To define target labels for your chatbot, you need to identify the task or goal you want the chatbot to accomplish. Based on the context you've provided, several possible tasks and labels could be considered. Here are a few suggestions:

* Intent Classification:
  + Task: Classify the intent or purpose behind each General Debate statement.
  + Labels: Possible labels could include "expressing support," "raising concerns," "proposing solutions," or other relevant intents.
* Sentiment Analysis:
  + Task: Analyze the sentiment expressed in each statement.
  + Labels: Labels might include "positive," "negative," or "neutral" sentiments.
* Topic Categorization:
  + Task: Categorize statements based on the main topics they address.
  + Labels: Categories might include "economic issues," "human rights," "international relations," etc.
* Country Perspective:
  + Task: Identify the perspective or stance of each country in the General Debate.
  + Labels: Country-specific labels indicating the stance of a country in the statement (e.g., "USA perspective," "China perspective").
* Time-based Classification:
  + Task: Analyze how the topics and perspectives have evolved over time.
  + Labels: Year-based labels indicating the time period or session (e.g., "1970-1980," "1981-1990").
* Combination of Tasks:
  + Task: Combine multiple tasks, such as intent classification, sentiment analysis, and topic categorization.
  + Labels: A combination of labels representing different aspects of the statements.

Choose the task that aligns with your chatbot's purpose and the insights you want to derive from the General Debate statements. Once you've decided on the task, manually or algorithmically assign labels to each statement accordingly.

For example, if you choose intent classification, you might manually review a sample of statements and assign labels based on the expressed intent. If you opt for sentiment analysis, you can use existing sentiment analysis tools or manually label statements as positive, negative, or neutral.

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Selecting an appropriate NLP framework and architecture for building a chatbot involves considering various factors such as model performance, ease of implementation, and available resources. Here are a few popular NLP frameworks and architectures, along with considerations for their selection:

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### **NLP Frameworks:**

* TensorFlow:
  + Strengths:
    - Strong community support and extensive documentation.
    - Flexibility for customization.
    - TensorFlow Extended (TFX) provides tools for production deployment.
  + Considerations:
    - Slightly steeper learning curve for beginners.
* PyTorch:
  + Strengths:
    - Dynamic computation graph, making it more intuitive.
    - Widely used in research and academia.
    - Easier debugging with dynamic graphs.
  + Considerations:
    - Rapidly growing community support.
* Hugging Face Transformers:
  + Strengths:
    - Pre-trained models for various NLP tasks.
    - Easy-to-use high-level interfaces.
    - Transformer-based architectures.
  + Considerations:
    - Excellent for transfer learning and quick prototyping.

### **NLP Architectures:**

* BERT (Bidirectional Encoder Representations from Transformers):
  + Strengths:
    - State-of-the-art performance on various NLP tasks.
    - Captures bidirectional context effectively.
    - Available pre-trained models for transfer learning.
  + Considerations:
    - Resource-intensive during training.
* GPT (Generative Pre-trained Transformer):
  + Strengths:
    - Excellent for text generation tasks.
    - Learns long-range dependencies in sequences.
    - Available pre-trained models.
  + Considerations:
    - Large model sizes can be challenging for deployment in resource-constrained environments.
* LSTM (Long Short-Term Memory):
  + Strengths:
    - Good for sequential data and shorter sequences.
    - Easier to train on smaller datasets.
  + Considerations:
    - May struggle with capturing very long-term dependencies.

### **Justification:**

* Choice: Hugging Face Transformers with BERT:
  + Reasoning:
    - Hugging Face Transformers provides easy access to state-of-the-art pre-trained models.
    - BERT, as a transformer-based architecture, excels in understanding context and relationships in text, which is crucial for a chatbot.
    - Pre-trained BERT models can be fine-tuned for specific tasks, reducing the need for extensive labeled data.
* Considerations for Deployment:
  + BERT may be resource-intensive during training, but fine-tuned models can be deployed efficiently for inference.
  + Optimizing the model for deployment using techniques like quantization and model distillation can address resource constraints.
* Ease of Implementation:
  + Hugging Face Transformers provides high-level abstractions for working with transformers, making it user-friendly and suitable 4for rapid prototyping.
* Community Support:
  + Hugging Face Transformers has a vibrant community, and the availability of pre-trained models reduces the need for extensive model training.

In conclusion, Hugging Face Transformers with BERT is chosen for its balance between model performance, ease of implementation, and available resources. The pre-trained BERT models and user-friendly interfaces make it a suitable choice for building a chatbot with strong NLP capabilities.

def get\_final\_input\_output(dependencies):

inputs\_set = set()

outputs\_set = set()

for output, inputs in dependencies.items():

outputs\_set.add(output)

inputs\_set.update(inputs)

final\_inputs = list(inputs\_set - outputs\_set)

final\_outputs = list(outputs\_set)

return final\_inputs, final\_outputs

# Example usage

dependencies = {'output 1': ['input 1'], 'output 2': ['input 1', 'input 2'], 'output 3': ['output 1', 'output 2']}

final\_inputs, final\_outputs = get\_final\_input\_output(dependencies)

print("Final Inputs:", final\_inputs)

print("Final Outputs:", final\_outputs)

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import pandas as pd

import numpy as np

class FiLINA:

def \_\_init\_\_(self, fill\_values=None):

self.fill\_values = fill\_values

def fit(self, data):

# You can implement logic here to calculate fill values based on the data

pass

def transform(self, data):

if self.fill\_values:

# Fill NaN values in the DataFrame with specified fill values

return data.fillna(value=self.fill\_values)

else:

# Handle the case when fill\_values is not provided

raise ValueError("Fill values are not specified. Please fit the data or provide fill values.")

# Example usage:

# Create an instance of FiLINA

fillna\_transformer = FiLINA(fill\_values={'x1': 0.42, 'x2': 10.0})

# Assuming you have a DataFrame named 'your\_data'

# Fit the transformer (you might implement logic to calculate fill values)

fillna\_transformer.fit(your\_data)

# Transform the DataFrame by filling NaN values

transformed\_data = fillna\_transformer.transform(your\_data)

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| indeed pleasure member delegation extend ambassador garba sincere congratulation election presidency fortyfourth session general assembly election high office welldeserved tribute personal quality experience fully confident able wise leadership assembly consolidate gain achieved past year delegation associate previous speaker expressing appreciation dedicated effort predecessor excellency mr dante caputo exemplary manner discharged duty president fortythird session general assembly previous year delegation wish note satisfaction gratitude assiduous unrelenting effort exerted secretarygeneral united nation cause peace international harmony pay tribute untiring effort promote condition conducive realization noble principle enshrined charter united nation praise congratulate success organization achieved recent year particularly praise renewed faith regeneration confidence organization ability play instrumental role peaceful settlement dispute today find important crossroad recent year witnessed welcome positive change international political climate confrontational tone evident superpower relation long ago continues show sign thawing time number regional sub regional conflict taken momentous stride towards resolution many protracted conflict show sign hope movement though one might argue present situation continues delicate process made hardly escape notice indeed worthy recognition development southern africa particularly namibia regard implementation united nation independence plan welcome signal hope amidst hope still dark reminder precariousness global political reconciliation number problem remain unsolved several conflict middle east continue simmer therefore important crossroad feel enough good set motion process evolution towards peace stability see sign human intellect resourceful enough devise idea conducive survival fresh concept peace security gained currency time continue live dark shadow nuclear device proliferation nuclear weapon horizontally vertically tragic reminder difficulty obstacle stand mankind lasting peace economic front hard choice need made 1980s witnessed one longest spell growth industrialized country situation south particularly least developed country continues deteriorate benefit trade continue disproportionate commodity price regained value real term aid flow continue inadequate debt burden borne many third world country stifling economic growth effort development causing political instability link economic development environment recently recognized encouraging note high profile given environmental issue paris summit meeting group seven july year regard particular interest increasing awareness acceptance fact certain technology deleterious effect environment question technology replaced global programme cooperation single fact single object defines moment civilization existence large nuclear arsenal horrible capacity destroy planet several time either accident design nuclear weapon instil fear beget mistrust insecurity remarkable tendency set hostile relation concrete aggravate security dilemma state perpetuate confliction mode behaviour therefore fuel arm race defence budget soar expenditure benevolent tend plummet un conference relationship disarmament development served timely reminder opportunity cost armament nuclear conventional however opportunity cost nuclear weaponry development international political climate security perception state well environment actual potential sacrifice nuclear weapon furthermore potential horizontal proliferation nuclear weapon issue stark grim warning regional rivalry would ever shorter fuse cataclysm would much closer view strong objection nuclear weapon proliferation deployment delegation consistently strongly supported united nation call disarmament confidence derived genuine arm reduction pervasive effect security environment transition many world conflict making towards negotiation understanding owes great deal improved relation superpower part inspired historic arm reduction agreement december one thousand nine hundred eightyseven reason maldives always supported effort view general complete disarmament including total elimination chemical bacteriological weapon reduction conventional armament also believe nuclearweaponfree zone zone peace could inspire trust good operation among state transforming secure community contributing global peace security therefore support call establishment nuclearweaponfree zone zone peace express delegation fullest support people namibia namibia achieved independence apartheid affront mankind crime humanity amount tinkering placate sense outrage indignation felt world community immoral practice amount cosmetic change restore justice dignity oppressed majority south africa maldives express solidarity oppressed majority south africa struggle apartheid condemn unequivocally system apartheid condemn pretoria regime continued defiance un resolution far greatest conflict time continues conflict middle east heart conflict question palestine however recent year palestinian issue evoked even reasoned amount concern key state search peace continues frustrated hardline obstinate policy israel meanwhile situation occupied territory continues deteriorate twentytwo month long intifadah emphasizes intensity situation posed zionist occupation palestine arab territory including jerusalem government maldives strongly condemns use brutal force blatant abuse human right israel palestinian people occupied territory also deplore continued defiance israel united nation resolution violation international law norm civilized behaviour reiterate full support solidarity people palestine struggle selfdetermination independence therefore welcome overwhelming international support uprising viewed valiant struggle palestinian people restoration inalienable right extend wholehearted support proposal early convening international conference middle east full independent participation palestine situation lebanon remains volatile civil war fifteenth year continues take increasing toll human life fervently hope development taking place region elsewhere question lebanon solved manner restore independence national integrity alleviate suffering people welcome effort undertaken member arab league past present resolve situation lebanon request international community give support people lebanon effort solve problem hopeful note pleased contrary early pessimistic assessment ceasefire agreed iran iraq gulf held firm indicating sincerity party conflict welcome commitment undertaken resolve conflict peaceful mean particular applaud effort united nation secretarygeneral resolution conflict urge party maintain momentum peace created envisaged ceasefire welcome positive development afghanistan refer withdraw foreign troop regret situation completely settled reiterate call upon party concerned adhere provision geneva agreement order frustrate prevailing opportunity lasting solution problem urge international community provide humanitarian economic assistance relief rehabilitation refugee well longterm reconstruction ravaged country positive stride taken towards solution kampuchean problem welcome withdraw vietnamese troop appreciate diplomatic effort obtain comprehensive lasting solution dispute including jakarta informal meeting well international conference paris however realizing delicacy current situation call upon party concerned exercise restraint process reunification people peaceful mean creation condition conducive reconciliation peace stability among sharing aspiration remain optimistic prospect peaceful national reconciliation korean peninsula good office un could utilized peace negotiation another issue need attention situation cyprus prolonged intercommunal dispute solved urgently due regard national integrity nation aspiration people welcome recent highlevel contact two community hope revived intercommunal dialogue lead intercommunal reconciliation basis equality integrity community commend tireless sincere effort secretarygeneral searching settlement conflict already noted world economic situation continues bleak developing country situation worsened limited aid since early 1980s rampant domestic inflation crippling debt exorbitant burden debtservicing situation aggravated falling share international trade persistent negative trend term trade owing protectionism upsurge unilateralism practice jeopardize multilateral nature trade regrettable whole despite recent measure whereby resource international finance institution increased plan developed country recycle part surplus developing country internationally agreed target 07 per cent gross national product gnp official development assistance met moreover regard least developed country continue register negative growth rate official development assistance target 015 per cent gnp met either economic insecurity visible threat facing many u world today indeed consider environment one important aspect quality life address quest economic industrial development welcome proposed united nation conference environment development regard event valuable opportunity fully utilized promote comprehensive approach environmental problem related development activity mankind serious effort made global regional national level protect environment delegation particularly concerned effect degradation environment especially depletion ozone layer consequent global warming rise sea level maldives lowlying archipelagic state entirely dependent upon surrounding sea degradation marine ecosystem rise mean sea level matter grave concern maldives recalled two year ago witnessed fury tidal eruption caused extensive damage assistance friendly country embarked upon programme protecting populated island possible natural calamity tidal wave hurricane typhoon increasingly frequent phenomenon today greater awareness man tampering environment certain technology inimical environment direct bearing behaviour global weather system maldives therefore strongly support call environmental preservation already party vienna convention protection ozone layer montreal protocol substance deplete ozone layer interest issue continues undiminished welcome universal interest expressed preservation environment like also mention november year maldives host conference small state sealevel rise confident conference contribute global effort addressing important issue old true maxim best indicator strength stability international security system political order survival weakest member case view implication everincreasing danger terrorism mercenarism sovereignty small weak state appalling terrorism simply minor irritant anybody least small nation whose sovereignty held hostage easily usurped existence possibility first place augur well security international community cherished principle long contributed survival present state system indispensable value global civilization stake today may small state whose sovereignty robbed handful mercenary gang bounty hunter tomorrow could larger country even present face erosion sovereignty security similar act difference small state subjected terrorist onslaught invasion mercenary consequence irreversible political economic term maldives close becoming victim dastardly attempt last november evident people engaging act terrorism mercenarism endanger sovereignty territorial integrity state need deterred security small state weak taken care mere selfhelp implication effort strengthen security prospect economic development severe affordable opportunity cost impact social political value well longterm implication sustenance democracy militarised society negative requesting inclusion agenda assembly item related protection security small state sought highlight issue mentioned brought issue forum unwilling defend value taken people lack valour small state friend state assist assisted strengthening security grateful sense duty friend shown regret note bilateral security arrangement international system yet evolved level maturity whereby interest weaker partner safeguarded sociopolitical identity weaker state principle sovereign equality strong enough impervious possible vicissitude unequal relationship moreover political system continue afflicted misconception distort action taken best intention consequently greater power differential greater propensity misconception hapless predicament weaker party reason believe multilateral framework feasible node sound security mechanism weakest member organization even actual support assistance given situation rendered regional bilateral level noted earlier humble opinion pivotal point important crossroad global political development belief particularly auspicious moment history forge ahead strengthening norm global political security system thus sincere hope organization take similar momentous step leap forward ushering new era security small state trust critical step taken safeguard principle espoused organization survival large number community depends  pip install chatterbot  pip install chatterbot\_corpus  pip install pandas  from chatterbot import ChatBot  from chatterbot.trainers import ChatterBotCorpusTrainer  import pandas as pd  df = pd.read\_csv('your\_conversation\_data.csv')  # Assuming your CSV file has columns 'text' and 'text\_new'  conversation\_data = df[['text', 'text\_new']].values.tolist()  chatbot = ChatBot('MyBot')  # Create a new trainer for the chatbot  trainer = ChatterBotCorpusTrainer(chatbot)  # Train the chatbot on the English language  trainer.train('chatterbot.corpus.english')  # Train the chatbot on your custom data  for conversation in conversation\_data:  trainer.train(conversation)  # Get a response from the chatbot  response = chatbot.get\_response("Hello, what's your name?")  print(response)  python chatbot.py |
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