenAI-Fearful

1. GenAI-Fanatic

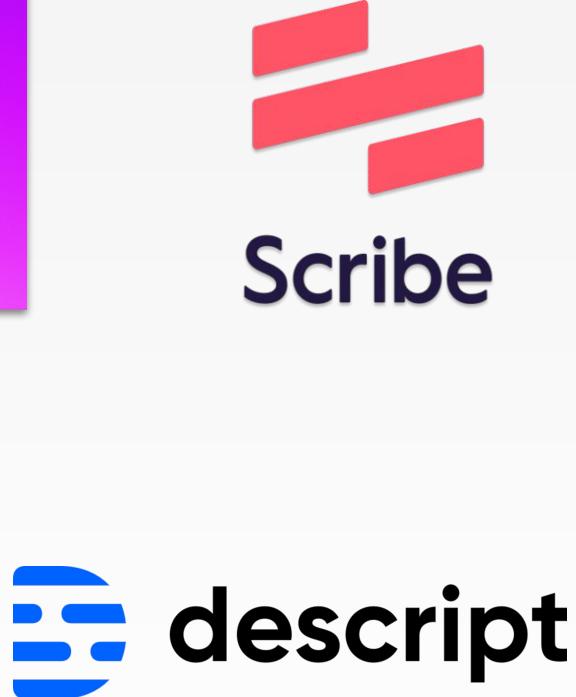
2. GenAI-Fatigued

3. GenAI-Fearful

- Be specific and detailed with prompts
- Build things up layer by layer
- Use existing mental models and your own expertise



Find
practical,
creative
use cases



“Upskill now or be left behind!”

“The **only** course you’ll need
to become an **AI Engineer!**”

“Double your salary **overnight**
with this one simple trick!”

“The **Age** of **Generative AI...**”

**Find a
framework for
using
Gen AI more
responsibly**

**Fair
Accountable
Secure
Transparent
Educated
Relevant**

Thanks!

Have any questions?

Go to [sli.do](#) and use #posit-keynote 😊

Slides available on my GitHub



youtube.com/c/ggnot2



linkedin.com/in/melissavanbussel



github.com/melissavanbussel



melissavanbussel.com

CREDITS: Please see next slide for full details. Slide template by **Slidesgo**, icons from **Flaticon** and images from various sources including **Pexels**, **Recraft.ai** and **Canva**.

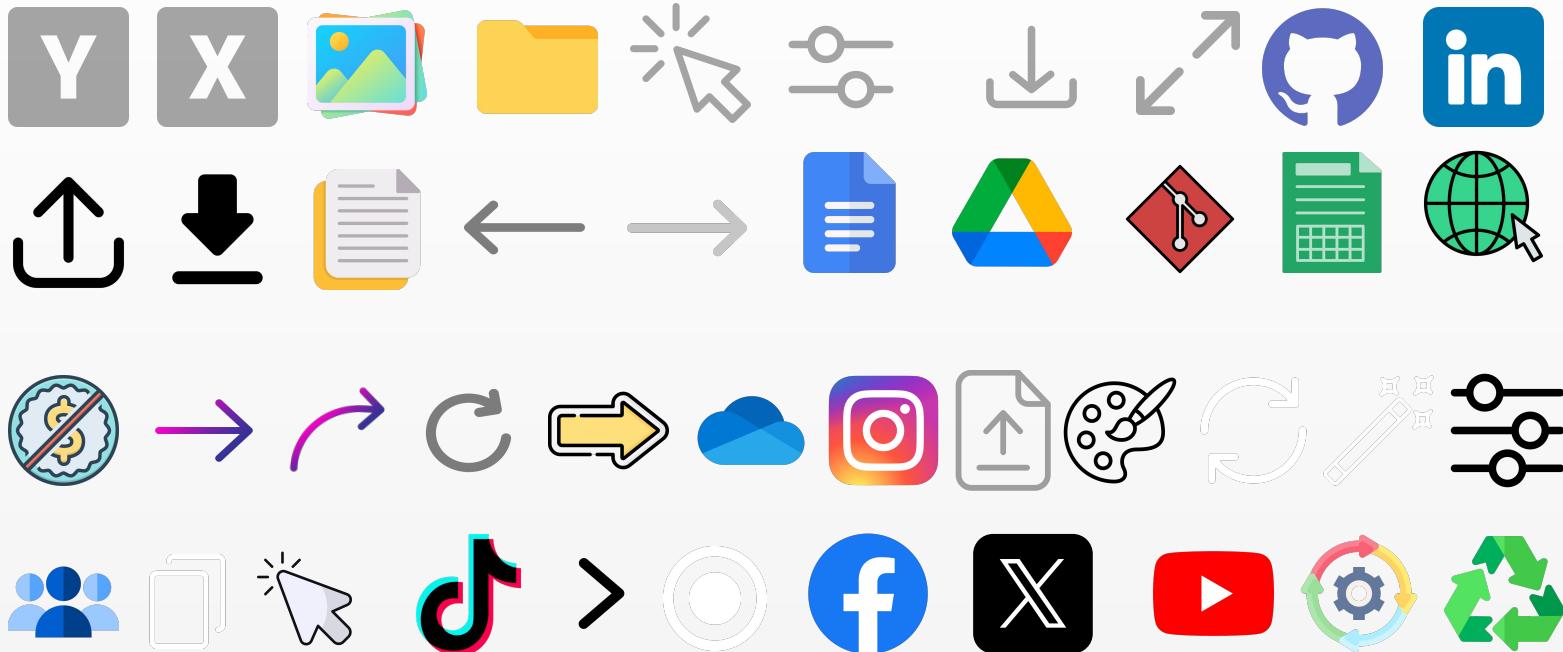


Credits

- Google Slides Presentation theme by [Slidesgo](#)
- [Image of Rideau Canal \(license\)](#) by “John B. Codrington”; unmodified
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- GPT-4o was used for brainstorming ideas for this talk. :)

Credits continue on the remaining slides.

Icons from Flaticon



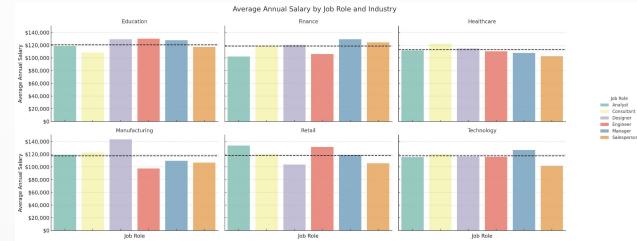
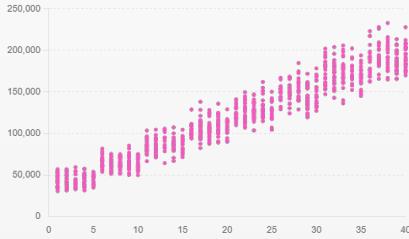
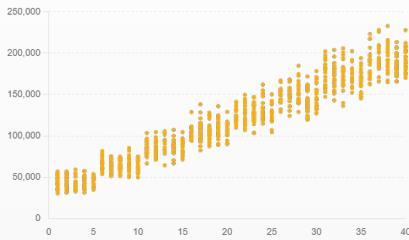


Images from Pexels

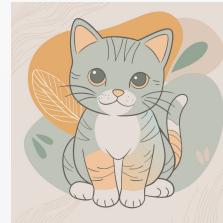
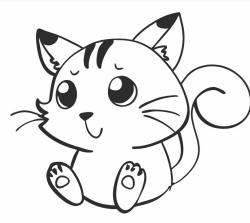


(Used the original image, as well as a modified version of the image that was modified using Photoshop)

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Images created using Recraft.ai

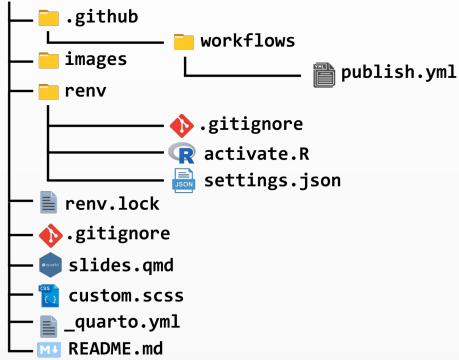


Mockups created using Recraft.ai



(Mockups created using Recraft.ai, text/images on top of mockups created using Canva)

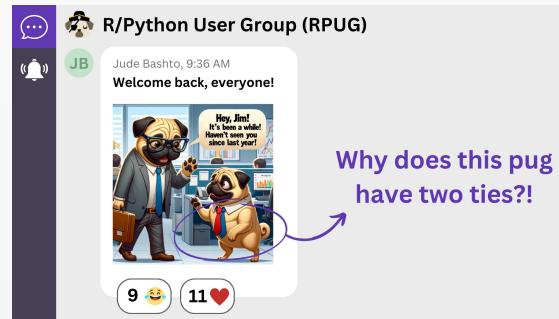
Images created using Canva



Images created using Canva



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Why does this pug have two ties?!

(Pug images generated by Jude Bashto using DALL-E; chat window images created using Canva)