



نوروز باستانی مبارک

برای دانشجو ...

برای صنعت ...

برای آینده ...

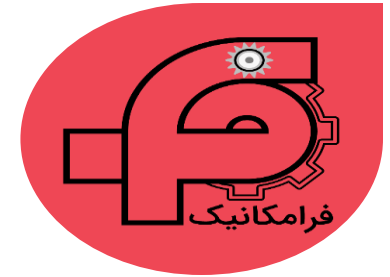
با وبینارهای نوروزی فرامکانیک



وبینار کاربرد ChatGPT در مهندسی مکانیک



حسن جاوی



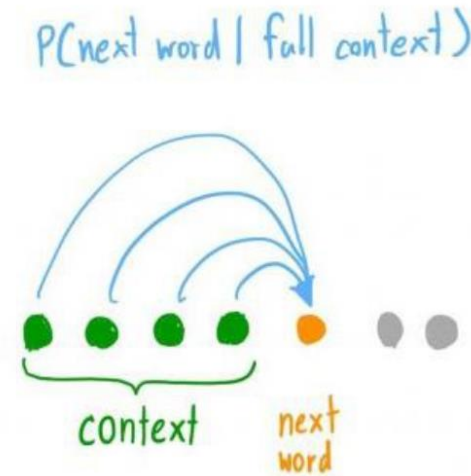
- کارشناس ارشد هوافضا و MBA
- دارای چندین سال سابقه کار در صنایع مختلف اعم از مترو تهران، شرکت تیدا و...
- طراح و مدرس دوره های تفرانس گذاری هندسی، انباشتگی تفرانسها، گیج و فیکسچرها بر اساس تفرانس گذاری هندسی، روش های اندازه گیری



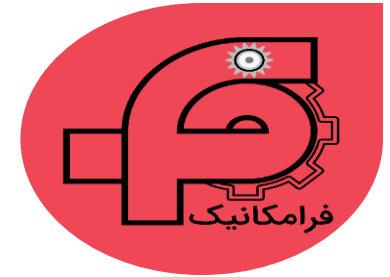
پلتفرم chatgpt چیه؟



چت جی پی تی ChatGPT جدیدترین مدل زبانی Model Language مبتنی بر هوش مصنوعی است که توسط مجموعه OpenAI به بازار آمده است و ایلان ماسک یکی از سهامداران آن است.

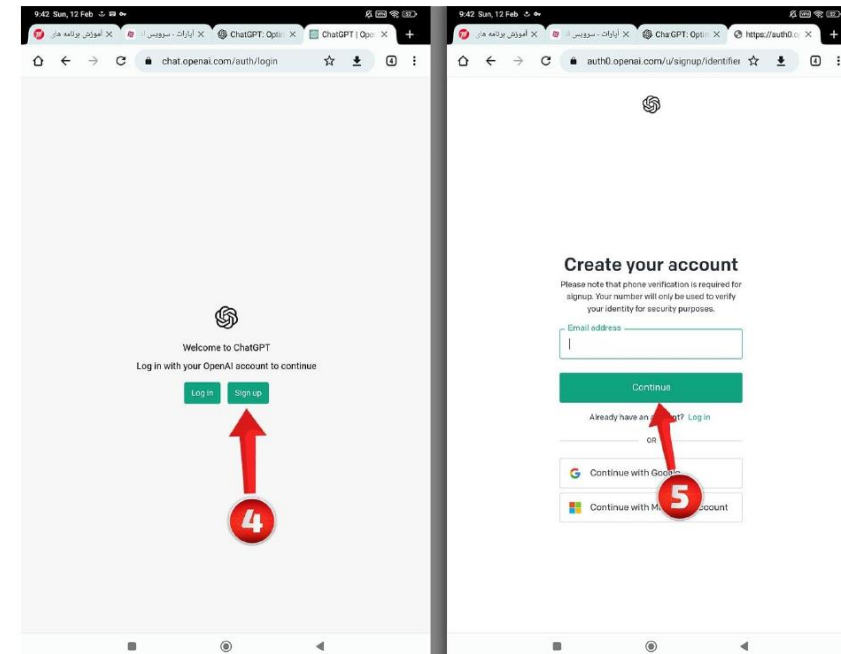
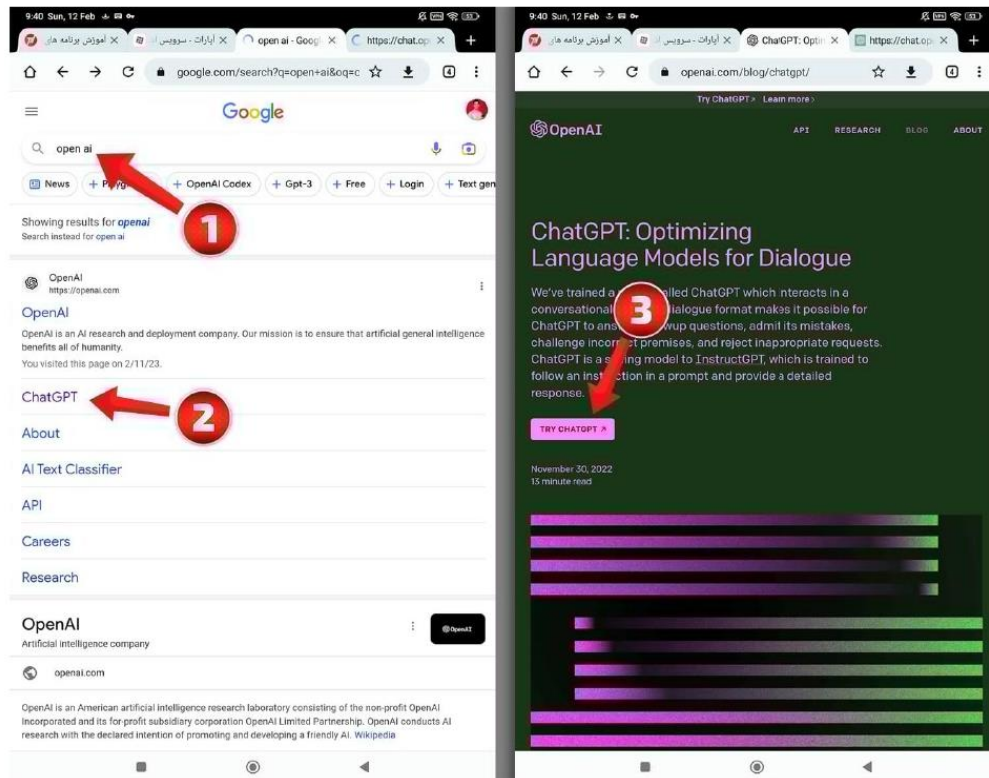


نحوه ساخت اکانت



- وارد مرورگر شوید و کلمه **Open ai** را جستجو کنید
- گزینه **ChatGPT** را بزنید و Try ChatGPT را لمس کرده

- در این صفحه شما با استفاده از گزینه Sign up یک حساب کاربری جدید بسازید

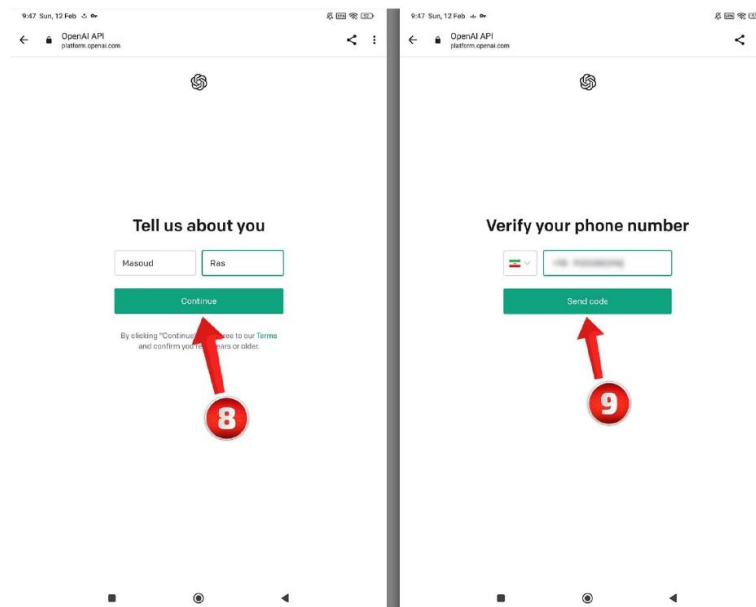
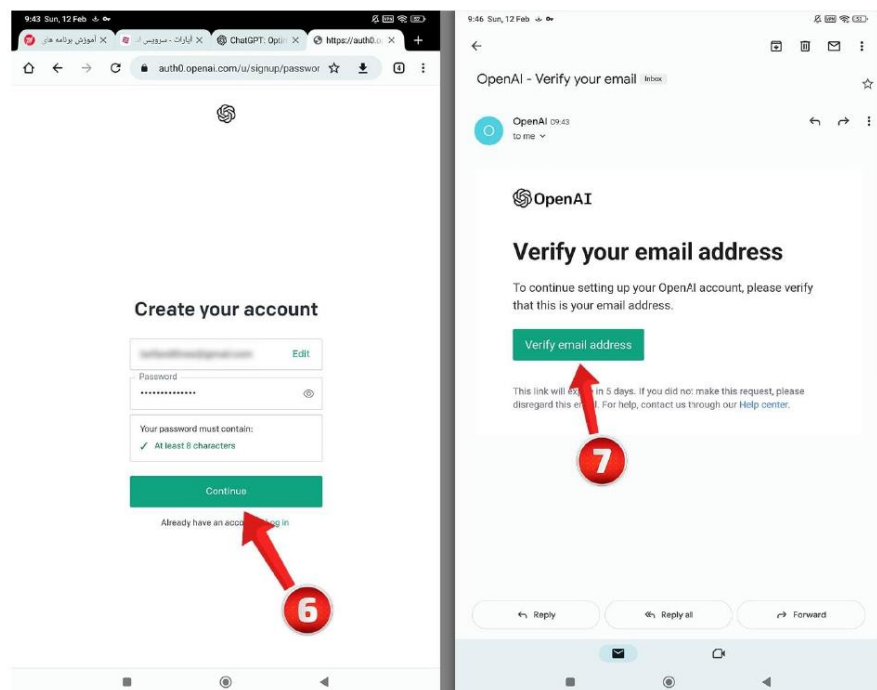




نحوه ساخت اکانت

- در کادر رو به رو آدرس ایمیل را وارد نمایید و یک رمز عبور برای حساب کاربری تعیین کنید
- لینکی که برای ایمیل تان ارسال میشود را انتخاب نمایید
- به صفحه ورودی ایمیل تان بروید و روی گزینه Verify Email Address بزنید

- در مرحله بعد اسم و فامیل خود را وارد نمایید
- اکنون در این مرحله شماره تماس خود را در اکانت ثبت کنید



نکته ChatGPT: از شماره های ایران پشتیبانی نمیکند و باید از شماره مجازی استفاده کنید

نحوه ساخت اکانت



Open AI

همچنین می توانید اکانت آماده Open AI را به صورت وریفای شده و تضمینی از ما دریافت کرده و به صورت آتی تحویل بگیرید.

[خرید اکانت Open AI](#)

چستجو فیلتر ترتیب

کشور	قیمت \$	✓ موجودی
انگلستان	۱۴,۲۰۰ تومان	۱,۰۴۷ عدد دریافت شماره
تایلند	۱۵,۵۰۰ تومان	۲,۳۵۹ عدد دریافت شماره
سوئد	۵۱,۰۰۰ تومان	۲,۲۱۲ عدد دریافت شماره
انگلستان	۱۵,۵۰۰ تومان	۳,۹۴۸ عدد دریافت شماره
اندونزی	۳۵,۳۰۰ تومان	۱۴۹ عدد دریافت شماره
آلمان	۳۵,۷۰۰ تومان	۲,۶۴۸ عدد دریافت شماره
استونی	۲۷,۷۰۰ تومان	۶۶۹ عدد دریافت شماره
فرانسه	۳۰,۶۰۰ تومان	۳,۸۰۸ عدد دریافت شماره
برزیل	۱۳,۳۰۰ تومان	۵,۹۴۲ عدد دریافت شماره
کلمبیا	۱۳,۳۰۰ تومان	۴۸۵ عدد دریافت شماره

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تلگرام

نحوه ساخت اکانت





Enter code

Please enter the code we just sent you.

[Resend code](#)

Chatgpt home page



Start with the basics

Quickstart tutorial

Learn by building a quick sample app

Examples

Explore some example tasks

Build an application



Chat Beta

Learn how to use chat-based language models



Text completion

Learn how to generate or edit text



Embeddings

Learn how to search, classify, and compare text



Speech to text Beta

Learn how to turn audio into text



Image generation Beta

Learn how to generate or edit images



Code completion Limited beta

Learn how to generate, edit, or explain code



Fine-tuning

Learn how to train a model for your use case

Chatgpt Examples



Q&A

Answer questions based on existing knowledge.



Grammar correction

Corrects sentences into standard English.



Summarize for a 2nd grader

Translates difficult text into simpler concepts.



Natural language to OpenAI API

Create code to call to the OpenAI API using a natural language instruction.



Text to command

Translate text into programmatic commands.



English to other languages

Translates English text into French, Spanish and Japanese.



Natural language to Stripe API

Create code to call the Stripe API using natural language.



SQL translate

Translate natural language to SQL queries.



Parse unstructured data

Create tables from long form text.



Classification

Classify items into categories via example.



Python to natural language

Explain a piece of Python code in human understandable language.



Movie to Emoji

Convert movie titles into emoji.



Calculate Time Complexity

Find the time complexity of a function.



Translate programming languages

Translate from one programming language to another.



Advanced tweet classifier

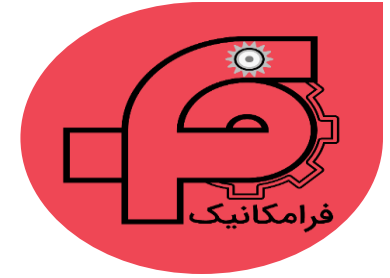
Advanced sentiment detection for a piece of text



Explain code

Explain a complicated piece of code.

Chatgpt Examples



Grammar correction

Transformation

Generation

Corrects sentences into standard English.

Prompt

Correct this to standard English:

She no went to the market.

Sample response

She did not go to the market.

Settings

Engine	text-davinci-003
Max tokens	60
Temperature	0
Top p	1.0
Frequency	0.0
penalty	
Presence penalty	0.0

Chatgpt Examples



Summarize for a 2nd grader

Transformation

Generation

translate below text into simpler concept.

Unlike experts, inexperienced readers are less apt to chunk complex material into discrete parts with describable functions. They do not say to themselves, for example, "This part is giving evidence for a new reason," "This part maps out an upcoming section," or "This part summarizes an opposing view." Their often indiscriminate, almost random use of the yellow highlighter suggests that they are not representing the text in their minds as a hierarchical structure. To use a metaphor popular among composition instructors, these students are taking an ant's-eye view of the text—crawling through it word by word—rather than a bird's-eye view, seeing the overall structure by attending to mapping statements, section headings, paragraph topic sentences, and so forth.

Inexperienced readers have difficulty understanding complex material and breaking it into pieces. They don't recognize how the different parts of the text are related and may randomly highlight the text without understanding its structure. They look at the text from a close-up perspective like an ant, instead of looking at it from a wider view like a bird.

Chatgpt Examples



English to other languages

Transformation

Generation

translate my text to french and arabic, spanish.

What is thermodynamics? Thermodynamics is the study of the relations between heat, work, temperature, and energy. The laws of thermodynamics describe how the energy in a system changes and whether the system can perform useful work on its surroundings.

Français: Qu'est-ce que la thermodynamique? La thermodynamique est l'étude des relations entre la chaleur, le travail, la température et l'énergie. Les lois de la thermodynamique décrivent comment l'énergie d'un système change et si le système peut effectuer un travail utile sur son environnement.

العربية: ما هي الطاقة الحرارية؟ الطاقة الحرارية هي دراسة العلاقات بين الحرارة والعمل والحرارة والطاقة. قوانين الطاقة الحرارية تصف كيف يتغير الطاقة في النظام وما إذا كان النظام يستطيع أن يقوم بعمل فاعل على محيطه.

Español: ¿Qué es la termodinámica? La termodinámica es el estudio de las relaciones entre el calor, el trabajo, la temperatura y la energía. Las leyes de la termodinámica describen cómo cambia la energía en un sistema y si el sistema puede realizar un trabajo útil en su entorno.

Chatgpt Examples



Parse unstructured data

Transformation

Generation

Create tables from long form text by specifying a structure and supplying some examples.

compare between material s 304 and 304l

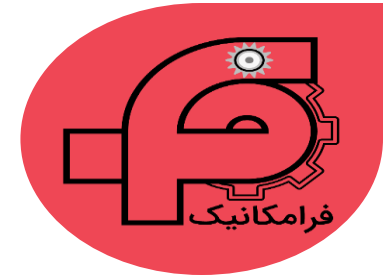
The main difference between 304 and 304L stainless steel is the carbon content; the lower carbon content of 304L minimizes deleterious or harmful carbide precipitation as a result of welding. 304L can, therefore, be used "as welded" in severe corrosion environments, and it eliminates the need for annealing. On the other hand, 304 stainless steel is not as corrosion resistant as 304L and it is slightly higher in cost.

The main difference between 304 and 304L stainless steel is the carbon content; the lower carbon content of 304L minimizes deleterious or harmful carbide precipitation as a result of welding. 304L can, therefore, be used "as welded" in severe corrosion environments, and it eliminates the need for annealing. On the other hand, 304 stainless steel is more corrosion resistant than 304L and it is slightly lower in cost.

compare between material s 304 and 304l into a table

Property	304 Stainless Steel	304L Stainless Steel
Carbon Content	0.08%	0.03%
Corrosion Resistant	Higher	Lower
Cost	Slightly Higher	Slightly Lower
Weldability	Lower	Higher
Use	General Purpose	Severe Corrosion

Chatgpt Examples



Explain code

Code

Translation

Explain a complicated piece of code.

Prompt

```
class Log:
    def __init__(self, path):
        dirname = os.path.dirname(path)
        os.makedirs(dirname, exist_ok=True)
        f = open(path, 'a+')

        # Check that the file is newline-terminated
        size = os.path.getsize(path)
        if size > 0:
            f.seek(size - 1)
            end = f.read(1)
            if end != "\n":
                f.write("\n")
        self.f = f
        self.path = path
```

Settings

Engine	code-davinci-002
Max tokens	64
Temperature	0
Top p	1.0
Frequency penalty	0.0
Presence penalty	0.0
Stop sequence	" "

Sample response

The constructor creates a directory for the log file if it doesn't exist.

1. The log() method writes a JSON-encoded event to the log file.
2. The state() method returns a dictionary with the set of complete tasks and the most recent event.

Chatgpt Examples



Python to natural language

Code Translation

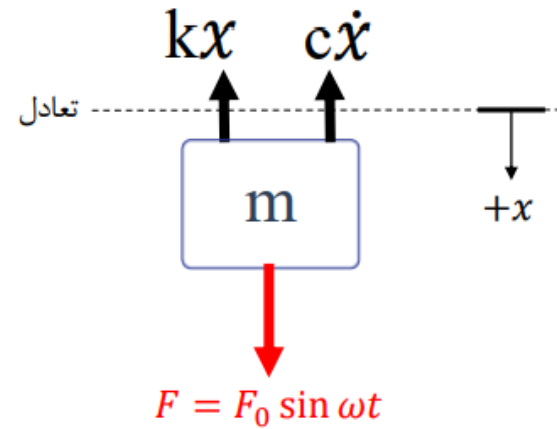
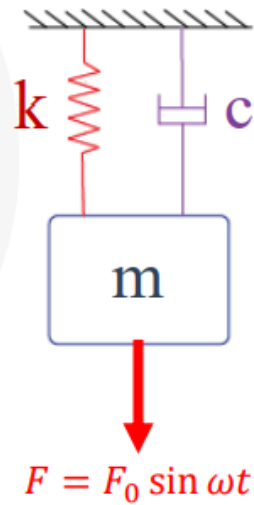
Explain a piece of Python code in human understandable language.



Chatgpt Examples



۳- ارتعاشات اجباری



$$\sum F = m\ddot{x} \longrightarrow -c\dot{x} - kx + F_0 \sin \omega t = m\ddot{x} \longrightarrow m\ddot{x} + c\dot{x} + kx = F_0 \sin \omega t$$

مدل ریاضی سیستم ارتعاشی

Chatgpt Examples



حل معادله دیفرانسیل

$$m\ddot{x} + c\dot{x} + kx = F_0 \sin \omega t$$

معادله دیفرانسیل خطی مرتبه دوم ناهمگن

پاسخ را به صورت زیر در نظر می گیریم و آن را در معادله دیفرانسیل صدق می دهیم تا مجهولات X و φ بدست آیند.

$$x(t) = X \sin(\omega t - \varphi)$$

$$\dot{x}(t) = X\omega \cos(\omega t - \varphi)$$

$$\ddot{x}(t) = -X\omega^2 \sin(\omega t - \varphi)$$

Chatgpt Examples



```
In [21]: import matplotlib.pyplot as pylab

# forces plots to appear in the ipython notebook
%matplotlib inline

from scipy.integrate import odeint
from pylab import plot,xlabel,ylabel,title,legend,figure,subplots

from pylab import cos, pi, arange, sqrt, pi, array, array
```

```
In [22]: def MassSpringDamper(state,t):
    '''
    k=spring constant, Newtons per metre
    m=mass, Kilograms
    c=dampign coefficient, Newton*second / meter

    for a mass,spring
    xdd = ((-k*x)/m) + g
    for a mass, spring, damper
    xdd = -k*x/m -c*xd-g
    for a mass, spring, dmaper with forcing function
    xdd = -k*x/m -c*xd-g + cos(4*t-pi/4)
    '''

    k=124e3 # spring constant, kN/m
    m=64.2 # mass, Kg
    c=3 # damping coefficient
    # unpack the state vector
    x,xd = state # displacement,x and velocity x'
    g = 9.8 # metres per second**2
    # compute acceleration xdd = x''
    omega = 1.0 # frequency
    phi = 0.0 # phase shift
    A = 5.0 # amplitude
    xdd = -k*x/m -c*xd-g + A*cos(2*pi*omega*t - phi)
    return [xd, xdd]
```

The initial displacement and velocity conditions are defined in the varaible state0

```
In [23]: state0 = [0.0, 1.2] #initial conditions [x0 , v0] [m, m/sec]
ti = 0.0 # initial time
tf = 4.0 # final time
step = 0.001 # step
t = np.arange(ti, tf, step)
state = odeint(MassSpringDamper, state0, t)
x = array(state[:,[0]])
xd = array(state[:,[1]])
```

Chatgpt Examples

Second-order differential equations are used to model many physical systems in mechanical engineering, such as oscillations, vibrations, and motion. These equations describe the relationship between the acceleration, velocity, and position of a system over time.

To solve a second-order differential equation, one typically needs to find a particular solution and a complementary solution. The particular solution is a solution that satisfies the differential equation and any initial or boundary conditions. The complementary solution is a solution that satisfies the homogeneous version of the differential equation, which is obtained by setting the right-hand side of the equation to zero.

There are several methods for solving second-order differential equations, including the method of undetermined coefficients, the method of variation of parameters, and the Laplace transform method. Each method has its advantages and disadvantages, and the choice of method depends on the specific problem at hand.

Overall, solving second-order differential equations is an important skill for mechanical engineers, as it allows them to model and analyze a wide range of physical systems.

Here is an example of solving a second-order differential equation representing a spring-damper system using Python:

```
'''python
import numpy as np
from scipy.integrate import odeint
import matplotlib.pyplot as plt

# Define the parameters of the system
m = 1.0 # mass of the object
k = 2.0 # spring constant
c = 0.5 # damping coefficient

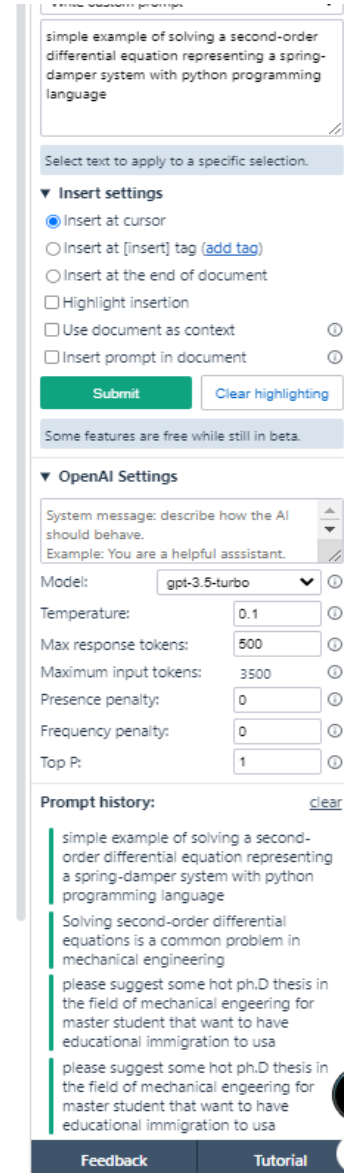
# Define the function that represents the system
def spring_damper(y, t):
    x, v = y
    dxdt = v
    dvdt = (-k*x - c*v) / m
    return [dxdt, dvdt]

# Define the initial conditions
y0 = [1.0, 0.0] # initial position and velocity
t = np.linspace(0, 10, 1000) # time vector

# Solve the differential equation using odeint
sol = odeint(spring_damper, y0, t)

# Plot the results
plt.plot(t, sol[:, 0], label='position')
plt.plot(t, sol[:, 1], label='velocity')
plt.xlabel('Time')
plt.ylabel('Position / Velocity')
plt.legend()
plt.show()
'''
```

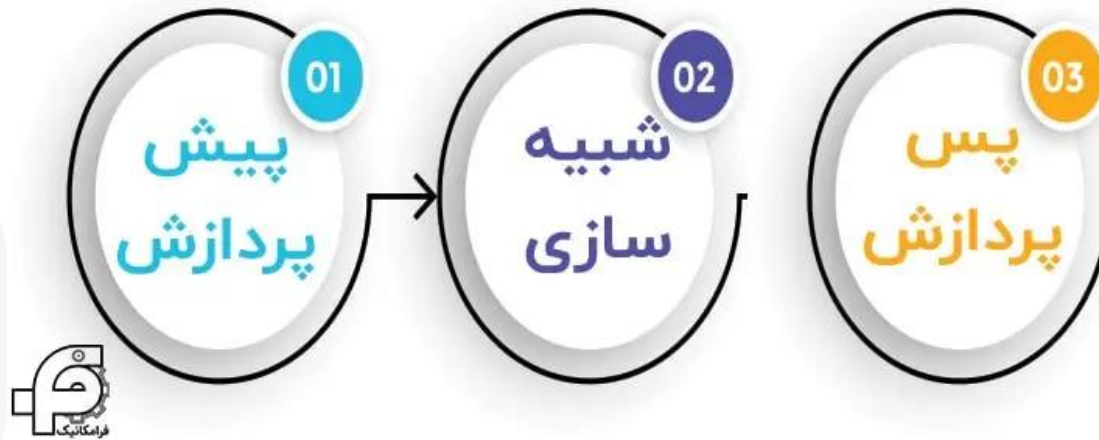
In this example, we define the parameters of the system (mass, spring constant, and damping coefficient), and then define the function 'spring_damper' that represents the differential equation. We then define the initial conditions and time vector, and use the 'odeint' function from the 'scipy.integrate' module to solve the differential equation. Finally, we plot the results using 'matplotlib'. The resulting plot shows the position and velocity of the object over time.



The screenshot shows the ChatGPT web interface. At the top, there's a text input area with the prompt: "simple example of solving a second-order differential equation representing a spring-damper system with python programming language". Below the input area, there are several settings sections. The "Insert settings" section includes options like "Insert at cursor" (selected), "Insert at [insert] tag", "Insert at the end of document", "Highlight insertion", "Use document as context", and "Insert prompt in document". The "OpenAI Settings" section includes a "System message" field, a "Model" dropdown set to "gpt-3.5-turbo", and various sliders for "Temperature", "Max response tokens", "Maximum input tokens", "Presence penalty", "Frequency penalty", and "Top P". At the bottom, there's a "Prompt history" section showing a list of previous prompts and responses.



Chatgpt Examples



Chatgpt Examples



solve mechanical engineering problems such as stress analysis



Sure, I can help you with solving mechanical engineering problems such as stress analysis. Here are the steps you would typically follow to solve a stress analysis problem:



1. Define the problem: You need to clearly understand the problem statement and gather all the necessary information including loading, material properties, and geometry.
2. Establish the model: Create a mathematical model of the geometry, loads, and supports involved in the problem, using either analytical or numerical methods. Finite element analysis (FEA) is commonly used for stress analysis problems.
3. Apply the boundary conditions: Define the boundary conditions such as constraints and loads that need to be applied to the model.
4. Solve the equations: Once you have defined the boundary conditions, you can solve the equations using mathematical tools such as matrix algebra or FEA software.
5. Post-process the results: Examine the results of the stress analysis, such as the stress distribution, maximum stress, and deformation, and compare them to the design criteria that you set. This will help you determine if the design is safe or if it needs to be modified.
6. Analyze the results: Based on the results of the stress analysis, you can identify any design modifications that may be needed to ensure that the design meets the performance requirements.
7. Iterate: If the results are not satisfactory, you may need to modify the design and run the analysis again. This iterative process may need to be repeated until the design meets the desired performance criteria.

It is important to note that stress analysis can be a complex process, and there are various factors that must be taken into account, such as material properties, boundary conditions, and loading. Therefore, it is recommended to consult with experienced mechanical engineers and use validated software to help ensure accurate results.

Chatgpt Examples



what is the formula of stress in mechanical engineering



In mechanical engineering, stress is defined as the force per unit area acting on a material.



Mathematically, stress can be represented by the following formula:

$$\text{Stress} = \text{Force} / \text{Area}$$

where,

Stress = Stress in the material (in units of force per unit area such as N/m², psi, MPa, etc.)

Force = Applied force (in units of force such as N, lbf, etc.)

Area = Cross-sectional area of the material on which the force is acting (in units of area such as m², in², cm², etc.)

It's important to note that there are different types of stress, such as normal stress (tensile, compressive, or shear stress) and bending stress, that have their own specific equations depending on the loading condition and material properties. Also, different formulas may be used depending on the type of material being analyzed (e.g., isotropic or anisotropic material). Therefore, it is recommended to consult appropriate textbooks or resources for specific formulas for different scenarios.

Chatgpt Examples



write python code of stress analysis in mechanical engineering with numerical example

Here's an example of how to perform stress analysis calculations of a rectangular bar in Python using NumPy and SciPy libraries:

```
import numpy as np
from scipy import linalg

# define material properties
E = 200e9 # Young's modulus in Pa
nu = 0.3 # Poisson's Ratio
sigma_y = 350e6 # Yield strength in Pa

# define geometry and loading
L = 2.0 # length of bar in m
W = 1.0 # width of bar in m
t = 0.05 # thickness of bar in m
F = 20000 # applied force in N

# calculate the area and moment of inertia of the cross-section
A = W * t
I = (1/12) * W * t**3

# calculate the stiffness matrix
K = np.array([[12, 6*L, -12, 6*L], [6*L, 4*L**2, -6*L, 2*L**2], [-12, -6*L, 12, -6*L], [6*L, 2*L**2, -6*L, 4*L**2]]) * (E*I/L**3)

# calculate the load vector
P = np.array([0, -F, 0, 0])

# solve for the displacement vector
u = linalg.solve(K, P)

# calculate the stress distribution
stress = (E / (1-nu**2)) * np.array([-1, -nu, 1, -nu]).dot(u) / t

# calculate the maximum stress
max_stress = abs(max(stress))

# check if the maximum stress exceeds the yield strength of the material
if max_stress > sigma_y:
    print("The component has failed!")
else:
    print("The component is safe.")

# print the stress distribution and maximum stress
print("The stress distribution is ", stress, "Pa")
print("The maximum stress is ", max_stress, "Pa")
```

In this code, we define the material properties, geometry, and loading. We then calculate the area, moment of inertia, stiffness matrix, and load vector of the rectangular bar. Using the

Chatgpt Examples



Movie to Emoji

Transformation

Generation

Convert movie titles into emoji.

Prompt

Convert movie titles into emoji.

Back to the Future: 🧑🏻 🧑🏻 🚗 ⌚

Batman: 🦹 🦇

Transformers: 🚗 🤖

Star Wars:

Settings

Engine text-davinci-003

Max tokens 60

Temperature 0.8

Top p 1.0

Frequency 0.0

penalty

Presence penalty 0.0

Stop sequence \n

Sample response



Chatgpt Examples



Product name generator

Generation

Create product names from examples words. Influenced by a community prompt.

Prompt

Product description: A home milkshake maker
Seed words: fast, healthy, compact.
Product names: HomeShaker, Fit Shaker, QuickShake, Shake Maker

Product description: A pair of shoes that can fit any foot size.
Seed words: adaptable, fit, omni-fit.

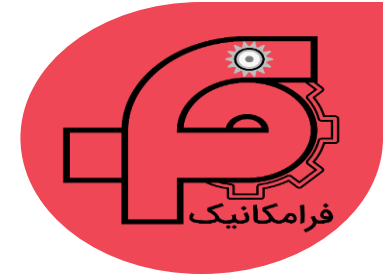
Settings

Engine	text-davinci-003
Max tokens	60
Temperature	0.8
Top p	1.0
Frequency penalty	0.0
Presence penalty	0.0

Sample response

Product names: AdaptFit, OmniSecure, Fit-All, AdaptShoes.

Chatgpt Examples



Notes to summary

Transformation Generation

Turn meeting notes into a summary.

Prompt

Convert my short hand into a first-hand account of the meeting:

Tom: Profits up 50%
Jane: New servers are online
Kjel: Need more time to fix software
Jane: Happy to help
Parkman: Beta testing almost done

Settings

Engine	text-davinci-003
Max tokens	64
Temperature	0
Top p	1.0
Frequency penalty	0.0
Presence penalty	0.0

Sample response

At the meeting, Tom reported that profits had increased by 50%. Jane then mentioned that the new servers were online. Kjel mentioned that they needed more time to fix the software, and Jane offered to help. Finally, Parkman reported that the beta testing was almost done.

Chatgpt Examples



Notes to summary

Transformation Generation

Turn meeting notes into a summary.

Prompt

Convert my short hand into a first-hand account of the meeting:

Tom: Profits up 50%
Jane: New servers are online
Kjel: Need more time to fix software
Jane: Happy to help
Parkman: Beta testing almost done

Settings

Engine	text-davinci-003
Max tokens	64
Temperature	0
Top p	1.0
Frequency penalty	0.0
Presence penalty	0.0

Sample response

At the meeting, Tom reported that profits had increased by 50%. Jane then mentioned that the new servers were online. Kjel mentioned that they needed more time to fix the software, and Jane offered to help. Finally, Parkman reported that the beta testing was almost done.

Chatgpt Examples



Create study notes

Generation

Provide a topic and get study notes.

what are 5 key points i should know when i studing thermodynamics?

1. Understand the Laws of Thermodynamics – Be familiar with the Zeroth, First, Second, and Third Laws of Thermodynamics.
2. Learn About Heat Transfer – Heat transfer can occur through conduction, convection, and radiation.
3. Learn About Entropy – Entropy is a measure of disorder and is related to the amount of energy in a system.
4. Understand the Different Types of Processes – Familiarize yourself with adiabatic and isothermal processes.
5. Learn About the Different Forms of Energy – Become familiar with potential energy, kinetic energy, and thermal energy.

Chatgpt Examples



Interview questions

Generation

Create interview questions.



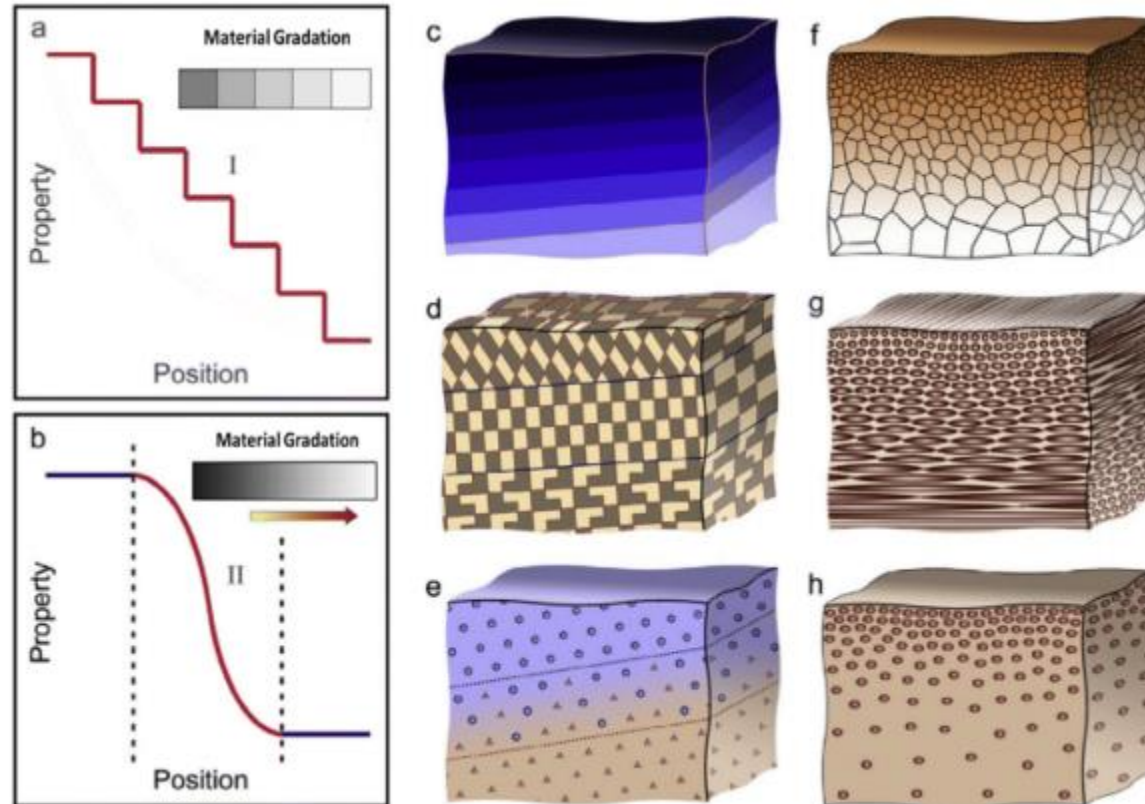
create a list of 5 question for my ph.D interview in field of metal 3d printing



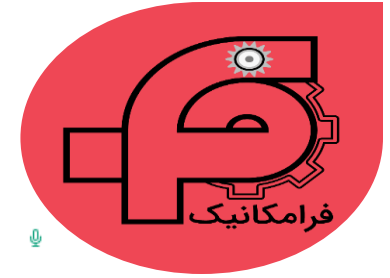
1. What motivated you to pursue research in the field of metal 3d printing, and what potential impact do you foresee your research having on the industry?
2. How do you approach the challenge of optimizing the printing parameters for metal 3d printing, and what methods have you found to be most effective in achieving maximum precision and reliability?
3. In your opinion, what are the biggest current limitations of metal 3d printing, and what areas of research do you think are most important for addressing these limitations?
4. Can you describe any major breakthroughs or discoveries you have made in your research in metal 3d printing? How have you managed to overcome challenges encountered along the way?
5. How do you envision the future of metal 3d printing in terms of its integration with other industrial processes and its impact on novel product development and design?



Chatgpt Examples



Chatgpt Examples



functionally graded materials formula

The formula for functionally graded materials is

$$FGM = (1 - x)A + xB$$

where FGM is the functionally graded material, A and B are the two components of the material, and x is the fraction of the material which is B.
functionally graded materials applications

Functionally graded materials are used in a variety of applications, such as:

- Aerospace: Aircraft and spacecraft components are often made from FGM due to their light weight and strength.
- Automotive: FGM is used in engine components, exhaust systems, and catalytic converters.
- Medical: FGM is used in prosthetics, implants, and surgical tools.
- Electronics: FGM is used in circuit boards, sensors, and other electronic components.
- Construction: FGM is used in bridges, buildings, and other structures.

how to manufacturing solar panels with functionally graded materials

Manufacturing solar panels with functionally graded materials involves a few steps. First, the materials must be selected and mixed to create the correct composition. This mixture is then heated to an appropriate temperature and poured into a mold. Once the mixture cools and hardens, the panel is cut and drilled as needed. Finally, the panel is wired and tested to ensure it meets the desired specifications.

Stress Analysis for Cylinder Made of FGM and Subjected to Thermo Mechanical Loadings

The stress analysis for a cylinder made of functionally graded material (FGM) and subjected to thermo-mechanical loadings requires an analysis of the stresses within the material. The stresses will vary due to the temperature differences between the two sides of the cylinder, as well as the mechanical loads applied. The stresses can be determined using finite element analysis (FEA), which involves solving a series of differential equations to calculate the stresses. The analysis can include a variety of factors, such as material properties, loading conditions, and boundary conditions. Once the stresses are determined, they can be used to determine the strength and failure of the cylinder.

how to calculate crack in functionally graded cylinder

To calculate a crack in a functionally graded cylinder, the stresses at the point of the crack must be determined. One way to do this is to use the finite element method (FEM), which involves solving a series of differential equations to calculate the stresses at each point. Once the stresses are known, the crack can be determined by looking at the stress intensity factor (SIF). The SIF is a measure of the stress intensity at the crack and can be used to calculate the critical crack length, which is the length at which the crack will propagate. By comparing the length of the crack to the critical crack length, the stability of the crack can be determined.

Chatgpt Examples



how to write USDFLD subroutine in Abaqus?



The USDFLD subroutine in Abaqus is used to define a field variable that is not available as an input parameter.



Here are the steps to write a USDFLD subroutine in Abaqus:

1. Open a text editor like Notepad, and create a new file with a .for extension. This file will contain your subroutine code.
2. Begin your subroutine code with the Subroutine statement followed by the name of your subroutine (e.g., Subroutine USDFLD).
3. Define the input variables required for your subroutine. These variables are passed into your subroutine by Abaqus, and typically include node coordinates, element connectivity, and material properties.
4. Define any additional variables required by your subroutine that are not available as input parameters.
5. Use the input variables to calculate the value of your field variable. This is the primary purpose of the USDFLD subroutine.
6. Return the calculated value of your field variable to Abaqus.
7. End your subroutine code with an End Subroutine statement.
8. Save your subroutine file and compile it using the Abaqus Compiler.
9. In the Abaqus input file, include a Node-based field output request for the variable you defined in your USDFLD subroutine.
10. Run your Abaqus analysis using the compiled USDFLD subroutine as part of your user-defined material model.

It is important to note that writing a USDFLD subroutine requires knowledge of programming in Fortran and familiarity with the Abaqus subroutines interface. It is recommended to use the Abaqus user manual and online resources to properly write and implement the USDFLD subroutine in your Abaqus analysis.

Chatgpt Examples



write USDFLD code for functional graded material

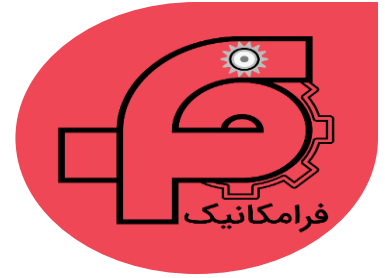


Here is an example of USDFLD subroutine code for a functional graded material (FGM). This code assumes that the FGM is composed of a mixture of two materials with varying volume fractions along the thickness direction of an element.

Copy code

```
SUBROUTINE USDFLD(COORDS,NOEL,NPT,LAYER,KSPT,TIME,TEMP,KSTEP,KINC,DLTYP,VALUES)
C
C*****INPUT VARIABLES*****
C COORDS(3,*) : array containing nodal coordinates
C NOEL       : element number
C NPT        : integration point number
C LAYER      : layer number
C KSPT       : stress point number
C TIME       : current time
C TEMP       : current temperature
C KSTEP      : current increment number
C KINC       : number of increments completed so far
C DLTYP      : load step type (1=total deformation, 2=incremental deformation)
C
C*****OUTPUT VARIABLE*****
C VALUES    : array containing output values of field variable G for stress
point KSPT
C
C                                     at integration point NPT
C
C      IMPLICIT DOUBLE PRECISION (A-H,O-Z)
C
C      DIMENSION COORDS(3,*),VALUES(*)
C
C*****USER INPUT PARAMETERS*****
C L is the total thickness of the element
C phi is a function describing the volume fraction of material 1 in terms of the
normal coordinate direction
C The elastic modulus is a function of the volume fraction of material 1 (E1)
and material 2 (E2).
C
C      PARAMETER (L=1.0)
C      FUNCTION phi(z)
C      phi = 1-2*z/L
C      END FUNCTION phi
C
C*****LOCAL VARIABLES*****
C E1(ELEMENT), E2(ELEMENT) : arrays containing elastic moduli at integration
points, where ELEMENT is the number of elements
C mat(NMAT)                : array containing elastic moduli of materials 1 and 2
C                           : NMAT is the number of materials (2 for FGM)
C z(NINTPT)                : array containing normal coordinate direction
C w(NINTPT)                : array containing integration weights
C G(NINTPT)                : array containing output values of G for each
integration point
```

Chatgpt Examples



please suggest some hot ph.D thesis in the field of mechanical engeering for master student that want to have educational immigration to usa

1. Development of Novel Heat Transfer Enhancement Techniques for Automotive Applications
2. Design and Optimization of Advanced Composite Materials for Aerospace Structures
3. Investigation of Advanced Manufacturing Techniques for Automotive Components
4. Development of Novel Automated Control Systems for Industrial Processes
5. Design and Optimization of Advanced Thermal Management Systems for Automotive Applications
6. Development of Novel Automated Inspection Systems for Automotive Components
7. Investigation of Advanced Materials for Automotive Applications
8. Design and Optimization of Advanced Automotive Powertrain Systems
9. Development of Novel Automated Diagnostic Systems for Automotive Components
10. Investigation of Advanced Manufacturing Techniques for Aerospace Structures
suggest some resources includes book,articles and online courses for each of them

1. Development of Novel Heat Transfer Enhancement Techniques for Automotive Applications

Books:

- Heat Transfer Enhancement: Fundamentals and Applications, by S.K. Das
- Heat Transfer Enhancement in Automotive Applications, by M.A. El-Sharkawy

Articles:

- "Heat Transfer Enhancement in Automotive Applications: A Review", by M.A. El-Sharkawy
- "Heat Transfer Enhancement in Automotive Engines: A Review", by M.A. El-Sharkawy

Online Courses:

- Heat Transfer Enhancement in Automotive Applications, by Coursera

2. Design and Optimization of Advanced Composite Materials for Aerospace Structures

Books:

- Composite Materials for Aerospace Structures, by A.K. Choudhury
- Design and Optimization of Composite Structures, by J.L. Williams

Articles:

- "Design and Optimization of Composite Structures for Aerospace Applications", by J.L. Williams
- "Design and Optimization of Composite Structures for Aerospace Applications: A Review", by J.L. Williams

Online Courses:

- Design and Optimization of Composite Structures for Aerospace Applications, by Coursera

3. Investigation of Advanced Manufacturing Techniques for Automotive Components

Books:

- Automotive Manufacturing Processes: Planning, Control and Improvement, by S.H. Kim
- Advanced Manufacturing Techniques for Automotive Components, by M.A. El-Sharkawy

Mode
Complete

Model
text-davinci-003

Temperature 0.22

Maximum length 256

Stop sequences
Enter sequence and press Tab

Top P 1

Frequency penalty 0

Presence penalty 0

Best of 1

Inject start text
☒

Inject restart text
☒

Show probabilities
Off

پیدا کردن موقعیت تحصیلی و استاد راهنما



آمریکا و کانادا

Philosophy(2023)

Engineering and Technology

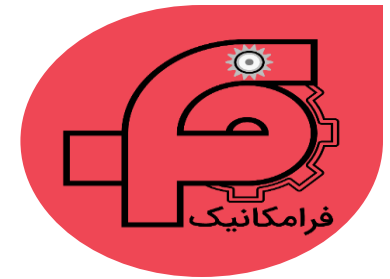
- 1 Massachusetts Institute of Technology (MIT)
- 2 Stanford University
- 3 University of Cambridge

[View Full List →](#)

Subjects:

Engineering - Chemical(2023) Engineering - Civil and Structural(2023)
Computer Science and Information Systems(2023)
Engineering - Electrical and Electronic(2023)
Engineering - Petroleum(2023) Engineering - Mechanical(2023)
Engineering - Mineral and Mining(2023) Data Science(2023)

Chatgpt Examples



please suggest 20 university professor of mechanical engineering in the usa in the field of functionally graded materials with their page links.




Sure, here are 20 mechanical engineering professors in the USA who specialize in functionally graded materials and their page links:


1. Prof. Nikhilesh Chawla, Arizona State University - https://engineering.asu.edu/faculty_staff/nikhilesh-chawla/
2. Prof. Yury Gogotsi, Drexel University- <https://drexel.edu/engineering/about/faculty-staff/Gogotsi-Yury/>
3. Prof. Caroline Schauer, Georgia Institute of Technology- <https://me.gatech.edu/faculty/schauer>
4. Prof. Michael W. Deem, Rice University - <https://mech.rice.edu/michael-w-deem>
5. Prof. Steven Y. Liang, University of California, Los Angeles - <https://www.seas.ucla.edu/~sliang/>
6. Prof. David L. McDowell, Georgia Institute of Technology - <https://me.gatech.edu/faculty/mcdowell>
7. Prof. Bharat Bhushan, Ohio State University - <https://mechse.osu.edu/people/bhushan.2>
8. Prof. Mark A. Meyers, University of Texas at Austin - <https://www.me.utexas.edu/people/faculty/mark-meyers>
9. Prof. Kunio Takeyasu, University of California, Berkeley - <https://me.berkeley.edu/people/kunio-takeyasu/>
10. Prof. Brennan J. O'Donnell, Texas A&M University - <https://engineering.tamu.edu/mechanical/profiles/odonnell-brennan.html>
11. Prof. A. John Hart, Massachusetts Institute of Technology - <https://meche.mit.edu/people/faculty/a-john-hart>
12. Prof. Fei Ye, Washington State University - <https://me.wsu.edu/people/faculty/fei-ye/>
13. Prof. Warren C. Oliver, Lehigh University - <https://www.lehigh.edu/~wco2/>
14. Prof. Martin P. Harmer, University of Virginia - <https://faculty.virginia.edu/harmerlab/>
15. Prof. Scott X. Mao, University of Pittsburgh - <https://engineering.pitt.edu/people/faculty/scott-mao/>
16. Prof. Yip-Wah Chung, University at Buffalo - <https://engineering.buffalo.edu/mechanical-aerospace/faculty/faculty-directory/yip-wah-chung.html>
17. Prof. T. Aaron Gundy-Burlet, University of Idaho - <https://www.uidaho.edu/engr/departments/me/people/faculty/faculty-details?personid=10262>
18. Prof. Kenneth S. Vecchio, University of California, San Diego - <https://www.materials.ucsb.edu/people/kenneth-s-vecchio>
19. Prof. Ravi Agarwal, University of Oklahoma - <http://www.ou.edu/coe/me/faculty-and-staff/a-r/raviagarwal>
20. Prof. Michael J. Demkowicz, Texas A&M University - <https://engineering.tamu.edu/materials/people/demkowicz-michael.html>

Chatgpt Examples



AN can you mix two article and make a new one?

 Yes, I can combine two articles and create a new one for you. Could you please provide me with the articles that you would like to be combined?  

AN this is first one : 

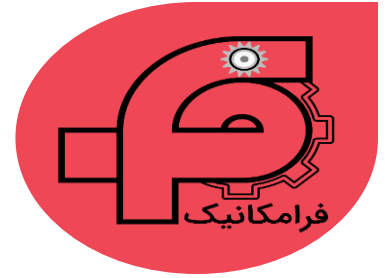
Samsung knows what power users want, as evidenced by the Galaxy S22 Ultra. This new beast adds the Galaxy Note's best feature while also offering a ton of other upgrades. Yup, there's an S Pen built in, but there's a lot more going on with this flagship as Samsung tries to top our best phone list.

For starters, the S Pen is more responsive, as Samsung made it 70% faster with less latency. The display is also brighter and more colorful than anything we've tested, and you get faster 45W charging.

and this is second one :

Our Samsung Galaxy S22 Ultra review found a big, powerful, and attractive Android phone (if you like them monolithic). It's super-versatile, ready for important work, hand-written notes, gaming, and casual big-screen web browsing – and the cameras are a clear highlight,

Chatgpt Examples



Chatgpt Examples



how to design shaft in solidworks



To design a shaft in SolidWorks, follow the steps given below:



1. Open SolidWorks and create a new sketch. Draw a circle of the desired diameter of the shaft as the base of the design.
2. Extract the centerline of the circle by selecting the circle and then selecting the "Convert Entities" option from the Sketch toolbar.
3. Next, using the shaft's total length and desired features, design the shaft's cross-section. This typically involves sketching shapes such as circles, rectangles, and other geometric shapes to create the desired profile.
4. Extrude the cross-sectional profile along the centerline of the shaft using the "Extrude Boss/Base" option from the Features toolbar. This action will create the 3D shaft model.
5. Add chamfers or fillets to the edges, as required, using the Chamfer and Fillet options in the Features toolbar.
6. Finally, add any additional features like keyways, grooves, or threads as required. This can be done using additional sketches or by importing pre-built components.
7. Save and export the model file to the desired file format. Your shaft design is now ready for further analysis or fabrication.

That's it! With these steps, you can create a basic 3D shaft design in SolidWorks. Remember that there are many advanced tools and options to enhance your design, so don't hesitate to explore and experiment with your designs.

Chatgpt Examples



what is the best material for manufacturing shaft?



The selection of the best material for manufacturing a shaft depends on various factors such as application, load-carrying capacity, operating temperature, and other environmental conditions.

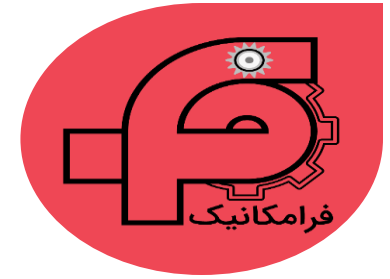


Here are some of the commonly used materials for manufacturing shafts:

1. Carbon steel: This is the most commonly used material for shafts due to its high strength, durability, and affordability. Carbon steel can be heat-treated to increase its hardness and wear resistance.
2. Stainless steel: Stainless steel offers excellent corrosion resistance and is a great choice for shafts used in harsh or corrosive environments. It is also a good choice for applications requiring high strength and high temperature resistance.
3. Alloy steel: Alloy steel offers a combination of strength, toughness, and wear resistance, making it suitable for high-load applications. It can be heat-treated to further improve its properties.
4. Titanium: Titanium is a lightweight, strong, and corrosion-resistant material, making it ideal for high-performance applications where weight and strength are critical.
5. Ceramic: Ceramic shafts are highly wear-resistant and offer excellent thermal and chemical resistance. They are often used for high-speed and high-temperature applications.

While these materials are commonly used for shafts, it's important to consult with a materials engineer or a mechanical designer to determine the best material for your specific application.

Chatgpt Examples



what is the best material for shaft in high temperature condition



In high-temperature conditions, the best material for manufacturing shaft depends on the specific temperature range and other factors such as load-carrying capacity, corrosion resistance, and cost. Here are some of the best materials for shafts in high-temperature conditions:



1. Inconel: Inconel is a family of superalloys that provide excellent strength, corrosion resistance, and high-temperature performance. Inconel can perform well in temperatures up to 1000°C and is often used in the aerospace, gas turbine, and oil and gas industries.
2. Cobalt-based alloys: Cobalt-based alloys are known for their high-temperature strength, wear resistance, and corrosion resistance. They can operate in temperatures up to 900°C and are commonly used in cutting tools and medical implants.
3. Stainless steel alloys: Certain stainless steel alloys like Grade 310 and 253MA provide excellent high-temperature strength and oxidation resistance. They can operate in temperatures up to 1150°C and are often used in furnace and heat-treatment applications.
4. Ceramic reinforced composites: Ceramic reinforced composites like carbon-fiber-reinforced silicon carbide and zirconia toughened alumina offer excellent high-temperature performance and wear resistance. They are commonly used in high-speed turbine and engine applications and can operate in temperatures up to 1200°C.

It is essential to choose the right material for a shaft in high-temperature conditions to avoid any failure in the application. It is recommended to consult with a materials engineer or mechanical designer to identify the best material for your specific application.

Chatgpt Examples



how to analysis shaft in abaqus?



To analyze a shaft in Abaqus, you generally need to follow these steps:



1. Create the geometry of the shaft using Abaqus/CAE or import it from a CAD software.
2. Assign material properties to the shaft such as density, modulus of elasticity, and Poisson's ratio.
3. Apply boundary conditions to the shaft model. In the case of a shaft, this would typically involve constraining one end of the shaft from moving and applying a torque or a rotational displacement to the other end.
4. Create a mesh of your shaft model. The mesh should be fine enough to capture the details of the model while not being too fine that it increases the computation time of the simulation.
5. Define the appropriate load and boundary conditions.
6. Run the simulation and analyze the results.
7. Use Abaqus visualization tools to review the results.
8. Interpret the results and make appropriate decisions.

It is important to note that these steps are general and the actual process of analyzing a shaft in Abaqus may vary depending on the specific requirements of the model.

Chatgpt Examples



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Chatgpt Examples



what is the best method for manufacturing shaft?



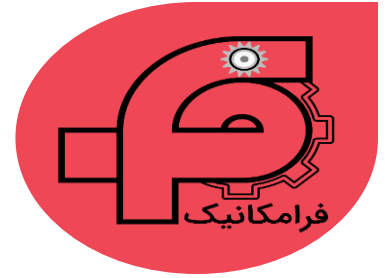
The best method for manufacturing a shaft would depend on various factors such as the material, the required dimensions, the desired surface finish, the required tolerances, and the quantity needed. Some common methods for manufacturing shafts are:



1. Turning: This method involves rotating the workpiece and cutting it with a single-point cutting tool. Turning is ideal for producing shafts with cylindrical shapes and external features such as grooves and threads.
2. Milling: Milling involves using a multi-point cutting tool to remove material from the workpiece. Milling can be used to produce shafts with non-cylindrical shapes and internal features.
3. Grinding: Grinding is a process that uses an abrasive wheel to remove material from the workpiece. This method is ideal for producing shafts with very tight tolerances and smooth surface finishes.
4. Cold drawing: This method involves pulling a bar of material through a die to reduce its diameter. Cold drawing is ideal for producing shafts with precise diameters and a smooth surface finish.
5. Forging: Forging involves using a press or a hammer to shape the material into the desired shape. This method is often used for producing shafts from materials such as steel.

The best method for manufacturing a shaft will depend on the specific requirements of the application and should be chosen in consideration of factors such as cost, time, and the properties of the material being used.

Add on



GPT for Sheets™ and ...

Install

ChatGPT in Google Sheets™ and Docs™. Get the full power of AI for inspiration data cleaning, classification, extraction, translation, edition, summarization, writing directly in you...

By: [Talarian](#)

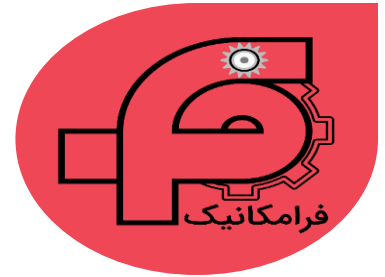
Listing updated: March 24, 2023

Works with:



★★★★★ 136 ⓘ ⬇ 1,123,731

Add on



The screenshot shows the OpenAI platform website. The browser's address bar is highlighted with a red box, showing the URL `platform.openai.com`. The website's navigation bar includes links for Overview, Documentation, Examples, and Playground. A notification banner at the top states: "ChatGPT is coming to our API soon, sign up to stay updated" with a "Sign up" button. The main heading is "Welcome to OpenAI", followed by "Start with the basics". Below this are two cards: "Quickstart tutorial" (Learn by building a quick sample app) and "Examples" (Explore some example tasks). On the right, a user menu is open, showing options: Personal, Manage account, View API keys (highlighted with a red box and a mouse cursor), Invite team, Help, Pricing, Terms & policies, and Log out.

Add on



ORGANIZATION

Personal ⓘ

Settings

Usage

Members

Billing

USER

API Keys

API keys

Your secret API keys are listed below. Please note that we do not display your secret API keys again after you generate them.

Do not share your API key with others, or expose it in the browser or other client-side code. In order to protect the security of your account, OpenAI may also automatically rotate any API key that we've found has leaked publicly.

SECRET KEY	CREATED	LAST USED	
██████████	Jan 26, 2023	Never	🗑️
██████████	Jan 26, 2023	Feb 3, 2023	🗑️

+ Create new secret key



Default organization

Add on



The most common types of composite materials are fiber-reinforced composites. wh

Api Key

You need a working OpenAI API key to use this extension.

- [Get your API key from the OpenAI dashboard.](#)
- Get help creating and setting up your API key: [setup_guide](#)

Enter your OpenAI API key:

sk-yGiuHAEB7CSip0JVEKaBT3BIbkFJ7IMG4hFn28uEeppeev0 [Check](#)

✓ An API key has already been set

[Cancel](#) [Save API key](#)

Your API key is never stored on our servers. It is stored in your Google account in a dedicated safe container. Once set, it won't be visible to anyone.

GPT for Sheets™ and Docs™

Choose an action:

Write custom prompt

Type your prompt here or in the document

Select text to apply to a specific selection.

▼ Insert settings

- ☒ Insert at cursor
- ☐ Insert at [insert] tag ([add tag](#))
- ☐ Insert at the end of document
- ☐ Highlight insertion
- ☐ Use document as context
- ☐ Insert prompt in document

[Submit](#) [Clear highlighting](#)

Some features are free while still in beta.

▼ OpenAI Settings

System message: describe how the AI should behave.
Example: You are a helpful assistant.

Model: [gpt-3.5-turbo](#)

Temperature: [0.5](#)

Max response tokens: [500](#)

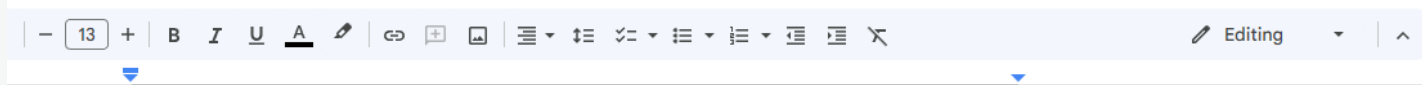
Maximum input tokens: [3500](#)

Presence penalty: [0](#)

Frequency penalty: [0](#)

Top P: [1](#)

Add on



Composite materials are a type of material that is made up of two or more different materials that are combined to create a new material with unique properties. These materials are used in a wide range of applications, from aerospace and automotive industries to construction and sports equipment.

The most common types of composite materials are made up of a matrix material, such as resin or plastic, and a reinforcement material, such as carbon fiber or fiberglass. The matrix material provides the structure and shape of the composite, while the reinforcement material adds strength and stiffness.

One of the main advantages of composite materials is their strength-to-weight ratio. They are much lighter than traditional materials, such as steel or aluminum, but can be just as strong or even stronger. This makes them ideal for use in applications where weight is a critical factor, such as in aircraft or race cars.

Composite materials are also highly resistant to corrosion and can withstand extreme temperatures and harsh environments. They are also highly customizable, allowing manufacturers to tailor the properties of the material to meet specific requirements.

However, composite materials can be more expensive to produce than traditional materials, and their properties can be affected by factors such as temperature and humidity. They also require specialized manufacturing processes and equipment.

Overall, composite materials offer a range of benefits and are becoming increasingly popular in a variety of industries. As technology continues to advance, it is likely that we will see even more innovative uses for these materials in the future.

GPT for Sheets™ and Docs™

Choose an action:

Write custom prompt

write an 200 words article about composite materials.

Select text to apply to a specific selection.

▼ Insert settings

☒ Insert at cursor

☐ Insert at [insert] tag [\(add tag\)](#)

☐ Insert at the end of document

☐ Highlight insertion

☐ Use document as context ⓘ

☐ Insert prompt in document ⓘ

Submit

Clear highlighting

Some features are free while still in beta.

▼ OpenAI Settings

System message: describe how the AI should behave.
Example: You are a helpful assistant.

Model: gpt-3.5-turbo ⓘ

Temperature: 0.1 ⓘ

Max response tokens: 500 ⓘ

Maximum input tokens: 3500 ⓘ

Presence penalty: 0 ⓘ

Frequency penalty: 0 ⓘ

Top P: 1 ⓘ

Prompt history: clear

Add on



Composite materials are engineered materials that are made up of two or more constituent materials with different physical and chemical properties. The combination of these materials results in a material that has superior properties compared to the individual materials. Composite materials are used in a wide range of applications, from aerospace to automotive, construction, and sports equipment.

The most common types of composite materials are fiber-reinforced composites, which consist of a matrix material, such as epoxy or polymer, and a reinforcing material, such as carbon fibers or glass fibers. The reinforcing material provides strength and stiffness to the composite, while the matrix material holds the reinforcing material in place and transfers the load between the fibers.

Composite materials offer several advantages over traditional materials, such as metals and plastics. They are lightweight, which makes them ideal for applications where weight is a critical factor, such as in aerospace and automotive industries. They are also corrosion-resistant, durable, and have excellent strength-to-weight ratios, making them suitable for use in high-stress applications.

Composite materials are also highly customizable, and their properties can be tailored to meet specific requirements. For example, the type and orientation of the reinforcing fibers can be adjusted to achieve the desired strength and stiffness, while the matrix material can be chosen based on the required chemical and thermal properties.

In conclusion, composite materials are an essential part of modern engineering and manufacturing. They offer superior properties compared to traditional materials, making them ideal for use in a wide range of applications. As technology continues to advance, it is likely that composite materials will become even more prevalent in various industries.

Composite materials are a type of material that is made up of two or more different materials that are combined to create a new material with unique properties. These materials are used in a wide range of applications, from aerospace and automotive industries to construction and sports equipment.

The most common types of composite materials are made up of a matrix material, such as resin or plastic, and a reinforcement material, such as carbon fiber or fiberglass. The matrix material provides the structure and shape of the composite, while the reinforcement material adds strength and stiffness.

One of the main advantages of composite materials is their strength-to-weight ratio. They are much lighter than traditional materials, such as steel or aluminum, but can be just as strong or even stronger. This makes them ideal for use in applications where weight is a critical factor, such as in aircraft or race cars.

Composite materials are also highly resistant to corrosion and can withstand extreme temperatures and harsh environments. They are also highly customizable, allowing manufacturers to tailor the properties of the material to meet specific requirements.

However, composite materials can be more expensive to produce than traditional materials, and their properties can be affected by factors such as temperature and humidity. They also require specialized manufacturing processes and equipment.

Overall, composite materials offer a range of benefits and are becoming increasingly popular in a variety of industries. As technology continues to advance, it is likely that we will see even more innovative uses for these materials in the future.

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▼ OpenAI Settings

System message: describe how the AI should behave.
Example: You are a helpful assistant.

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Temperature: 0.5 ⓘ

Max response tokens: 500 ⓘ

Maximum input tokens: 3500 ⓘ

Presence penalty: 0 ⓘ

Frequency penalty: 0 ⓘ

Top P: 1 ⓘ

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7. Geometric Dimensioning and Tolerancing - GD&T

L: 52 LD: 10.8K I: 47 whois </> source Rank: 264K

Geometric dimensioning and tolerancing (GD&T) is a system of symbols used on **engineering drawings** to communicate information from the designer to the ...

Symbol: Tolerance zone

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8. GD&T Symbols Reference Guide

L: 404 LD: 9.8K I: 50 whois </> source Rank: 68.9K

GD&T Symmetry is a 3-Dimensional tolerance that is used to ensure that two features on a part are uniform across a datum plane... Learn Symbol → · Angularity.

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9. Geometrical Tolerance - an overview

L: 16 LD: 940M I: 57.5K whois </> source Rank: 181

Geometrical tolerances are used to convey in a brief and precise manner complete geometrical requirements on **engineering drawings**.


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10. GD&T 101: An Introduction to Geometric Dimensioning

...



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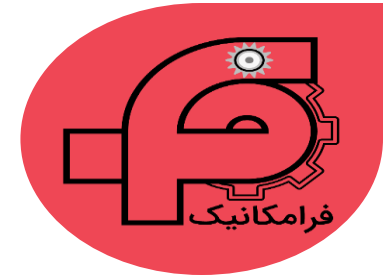
Geometric tolerance is a specification used in engineering drawings to ensure that parts are manufactured to the required level of accuracy and precision. It is a way to communicate the allowable variation in size, shape, and orientation of features on a part.

Geometric tolerances are represented by symbols and are typically placed next to the feature they apply to on a drawing. These symbols indicate the type of tolerance and the allowable variation in the feature's size, form, or orientation.

There are several types of geometric tolerances, including:

1. Straightness: The allowable deviation from a straight line.
2. Flatness: The allowable deviation from a perfect flat surface.
3. Roundness: The allowable deviation from a perfect circle.
4. Cylindricity: The allowable deviation from a perfect cylinder.
5. Parallelism: The allowable deviation from a perfect parallelism between two surfaces.
6. Perpendicularity: The allowable deviation from a perfect 90-degree angle between two surfaces.
7. Concentricity: The allowable deviation from a perfect concentricity between two features.

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Transcript & Summary

English - Default English (auto-generated)

00:00 - Hey, I'm John Kanell, and today on Preppy Kitchen we're making an easy and delicious banana cake. So let's get started. First off, set that oven to 350. Grab a 9x13 inch baking dish. And I'm just gonna give it some butter and a little bit of parchment paper so everything comes out nice and easy.

00:16 I just so happened to have these rotten, old bananas hanging out in the kitchen. I don't want to eat these. They're too mushy, but they're perfect for baking. If you don't have these bananas and you have just regular ripe ones, that's totally fine too. Pop 'em onto a baking sheet and bake them at 350 for about 10 minutes or until they're blackened.

00:35 Then, just allow them to cool for a little bit, and they're gonna be soft as



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