

A person wearing a teal lab coat and a name tag is pointing at a large digital screen. The screen displays a complex network diagram with blue nodes and connections. The person is holding a clipboard. The background is a dimly lit room with window blinds.

Prompt Engineering in Gen AI (ChatGPT) : A Game-Changer for Professional Development of Stat Programmers and Data Scientist

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Disclaimer

The views and opinions presented here represent those of the speaker and should not be considered to represent any companies or organizations.

Agenda

- Prompt it, not Google it
- What is Prompt Engineering?
- How to Prompt Better
- Prompt Engineering Technique
- Use Cases in Biometrics
- Prompt in Agentic AI
- Should we trust the results from prompt engineering?
- A Game Changer?
- Discussion



Do you NOT use
“ChatGPT” or “Gen AI”?



Prompt it is the new ~~Google~~ it



What is Prompt?

- Prompt – A tool to communicate with Gen AI (ChatGPT)

Default (GPT-3.5)

K what is schizophrenia?



Schizophrenia is a complex and severe mental disorder that affects how a person thinks, feels, and behaves. It is characterized by a range of symptoms that can vary in intensity and duration but often include:

1. **Delusions:** False beliefs that are resistant to reasoning or contrary evidence. Common delusions in schizophrenia include beliefs in conspiracy theories, being persecuted, or having special powers.
2. **Hallucinations:** Sensory experiences that are not based in reality. Auditory hallucinations (hearing voices) are the most common in schizophrenia, but visual and tactile hallucinations can also occur.
3. **Disorganized thinking:** Individuals with schizophrenia may have difficulty organizing their thoughts and may exhibit incoherent or tangential speech.
4. **Disorganized or abnormal motor behavior:** This can manifest as unpredictable or unusual movements, agitation, or catatonia (a state of immobility and unresponsiveness).
5. **Negative symptoms:** These involve a decrease in normal emotional responses, motivation, and social functioning. Negative symptoms can include a lack of interest in daily activities,

Regenerate



what is schizophrenia?



Feedback



National Institutes of Health (.gov)

<https://www.nimh.nih.gov> › health › topics › schizoph...

Schizophrenia - NIMH

Schizophrenia is a **serious mental illness that affects how a person thinks, feels, and behaves**. People with schizophrenia may seem like they have lost touch ...

[What are the signs and...](#) · [How is schizophrenia treated?](#)



Substance Abuse and Mental Health Services Administration (.gov)

<https://www.samhsa.gov> › mental-health › schizophrenia

What is Schizophrenia? | SAMHSA

Apr 24, 2023 — Schizophrenia is a **severe, lifelong brain disorder that causes people to interpret reality abnormally**. They don't know what sights, sounds, ...

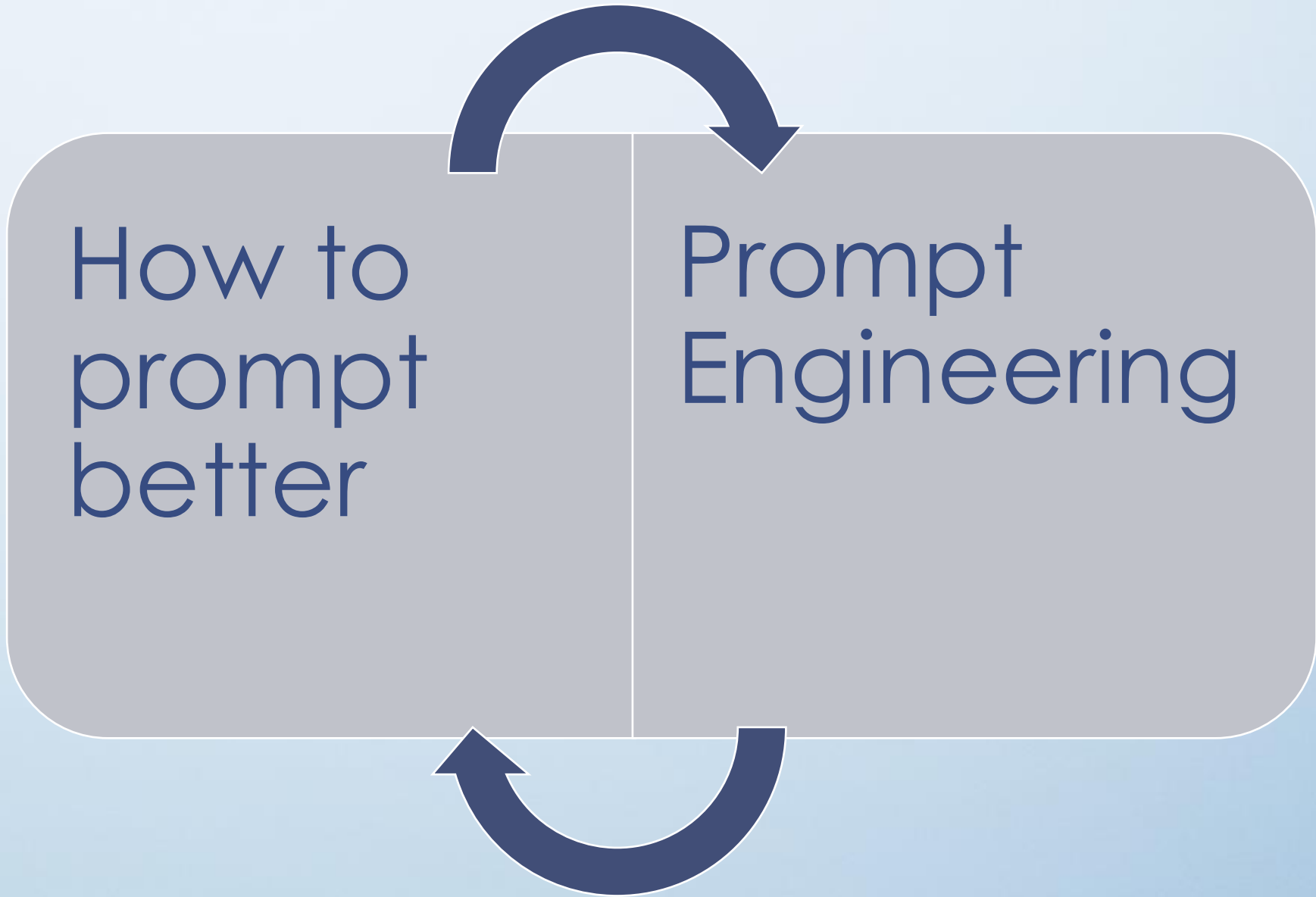


Mayo Clinic

<https://www.mayoclinic.org> › syc-20354443

Schizophrenia - Symptoms and causes

Jan 7, 2020 — Schizophrenia **involves a range of problems with thinking (cognition), behavior and emotions**. Signs and symptoms may vary, but usually involve ...



What is Prompt Engineering?

- Prompt Engineering – the **art** of creating effective communication/ prompt that guide Gen AI (ChatGPT) to generate **desired response**.

Bad Prompt – Bad Response
(e.g., Hallucination)



Good Prompt – Good Response



ChatGPT is like a very smart, capable,
recently graduated intern/new hire.



How to work with the recently graduated, smart intern at work?

How to make an intern competent or incompetent?



How to prompt better (How to communicate better with an intern)

- Get Specific
- Add Constraints
- Add more contexts
- Set the role
- Coach with feedback
- Probe further
- Step by step instruction



Get specific

- Generic inquiry will provide generic (and less impressive) answers

Generic Prompt	Specific Prompt
Tell me about PhUSE.	Tell me about PhUSE – its overview, core services and activities.
Tell me the best places to visit in Prague.	Tell me the best places to visit in Prague, where I could have unique experiences.
Write me a promotion request email.	Write me a promotion request email for Manager of CDSIC Standards.

Add Parameter or Constraints

- Parameter could provide better response.
- Restriction and constraints breed a creativity.
- Example of parameters
 - Under 100 words
 - Make it under \$100
 - Make it work for 15 people.

Generic Prompt

Tell me about PhUSE.

Tell me the best places to visit in Prague.

Tell me the best places to visit in Prague.

Prompt with parameter

Tell me about PhUSE – its overview, core services and activities **within 200 words.**

Tell me the best places to visit in Prague **within 4 days.**

Tell me the best places to visit in Prague **with \$500 budget.**

Add more context

- If a prompt includes more background, ChatGPT can provide more relevant, customized answers.
- Provide the reason that I am using ChatGPT

Generic Prompt	Prompt with parameter
Tell me about PhUSE.	Tell me about PhUSE from the perspective of a senior statistical programmer working in pharma.
Tell me about PhUSE.	Tell me about PhUSE in 5 bullet points, focusing on what stat programmers should know.
Tell me the best places to visit in Prague.	Tell me the best places to visit in Prague for a first-time visitor who enjoys history and architecture.
Tell me the best places to visit in Prague.	I am in the vacation. Tell me the best places to visit in Prague.

Set the role

- If one gives a role to ChatGPT and ask, ChatGPT play a role given and provide the answers.
- Example of roles : salesperson, the head of IT, Stat Programmer, Biostatistician, figures

Generic Prompt	Prompt with role
Write a greeting email.	I am a salesperson who markets new medicine. Write a greeting email.
Review this proposal and provide your feedback.	Pretend you are the head of IT. Review this proposal and provide your feedback.
How do you respond below proposal?	You are Steve Jobs. How do you respond below proposal?

Coach ChatGPT with feedback

- After ChatGPT provide an answer, one can provide a feedback and ask again.
- By iterating, one can get the better answer

Initial Prompt	Prompt with feedback
Write me a promotion request email.	
	Make it in 50 words.
	Make it more formal.
	Make it more persuasive.

Probe further

- After receiving the answers, one could probe further in the current chat.
- One can find more detail information from the certain part of previous response.

Initial Prompt	Prompts with probing
Tell me how to be a excellent Stat Programmer.	Tell me more about the first tip on “Understand CDISC Standards”
List top 10 attractions in Prague.	Tell me more about attraction 1. Please tell me the specific foods that I need to try near by attraction 1.

Provide a reference

- This technique is called 'Few-shot Learning'
- By providing reference/ examples, one could receive customized response.
- It will help ChatGPT to mimic writing style and format.

Generic Prompt

Write a greeting email.

Prompt with feedback

I want you to refer to #my_previous_email to write a greeting email by following my tones and styles.

#my_previous_email:

.....

Provide step by step instruction

- One can give step by step instruction on how ChatGPT think the answer “step by step”
- This will help ChatGPT to perform better.

Generic Prompt

Summarize new trend about CDISC.

Prompt with step by step introduction

Perform the following actions:

1. **Identify 10 recent articles** (e.g., 6 to 12 months) related to CDISC.
2. For each article, **extract title, publication date, source, and a short summary** of key points.
3. **Filter** and synthesize the information to identify **common trend themes** across the articles.
4. **Summarize** each identified trend, explaining **what is changing and why it matters** to clinical data stakeholders.
5. Produce a **final structured summary**, including an executive overview, key trends, implications, and source list.

Prompt Engineering Technique

- Zero Shot
- Few Shot
- Chain of Thought



Prompt Technique : Zero-Shot

- Purpose : One time Query
- Method : Straight-up Query, no example.
- Examples
 - Prompt : **What is 2 + 8?**
 - Output : **2 + 8 equals 10.**

Prompt Technique : Few-Shot

- Purpose : Teaching AI models to follow specific examples / patterns
- Method : Feeding model with **few examples** before asking the desired questions

- Examples

- Prompt :

- $2@4 = 12$

- $3@3 = 12$

- $5@3 = 18$

- $4@2 =$

- Output :

- The operation "@" seems to follow the pattern where $a@b$ is calculated as $(a \text{ times } b) + b$. Applying this to $4@2$:

- $4@2 = (4 \text{ times } 2) + 2 = 8 + 2 = 10$

- Therefore, $4@2$ equals 10.

Prompt Technique : Chain of Thought Example

- Prompt :

Classify the safety issues of the #text.
Follow these steps in the classification.

1. Identify adverse event in text.
2. Identify patient information in text
3. Identify medication information in text

If #text answers to "Yes" on all the steps,
classify as 'Safety Issues' Otherwise 'No
Safety Issues'

Let's think step by step for classification of
the #text.

#text:

Patient 001 had a headache after taking
a Tylenol.

- Output :

To classify the safety issues of the given text, we'll follow the steps
provided:

Step-by-Step Classification:

1. **Identify adverse event in text:**
- The text mentions a headache, which is an adverse event.
2. **Identify patient information in text:**
- The text refers to "Patient 001," which is patient information.
3. **Identify medication information in text:**
- The text mentions "Tylenol," which is medication information.

Since the text answers "Yes" to all the steps, we classify it as:

Safety Issues

Is there anything else you would like to analyze or discuss?

Prompt Template

Categories	Explanation	Examples
# Identity	Identity or the roles that AI will play.	I am SOP developer.
# Task	Main task that AI will do for me.	Write SOP for TFL Development.
# Sub tasks	Subtasks, Step by Step Tasks that AI will follow to do main task. Refer to #Context and #Guidance for tasks.	Refer to SOP for SDTM Development in #Guidance. Write SOP for TFL development.
# Context	Background of this task. <ul style="list-style-type: none">- Who you are- State of projects- Goal of projects	TFL is the abbreviation of Table, Figure and Listing. SAS programmers create TFL from ADaM and SDTM datasets based on SAP. TFL should be validated by independent SAS Programmers
# Guidance	Guidance or Examples that AI use or refer to the task	Current SOP examples for the new SOP development task – SOP for SDTM Development.

Prompt Template Examples

- Prompt :

Identity

Task

Sub Tasks

Context

Guidance

Prompt Template Example - Prompt

Identity

I am SOP developer.

Task

I am writing SOP for TFL development

Sub Tasks

Refer to SOP for SDTM Development in #Guidance.
Write SOP for TFL development

Context

TFL is the abbreviation of Table, Figure and Listing.
SAS programmers create TFL from ADaM and SDTM datasets based on SAP. TFL should be validated by independent SAS programmers.

Guidance

SOP for SDTM Development

1. Purpose

This Standard Operating Procedure (SOP) outlines the process for developing Study Data Tabulation Model (SDTM) datasets for clinical trials, ensuring data consistency, regulatory compliance, and efficient analysis.

2. Scope

This SOP applies to all personnel involved in SDTM development, including SAS programmers, data managers, and clinical trial leads.

3. References

•ICH E6 Good Clinical Practice

(https://database.ich.org/sites/default/files/E6_R2_A_ddendum.pdf)

4. Responsibilities

•SDTM Developer:

- Develops SDTM mapping specification.
- Develops SDTM datasets based on the approved mapping document.

•SDTM Validator:

- Validate SDTM datasets based on SDTM specification.
- Reviews and approves the final SDTM datasets.

5. Procedure

5.1. Pre-development Activities

- SDTM Developer reviews the clinical trial protocol and data collection forms.
- Identify data elements for SDTM mapping.
- Select the appropriate CDISC SDTM Implementation Guide based on the study type.

5.2. SDTM Mapping

- Map each data element from the clinical trial forms to the corresponding SDTM domain and variable.
- Utilize controlled terminologies (e.g., MedDRA) for coded data elements.
- Document variable labels, formats, definitions, and value ranges in SDTM mapping specification.

5.3. SDTM Dataset Development

- SDTM Developer creates SDTM datasets using SAS programming techniques.
- Ensure adherence to SDTM variable naming conventions and data types.
- Include variable labels, formats, and definitions within the SAS datasets.
- Implement data cleaning and validation procedures to ensure data quality.

5.4. Review and Approval

- SDTM validator reviews the developed SDTM datasets for accuracy and completeness.

6. Training

- Train personnel involved in data analysis and reporting on the structure and content of the SDTM datasets.

7. Records

- Maintain records of all SDTM development documents, including mapping documents, programming code, and data cleaning logs.

8. Deviations

- Any deviations from this SOP must be documented with justification and approval from the Programming Lead.

9. Revision History

- Maintain a revision history of this SOP, including the date of each revision and a brief description of the changes made.

Prompt Template Examples - Output

SOP for TFL Development

1. Purpose

This Standard Operating Procedure (SOP) outlines the process for developing Table, Figure, and Listing (TFL) outputs from Analysis Data Model (ADaM) and Study Data Tabulation Model (SDTM) datasets for clinical trials. The objective is to ensure the creation of accurate, consistent, and regulatory-compliant TFLs that support efficient data analysis.

2. Scope

This SOP applies to all personnel involved in TFL development, including SAS programmers, data managers, and clinical trial leads.

3. References

- ICH E6 Good Clinical Practice (https://database.ich.org/sites/default/files/E6_R2_Addendum.pdf)
- SDTM Development SOP

4. Responsibilities

TFL Developer:

- Develops TFL mapping specification based on the Analysis Plan (SAP).
- Creates TFL outputs using SAS programming techniques.
- Implements validation checks to ensure TFL

accuracy and consistency.

Independent SAS Programmer (TFL Validator):

- Validates TFL outputs based on TFL mapping specification.
- Reviews and approves the final TFL outputs.

5. Procedure

5.1. Pre-development Activities

- TFL Developer reviews the SAP and identifies variables for TFL mapping.
- Identify any specific requirements or considerations for TFL development outlined in the SAP.

5.2. TFL Mapping

- Map each variable identified in the SAP to the corresponding TFL output.
- Utilize controlled terminologies when applicable.
- Document output labels, formats, definitions, and any statistical methodology used in the TFL mapping specification.

5.3. TFL Development

- TFL Developer creates TFL outputs using SAS programming techniques.
- Ensure adherence to TFL output naming conventions and formatting.
- Include output labels, format, and definitions within the output files.

- Implement data quality checks and validation procedures.

5.4. Review and Approval

- Independent SAS Programmer (TFL Validator) reviews the developed TFL outputs for accuracy and completeness.
- Any discrepancies or issues identified during the validation process are documented and addressed by the TFL Developer.

6. Training

- Train personnel involved in TFL development and validation on the structure and content of TFL outputs.

7. Records

- Maintain records of all TFL development documents, including mapping documents, programming code, and validation logs.

8. Deviations

- Any deviations from this SOP must be documented, providing justification and obtaining approval from the Programming Lead.

9. Revision History

- Maintain a revision history of this SOP, including the date of each revision and a brief description of the changes made.

Gen AI (ChatGPT) Use Cases in Biometrics

- Simple Inquiry
- Content Development
- Coding
- Data Analysis
- Image / Video
- Brain-storming



Simple Inquiry

Prompt :
What is CDISC?
Tell me in 200
words.

Output :
The Clinical Data Interchange Standards Consortium (CDISC) is a global, non-profit organization dedicated to creating and promoting standards for the collection, sharing, and analysis of clinical research data. Founded in 1997, CDISC aims to streamline the process of clinical research by enabling more efficient data collection and analysis, ultimately accelerating the development of new medical therapies and improving public health.

CDISC standards encompass various stages of the clinical research process, including study design, data collection, data management, data analysis, and data reporting. The core standards developed by CDISC include the Study Data Tabulation Model (SDTM), the Analysis Data Model (ADaM), and the Clinical Data Acquisition Standards Harmonization (CDASH). These standards ensure that data is collected and presented in a consistent and structured manner, facilitating interoperability between different systems and stakeholders.

Adopting CDISC standards is beneficial for regulatory submissions, as agencies like the U.S. Food and Drug Administration (FDA) and the Japanese Pharmaceuticals and Medical Devices Agency (PMDA) require data in CDISC-compliant formats. This harmonization helps reduce the time and cost associated with data integration and review processes, enhancing the overall efficiency and reliability of clinical trials and research initiatives.

Content Development

Prompt :

I am Senior Statistical Programmer.

I want to be promoted to the Principal Statistical Programmer. I have successfully led a couple of major Phase 3 oncology clinical trials, and I have been also mentoring Junior Statistical programmer.

write emails to my manager within 100 words politely and formally.

Output :

Dear [Manager's Name],

I hope this message finds you well. I am writing to formally request consideration for a promotion to the role of Principal Statistical Programmer.

Over the past [number of years/months], I have had the privilege of serving as a Senior Statistical Programmer, where I have successfully led multiple major Phase 3 oncology clinical trials. These experiences have allowed me to develop a robust understanding of trial design, data management, and statistical analysis, ensuring the successful delivery of critical clinical data.

In addition to my technical contributions, I have also dedicated significant effort to mentoring Junior Statistical Programmers. This mentorship has not only fostered their professional growth but has also enhanced our team's overall efficiency and effectiveness.

I am confident that my skills, experience, and dedication align well with the responsibilities of a Principal Statistical Programmer. I am eager to take on additional challenges and further contribute to our organization's success.

Thank you for considering my request. I am available to discuss this further at your convenience.

Best regards,

Codes conversion

Prompt :

Convert below SAS codes to R codes:

```
data dm;  
  merge demo rand;  
  by usubjid ;  
run;
```

Output :

You can convert the SAS code to R using the `merge` function in R to perform the equivalent operation. Assuming you have two data frames `demo` and `rand` that you want to merge by the `usubjid` variable, here's the equivalent R code:

```
```\n# Assuming you have loaded your data into two data frames: demo\nand rand\n# Merge the data frames by usubjid\ndm <- merge(demo, rand, by="usubjid")\n```\n
```

In this code:

- `demo` and `rand` are your input data frames.
- We use the `merge` function to merge the data frames.
- The `by` parameter specifies the key variable by which to merge the data frames, which in this case is `usubjid`.

After running this code, the merged data frame `dm` will contain the result of the merge operation, similar to what you would achieve with the SAS code you provided.

# Codes Development – R

Prompt 1:

Write a **R script** that groups data by "TRTA" and "AVISIT" columns in "advs.xpt"

and calculates the mean of "AVAL" column for each group at PARAMCD = 'WEIGHT'

Prompt 2:

Write a **R script** that groups data by actual treatment and actual visit in "advs.xpt"

and calculates the mean for each group at weight.

Use ADaM CDISC variable.

Output :

```
library(haven) # For reading XPT files
library(dplyr) # For data manipulation
```

```
Read the ADaM dataset
advs <- read_xpt("advs.xpt")
```

```
Process the data
result <- advs %>%
```

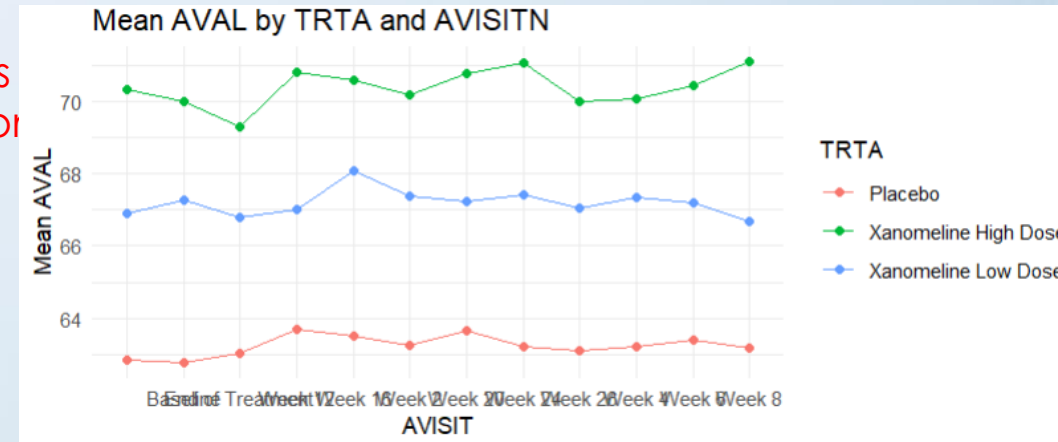
```
 filter(PARAMCD == "WEIGHT") %>% # Filter for PARAMCD = 'WEIGHT'
```

```
 group_by(TRTA, AVISIT) %>% # Group by TRTA and AVISIT
```

```
 summarise(mean_AVAL = mean(AVAL, na.rm = TRUE)) %>% # Calculate mean of
 AVAL
```

```
 ungroup()
```

```
Print the result
print(result)
```



# Codes Creation

Output :

```
```sas
```

```
/* Step 1: Import the advs.xpt file */
```

```
libname mylib xport "path_to_your_advs.xpt";
```

```
/* Step 2: Create a SAS dataset from the imported data */
```

```
data advs;
```

```
  set mylib.advs;
```

```
run;
```

```
/* Step 3: Filter the data for parmcd = 'WEIGHT' */
```

```
data advs_weight;
```

```
  set advs;
```

```
  where parmcd = 'WEIGHT';
```

```
run;
```

```
/* Step 4: Group the data by trta and avisitn, and calculate the mean of aval */
```

```
proc means data=advs_weight noprint;
```

```
  class trta avisitn;
```

```
  var aval;
```

```
  output out=mean_aval (drop=_TYPE_ _FREQ_) mean=mean_aval;
```

```
run;
```

```
/* Step 5: Display the result */
```

```
proc print data=mean_aval;
```

```
run;
```

Prompt :

Write a **SAS script** that groups data by "trta" and "avisitn" columns in "advs.xpt" and calculates the mean of the "aval" column for each group at parmcd = 'WEIGHT'

Codes Creation

Prompt :

Write a **Python script** that groups data by "trta" and "avisitn" columns in "advs.xpt" and calculates the mean of the "aval" column for each group at parmcd = 'WEIGHT'

Output :

```
```bash
pip install pandas xport
```

```python
import pandas as pd
import xport

Load the .xpt file
with open("advs.xpt", "rb") as file:
 data = xport.to_dataframe(file)

Filter the data where parmcd is 'WEIGHT'
weight_data = data[data['parmcd'] == 'WEIGHT']

Group by 'trta' and 'avisitn' and calculate the mean of 'aval'
grouped_data = weight_data.groupby(['trta', 'avisitn'])['aval'].mean().reset_index()

Rename the column for clarity
grouped_data = grouped_data.rename(columns={'aval': 'mean_aval'})

Display the result
print(grouped_data)
```
```

Comparison between SAS and R

Prompt :

I want you to compare SAS and R programming. Provide me with differences, present in a table format

Output :



Certainly! Here is a comparison of SAS and R programming in a table format highlighting the key differences between the two:

| Aspect | SAS | R |
|-----------------------------|--|---|
| Type of Language | Proprietary language | Open-source language |
| Cost | Commercial software with licensing fees | Free and open-source software |
| Data Manipulation | Excellent data manipulation and transformation capabilities | Strong data manipulation capabilities |
| Data Visualization | Basic data visualization features; often requires external tools like SAS Visual Analytics | Rich data visualization libraries (e.g., ggplot2) |
| Statistical Analysis | Comprehensive built-in statistical procedures | Extensive statistical packages and libraries |
| Machine Learning | Limited machine learning capabilities | Extensive machine learning libraries (e.g., scikit-learn, TensorFlow) |
| Community Support | Smaller user community and less open-source collaboration | Large and active user community with extensive online resources |
| Customization | Limited customization options compared to open-source alternatives | Highly customizable with the ability to create packages and functions |

Patient Profile Development

- Prompt :

Use below data to provide patient profiles:

```
{ 'patient' : '01-001', 'sex' : 'male', 'age' : 25, 'race' : 'White' }
```

- Output :

Based on the provided data, here is a patient profile for '01-001':

- Patient ID: 01-001
- Sex: Male
- Age: 25
- Race: White

This patient is a 25-year-old male of White race. Please let me know if you need any additional information or if you would like to create profiles for more patients.

Data Analysis (1)

- Prompt :

Select patients whose sex is male. Use below "Patient Data". Provide me the answers only.

“Patient Data”:

```
{ 'patient' : '01-001', 'sex' : 'male', 'age' : 25, 'race' : 'White'},  
{ 'patient' : '01-002', 'sex' : 'female', 'age' : 28, 'race' : 'Asian'},  
{ 'patient' : '02-001', 'sex' : 'female', 'age' : 50, 'race' : 'White'},  
{ 'patient' : '02-002', 'sex' : 'male', 'age' : 40, 'race' : 'Black'}
```

- Output :

The selected patients whose sex is male are:

1. {'patient': '01-001', 'sex': 'male', 'age': 25, 'race': 'White'}
2. {'patient': '02-002', 'sex': 'male', 'age': 40, 'race': 'Black'}

Data Analysis (2)

- Prompt :

Count below "Patient Data" by race

"Patient Data":

```
{ 'patient' : '01-001', 'sex' : 'male', 'age' : 25, 'race' : 'White'},  
{ 'patient' : '01-002', 'sex' : 'female', 'age' : 28, 'race' : 'Asian'},  
{ 'patient' : '02-001', 'sex' : 'female', 'age' : 50, 'race' : 'White'},  
{ 'patient' : '02-002', 'sex' : 'male', 'age' : 40, 'race' : 'Black'}
```

- Output :

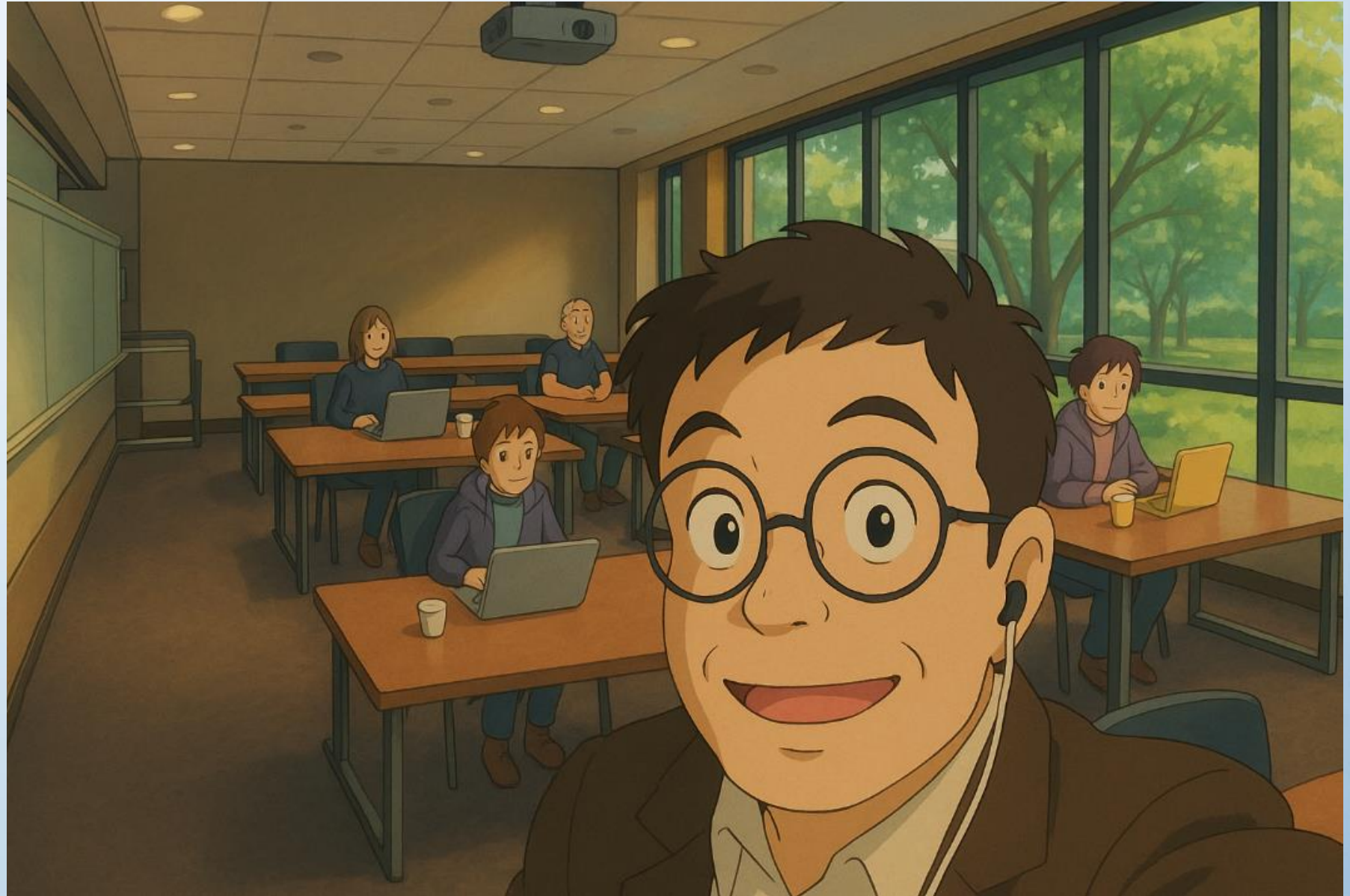
Certainly! Let's count the number of patients by race in the given "Patient Data":

```
- White: 2  
- Asian: 1  
- Black: 1
```

Image creation using ChatGPT

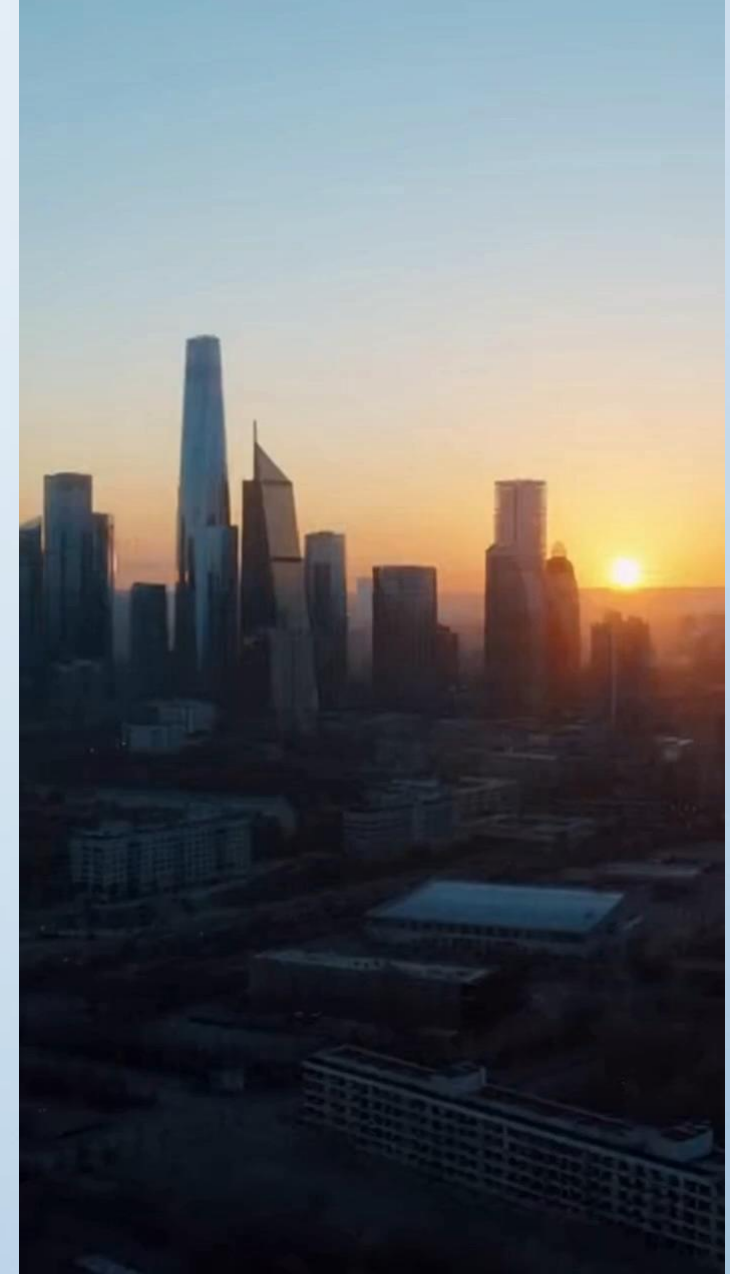
Prompt:

Convert the
picture in Ghibli
animation
format



Video Generation using Sora

- OpenAI can generate short video(60 second) based on simple prompt.
- <https://sora.chatgpt.com/explore>
- Prompt :
Create a video about Gen AI and Vibe Coding online course at WUSS in Dec 05 from 1 pm to 5 pm est



Prompt :

Based on the interaction with ChatGPT, what is my personality type?

Use MBTI, and provide the reasons

Output : **Personal Question**

Personality Type: **INTJ (The Architect)**

Introversion (I): vs Extraversion (E)

You prefer working independently and are energized by deep, focused tasks. Your conversations show a strong inclination toward thoughtful reflection rather than social interaction.

Intuition (N): vs Sensing (S)

You focus on long-term goals, systems, and innovative ideas. You consistently explore how to improve processes using advanced tools like AI and automation, indicating a forward-thinking mindset.

Thinking (T): vs Feeling (F)

You rely on logic and structure in your decision-making. Your work in programming, system validation, and analytics demonstrates a preference for objective analysis over personal values.

Judging (J): vs Perceiving (P)

You show a high level of organization and planning. Whether you're creating templates, managing clinical trial workflows, or mentoring others, your approach is methodical and goal-driven.

Summary:

You are likely an INTJ—strategic, independent, and analytical. You enjoy solving complex problems, optimizing systems, and leading through expertise rather than authority.⁴¹

Brain Storming

Prompt :

I want to generate creative ideas for promoting a Gen AI integration in my department.

Please suggest 10 different ideas that are easy to understand, eye-catching, and easy to follow.

Consider the audience is mostly for SAS programmers who are very knowledgeable in clinical trial programming.

Think outside the box and include social media, influencers, and offline ideas too

Brain Storming

Output :

Here are **10 creative and easy-to-understand promotional ideas** to excite and engage **SAS programmers in a clinical trials department** about **Generative AI integration**—with a mix of digital, social, and offline strategies:

1. “GPT vs. SAS” Showdown

Format: Host a live internal webinar or recorded video comparing how a Gen AI tool solves a clinical programming task (e.g., writing a simple SDTM mapping) vs. how a SAS programmer would approach it.

Hook: “Can GPT keep up with a veteran programmer?”

Bonus: Post clips on LinkedIn or internal social platforms with polling: “Who did it better?”

2. “1-Minute AI Tips” Video Series

Format: Launch a weekly series of 1-minute internal (or LinkedIn) videos showing bite-sized Gen AI use cases (e.g., automating reviewer guides, generating shell specs,

checking code logic).

Easy: Screen-recorded + voiceover.

Amplify: Invite internal team members to guest-host episodes.

3. “Prompt Cookbook” for SAS Programmers

Format: Create a visually appealing PDF or web-based *Gen AI Prompt Cookbook* with categorized prompts:

Writing SDTM specs

Reviewing define.xml logic

Creating test data

Title: “From Prompt to Production: Gen AI for SAS Programmers”

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Prompt in AI Agent

- System that can interact with its environment, collect data, and **autonomously** perform tasks and make decisions to achieve the goals.

- Main Components

- LLM (e.g., ChatGPT5.2, Claude4.5)
- Prompts: (e.g., instruction for AI Agent –

'You are stat programmer.

Use the input and generate SAS codes based on input.

Follow below steps:

- 1. Generate SAS codes based on input**
- 2. Execute generated SAS codes using SAS Studio.**
- 3. If there are error messages, debug SAS codes.**
- 4. Rerun SAS codes.**

Do Step 2 to 4 until there are no error message. '

- Tools (e.g., SAS Studio, R Studio, Python)
- Memory : short-term /long-term memory/ RAG (e.g., previous SAS codes)



What will we do with the results from an intern?



**The output of Gen AI prompt is
not the final result,
but the beginning of new process.**

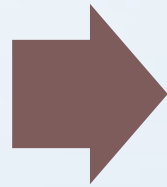
But, will “A Smart Intern” give us a Head Start?



Prompt
Engineering



Gen AI



Great
Intern /
Partner

ChatGPT Users vs Non-Users Comparison in Boston Consulting

- Results of ChatGPT Users
 - finished **12.2%** more tasks on average
 - completed tasks **25.1%** more quickly
 - produced **40%** higher quality results

Re-imagine what we could do with it?



Discussion :

At work, do we
make our intern

Competent? Or
Incompetent?



Q & A

