

# Customer Support System: An email to the customer

By: Vaishnavi Patil

## 1. Set Up Virtual Environment

First, ensure you have virtualenv installed. If not, you can install it by running:

```
vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ pip install virtualenv
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: virtualenv in /usr/lib/python3/dist-packages (20.13.0+ds)
Requirement already satisfied: filelock<4,>=3.2 in /usr/lib/python3/dist-packages (from virtualenv) (3.6.0)
Requirement already satisfied: platformdirs<3,>=2 in /usr/lib/python3/dist-packages (from virtualenv) (2.5.1)
Requirement already satisfied: six<2,>=1.9.0 in /usr/lib/python3/dist-packages (from virtualenv) (1.16.0)
Requirement already satisfied: distlib<1,>=0.3.1 in /usr/lib/python3/dist-packages (from virtualenv) (0.3.4)
vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$
```

### a. Create a Virtual Environment

Navigate to your project directory and create a virtual environment:

```
vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ virtualenv venv
created virtual environment CPython3.10.12.final.0-64 in 3442ms
creator CPython3Posix(dest=/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)/venv, clear=False, no_vcs_ignore=False, global=False)
seeder FromAppData(download=False, pip=bundle, setuptools=bundle, wheel=bundle, via=copy, app_data_dir=/home/vaishnavi/.local/share/virtualenv)
added seed packages: pip==22.0.2, setuptools==59.6.0, wheel==0.37.1
activators BashActivator,CShellActivator,FishActivator,NushellActivator,PowerShellActivator,PythonActivator
vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$
```

This will create a venv folder inside your project directory.

### b. Activate the Virtual Environment

I am using Ubuntu so run **source venv/bin/activate**

```
vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ source venv/bin/activate
(venv) vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$
```

You should now see (venv) in your terminal, indicating that the virtual environment is active.

### c. Install Dependencies

Once the virtual environment is activated, install the dependencies from the requirements.txt file:

```
(venv) vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ pip install -r requirements.txt
Collecting Flask==2.2.2
  Downloading Flask-2.2.2-py3-none-any.whl (101 kB)
    101.5/101.5 KB 2.2 MB/s eta 0:00:00
Collecting openai==0.27.0
  Using cached openai-0.27.0-py3-none-any.whl (70 kB)
Collecting python-dotenv==0.21.0
  Downloading python_dotenv-0.21.0-py3-none-any.whl (18 kB)
Collecting Jinja2>=3.0
  Using cached jinja2-3.1.4-py3-none-any.whl (133 kB)
Collecting click>=8.0
  Using cached click-8.1.7-py3-none-any.whl (97 kB)
Collecting itsdangerous>=2.0
  Downloading itsdangerous-2.2.0-py3-none-any.whl (16 kB)
Collecting Werkzeug>=2.2.2
  Downloading werkzeug-3.0.4-py3-none-any.whl (227 kB)
    227.6/227.6 KB 10.3 MB/s eta 0:00:00
Collecting tqdm
  Using cached tqdm-4.66.5-py3-none-any.whl (78 kB)
Collecting requests>=2.20
  Using cached requests-2.32.3-py3-none-any.whl (64 kB)
Collecting aiohttp
  Downloading aiohttp-3.10.10-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.2 MB)
    1.2/1.2 MB 14.4 MB/s eta 0:00:00
Collecting MarkupSafe>=2.0
  Using cached MarkupSafe-3.0.1-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (20 kB)
Collecting urllib3<3,>=1.21.1
  Using cached urllib3-2.2.3-py3-none-any.whl (126 kB)
Collecting certifi>=2017.4.17
  Using cached certifi-2024.8.30-py3-none-any.whl (167 kB)
Collecting charset-normalizer<4,>=2
  Downloading charset_normalizer-3.4.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (144 k
Collecting frozenlist>=1.1.1
  Using cached frozenlist-1.4.1-cp310-cp310-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_17_x86_64
.manylinux2014_x86_64.whl (239 kB)
Collecting typing-extensions>=4.1.0
  Using cached typing_extensions-4.12.2-py3-none-any.whl (37 kB)
Collecting propcache>=0.2.0
  Using cached propcache-0.2.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (208 kB)
Installing collected packages: urllib3, typing-extensions, tqdm, python-dotenv, propcache, MarkupSafe, i
tsdangerous, idna, frozenlist, click, charset-normalizer, certifi, attrs, async-timeout, aiohappyeyeball
s, Werkzeug, requests, multidict, Jinja2, aiosignal, yarl, Flask, aiohttp, openai
Successfully installed Flask-2.2.2 Jinja2-3.1.4 MarkupSafe-3.0.1 Werkzeug-3.0.4 aiohappyeyeballs-2.4.3 a
iohttp-3.10.10 aiosignal-1.3.1 async-timeout-4.0.3 attrs-24.2.0 certifi-2024.8.30 charset-normalizer-3.4
.0 click-8.1.7 frozenlist-1.4.1 idna-3.10 itsdangerous-2.2.0 multidict-6.1.0 openai-0.27.0 propcache-0.2
.0 python-dotenv-0.21.0 requests-2.32.3 tqdm-4.66.5 typing-extensions-4.12.2 urllib3-2.2.3 yarl-1.15.2
(venv) vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$
```

- d. Set up environment variables:

```
# Define your OpenAI API key
OPENAI_API_KEY = "sk-..." # Replace with your actual API key
```

- e. Deactivate the virtual environment (when done) using **deactivate**

## 2. Main Application Code

After all the requirements are installed and virtual environment is set, let's move with the code to send an email to customer using gpt-3-turbo model and flask.

```
customer_support_system(email to customer) > app.py > get_completion_from_messages

1 import os, openai
2 from dotenv import load_dotenv
3 from products import products
4 from flask import Flask, render_template, request, url_for
5
6 app = Flask(__name__)
7
8 # Load environment variables for OpenAI API key
9 load_dotenv()
10 openai.api_key = os.getenv("OPENAI_API_KEY") # Set the API key
11
12 # Define delimiter
13 delimiter = "###"
14
15 # Use text completion to generate the required content
16 def get_completion_from_messages(messages,
17                                 model="gpt-3.5-turbo",
18                                 temperature=0,
19                                 max_tokens=500):
20     response = openai.ChatCompletion.create( # type: ignore
21         model=model,
22         messages=messages,
23         temperature=temperature,
24         max_tokens=max_tokens,
25     )
26     return response.choices[0].message.content
27
28
29 # Step 1: Generate customer comment based on the product input
30 def generate_customer_comment(products):
31
32     system_message = f"""{products}"""
33     user_message = f"""Generate comment in less than 100 words about the products"""
34
35     messages = [
36         ('role': 'system',
37          'content': system_message),
38         ('role': 'user',
39          'content': f"{delimiter}Assume you are a customer of the electronics company. {user_message}{delimiter}"),
40     ]
41
42     comment = get_completion_from_messages(messages)
43     print('Comment:\n', comment)
44     return comment
45
46
47 # Step 2: Generate a subject for the email from the comment
48 def generate_email_subject(comment):
49     system_message = comment
50     user_message = f"""Please generate a subject for the email from the comment using Inferring technique."""
51
52     messages = [
53         ('role': 'system',
54          'content': system_message),
55         ('role': 'user',
56          'content': f"{delimiter}Assume that you are a customer support representative of the electronics company. {user_message}{delimiter}"),
57     ]
58
59     subject = get_completion_from_messages(messages)
60     print('Subject of the email:\n', subject)
61     return subject
62
63
64 # Step 3: Create a summary of the comment
65 def generate_summary(comment):
66     system_message = comment
67     user_message = f"""Provide a concise summary of the comment in at most 30 words."""
68
69     messages = [
70         ('role': 'system',
71          'content': system_message),
72         ('role': 'user',
73          'content': f"{delimiter}Assume that you are a customer support representative of the electronics company. {user_message}{delimiter}"),
74     ]
75
76     summary = get_completion_from_messages(messages)
77     print('Summary of the comment:\n', summary)
78     return summary
79
80
```



```

app.py x env index.html styles.css product.py
customer_support_system(email to customer) > app.py > get_completion_from_messages

80
81 # Step 4: Analyze the sentiment of the comment and tell if it is positive or negative
82 def analyze_sentiment(comment):
83     system_message = comment
84     user_message = f"""Do sentiment analysis of the comment using Inferring technique. Just mention if it is positive or negative in one word."""
85
86     messages = [
87         {'role': 'system',
88          'content': system_message},
89         {'role': 'user',
90          'content': f'{delimiter}Assume that you are a customer support representative of the electronics company. {user_message}{delimiter}'},
91     ]
92
93     sentiment = get_completion_from_messages(messages)
94     print('Sentiment of the comment:\n', sentiment)
95     return sentiment
96
97
98 # Translate the given content into the selected language
99 def get_translation(email, language):
100     system_message = email
101     user_message = f"""Translate the given email content into {language} using Transforming technique"""
102
103     messages = [
104         {'role': 'system',
105          'content': system_message},
106         {'role': 'user',
107          'content': f'{delimiter}{user_message}{delimiter}'},
108     ]
109
110     translate = get_completion_from_messages(messages)
111     print(f'Translation of customer comment email in {language}: ')
112     print(translate, '\n')
113     return translate
114
115
116 # Step 5: Generate email based on the comment, summary, sentiment and subject generated
117 def generate_email(comment, subject, summary, sentiment):
118     system_message = comment + subject + summary + sentiment
119     user_message = f"""Create an email to be sent to the customer based on the {comment} and {sentiment}, including {subject}, {summary} in a proper format having subject and other content."""
120
121     messages = [
122         {'role': 'system',
123          'content': system_message},
124         {'role': 'user',
125          'content': f'{delimiter}Assume that you are a customer support representative of the electronics company. {user_message}{delimiter}'},
126     ]
127
128     email = get_completion_from_messages(messages)
129     print('Email generated:\n', email)
130     return email
131
132
133 @app.route('/', methods=['GET', 'POST'])
134 def index():
135     comment = None
136     language = 'en'
137     email = None
138
139     if request.method == "POST":
140         language = request.form.get("language")
141         translate_comment = request.form.get("translate-comment")
142         translate_email = request.form.get("translate-email")
143         comment = generate_customer_comment(products)
144         subject = generate_email_subject(comment)
145         summary = generate_summary(comment)
146         sentiment = analyze_sentiment(comment)
147         email = generate_email(comment, subject, summary, sentiment)
148
149         if translate_email:
150             email = get_translation(email, language)
151
152         if translate_comment:
153             comment = get_translation(comment, language)
154
155     return render_template('index.html', comment = comment, language = language, email = email)
156
157 if __name__ == '__main__':
158     app.run(host='0.0.0.0', port=3000, debug=True)

```

## Running the Application

To run the flask app, use the command: **flask run**

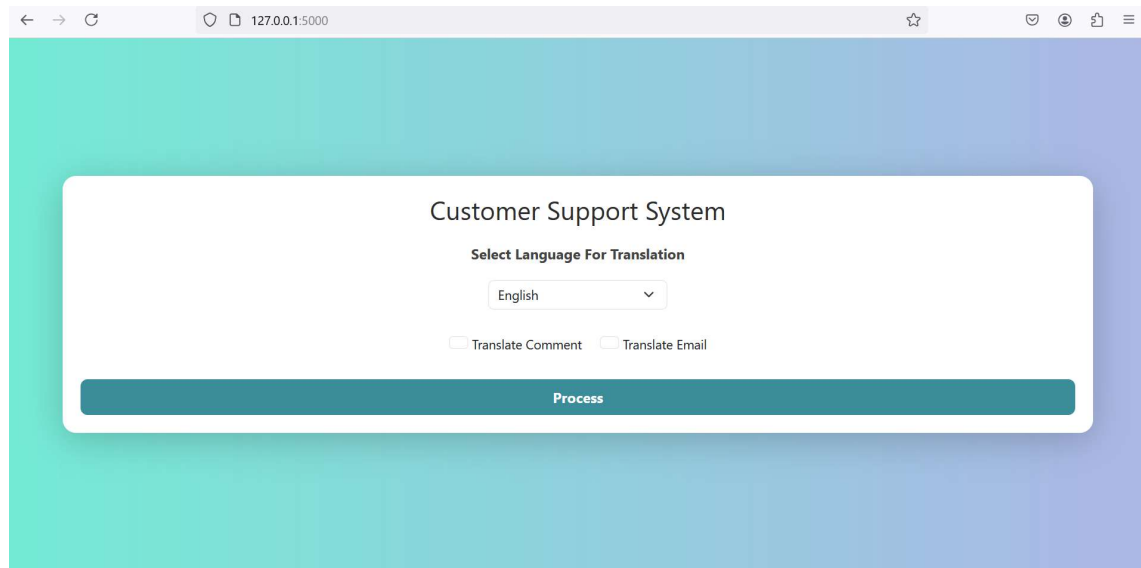
This will run the app.py file by default.

```

(venv) vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ flask run
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit

```

Then follow the link shown



## STEPS INVOLVED IN DEVELOPMENT:

### STEP 1: Generate customer's comment.

An input of the list of products is given and expect a response of about 100 words as a customer comment.

```
(venv) vaishnavi@DESKTOP-9V8KJG2:/mnt/c/Users/Mohit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ flask run
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [15/Oct/2024 16:04:03] "GET / HTTP/1.1" 200 -
Comment:
I am impressed by the wide range of high-quality products offered by our electronics company. From powerful laptops and smartphones to immersive TVs and gaming consoles, there is something for everyone. The attention to detail in design, performance, and features is evident across all categories. The warranty coverage provides peace of mind, and the competitive pricing makes these products accessible to all. Overall, I am confident in the reliability and innovation of our electronics company's offerings, making it a go-to destination for all my tech needs.
```

### STEP 2: Generate email subject.

The comment generated is given as input and expect ChatGPT to generate appropriate subject for the email using Inferring technique.

```
Subject of the email:
Subject: Impressed by the Diverse Range of High-Quality Electronics Products
```

### STEP 3: Generate summary of customer comments.

Based on the comment, expect ChatGPT generate a summary within 30 words.

Summary of the comment:

Our electronics company offers a diverse range of high-quality products with attention to detail, warranty coverage, competitive pricing, and reliability, making it a go-to destination for tech needs.

STEP 4: Sentiment analysis of the customer comment.

Take the comment as an input and expect to analyze the sentiment of the comment if it is positive or negative using Inferring technique.

Since it gave an output with more than 100 words, I just wanted to know if the comment is positive or negative. So, I changed the prompt accordingly.

Sentiment of the comment:  
Positive

STEP 5: Generate email.

Based on all the comment, subject of email, sentiment and summary, expect to generate an email in the selected language by the user.

Email generated:

Subject: Appreciation for Your Positive Feedback on Our High-Quality Electronics Products

Dear [Customer's Name],

I hope this email finds you well. I wanted to personally reach out to express my gratitude for your recent feedback regarding our diverse range of high-quality electronics products. Your positive comments about our offerings, including powerful laptops, smartphones, immersive TVs, and gaming consoles, truly resonate with us.

At our electronics company, we take great pride in ensuring that each product is meticulously designed with a focus on performance, features, and overall user experience. It is heartening to hear that our attention to detail has not gone unnoticed and that you find our products suitable for a wide range of tech needs.

Moreover, I am delighted to hear that our warranty coverage has provided you with peace of mind. We understand the importance of reliability and stand by the quality of our products to ensure customer satisfaction.

Your mention of our competitive pricing being accessible to all is also greatly appreciated. We strive to make cutting-edge technology affordable without compromising on quality, and it is rewarding to know that our efforts are recognized and valued by customers like you.

We are committed to innovation and continuously improving our product offerings to meet the evolving needs of our customers. Your confidence in our company as a go-to destination for all your tech needs is a testament to our dedication to providing top-notch electronics solutions.

Thank you once again for taking the time to share your positive feedback. If you have any further questions, feedback, or require assistance, please do not hesitate to reach out to us. We are here to ensure your experience with our products remains exceptional.

We look forward to serving you with more innovative products in the future and continuing to meet your expectations.

Warm regards,

[Your Name]  
Customer Support Representative  
[Electronics Company Name]

The entire output looks like:

```
(venv) vaishnavi@DESKTOP-9V8CQ2:/mnt/c/Users/Vahit/Desktop/Gen AI/Week 4/customer_support_system(email to customer)$ flask run
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [15/Oct/2024 16:04:03] "GET / HTTP/1.1" 200 -
Comment:
I am impressed by the wide range of high-quality products offered by our electronics company. From powerful laptops and smartphones to immersive TVs and gaming consoles, there is something for everyone. The attention to detail in design, performance, and features is evident across all categories. The warranty coverage provides peace of mind, and the competitive pricing makes these products accessible to all. Overall, I am confident in the reliability and innovation of our electronics company's offerings, making it a go-to destination for all my tech needs.
Subject of the email:
Subject: Impressed by the Diverse Range of High-Quality Electronics Products
Summary of the comment:
Our electronics company offers a diverse range of high-quality products with attention to detail, warranty coverage, competitive pricing, and reliability, making it a go-to destination for tech needs.
Sentiment of the comment:
Positive
Email generated:
Subject: Appreciation for Your Positive Feedback on Our High-Quality Electronics Products

Dear [Customer's Name],

I hope this email finds you well. I wanted to personally reach out to express my gratitude for your recent feedback regarding our diverse range of high-quality electronics products. Your positive comments about our offerings, including powerful laptops, smartphones, immersive TVs, and gaming consoles, truly resonate with us.

At our electronics company, we take great pride in ensuring that each product is meticulously designed with a focus on performance, features, and overall user experience. It is heartening to hear that our attention to detail has not gone unnoticed and that you find our products suitable for a wide range of tech needs.

Moreover, I am delighted to hear that our warranty coverage has provided you with peace of mind. We understand the importance of reliability and stand by the quality of our products to ensure customer satisfaction.

Your mention of our competitive pricing being accessible to all is also greatly appreciated. We strive to make cutting-edge technology affordable without compromising on quality, and it is rewarding to know that our efforts are recognized and valued by customers like you.

We are committed to innovation and continuously improving our product offerings to meet the evolving needs of our customers. Your confidence in our company as a go-to destination for all your tech needs is a testament to our dedication to providing top-notch electronics solutions.

Thank you once again for taking the time to share your positive feedback. If you have any further questions, feedback, or require assistance, please do not hesitate to reach out to us. We are here to ensure your experience with our products remains exceptional.

We look forward to serving you with more innovative products in the future and continuing to meet your expectations.

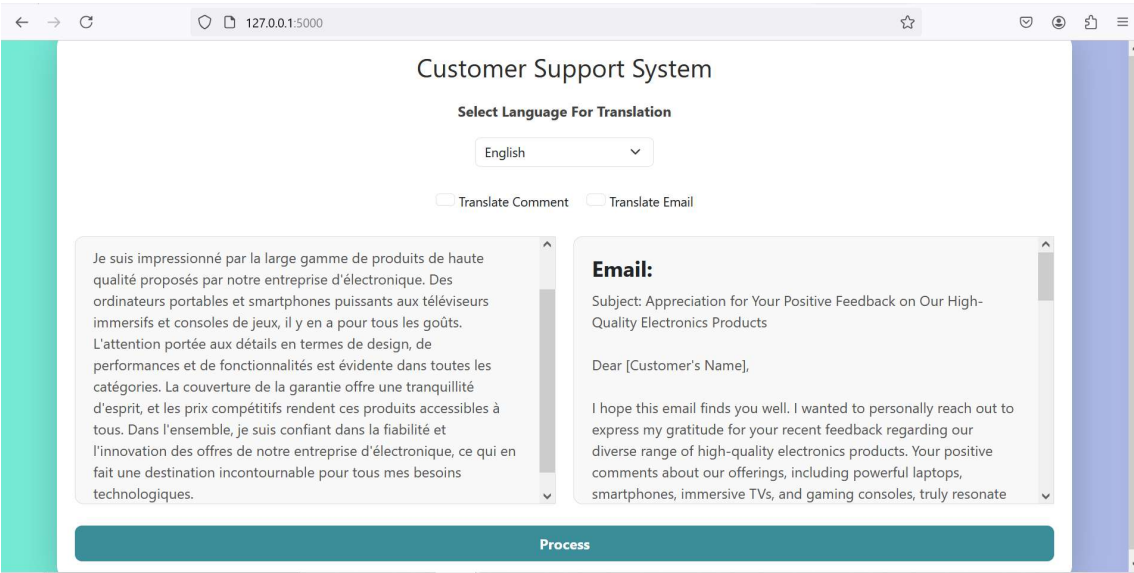
Warm regards,

[Your Name]
Customer Support Representative
[Electronics Company Name]
```

The translated output looks like:

```
Translation of customer comment email in fr:
Je suis impressionné par la large gamme de produits de haute qualité proposés par notre entreprise d'électronique. Des ordinateurs portables et smartphones puissants aux téléviseurs immersifs et consoles de jeux, il y en a pour tous les goûts. L'attention portée aux détails en termes de design, de performances et de fonctionnalités est évidente dans toutes les catégories. La couverture de la garantie offre une tranquillité d'esprit, et les prix compétitifs rendent ces produits accessibles à tous. Dans l'ensemble, je suis confiant dans la fiabilité et l'innovation des offres de notre entreprise d'électronique, ce qui en fait une destination incontournable pour tous mes besoins technologiques.
```

The UI for the given use case is generated based on the design given and looks like: Comment in French, Email in English





GITHUB LINK:

GOOGLE SLIDE LINK:

Comment in Spanish, Email in English

Customer Support System

Select Language For Translation

English

☐ Translate Comment ☐ Translate Email

**Comment:**

Estoy muy impresionado con la amplia gama de productos electrónicos ofrecidos por esta empresa. Desde potentes laptops y smartphones hasta televisores inmersivos y consolas de juegos, satisfacen todas mis necesidades tecnológicas. La calidad y características de sus productos son de primera categoría, lo que los convierte en la opción ideal para cualquiera que busque electrónica confiable e innovadora. Las opciones de garantía brindan tranquilidad, y los precios competitivos hacen que estos dispositivos de alta tecnología sean accesibles para todos. En general, soy un cliente satisfecho y recomendaría esta empresa a

**Email:**

Subject: Thank you for your Positive Feedback on our Diverse Range of Electronics Products!

Dear Valued Customer,

I hope this email finds you well.

I wanted to personally reach out and express my gratitude for your positive feedback regarding our diverse range of electronics products. We are thrilled to hear that you are highly impressed with

Process

Comment in English, Email in French

Customer Support System

Select Language For Translation

English

☐ Translate Comment ☐ Translate Email

**Comment:**

I am impressed by the wide range of electronics products offered by this company. From high-performance gaming laptops to sleek ultrabooks, versatile smartphones, immersive TVs, and powerful gaming consoles, there is something for every tech enthusiast. The attention to detail in features, warranties, and ratings showcases a commitment to quality. The diverse selection caters to various needs, whether for work, entertainment, or creativity. Overall, I find the product lineup exciting and innovative, making it a one-stop destination for all my electronic needs.

**Email:**

Cher client précieux,

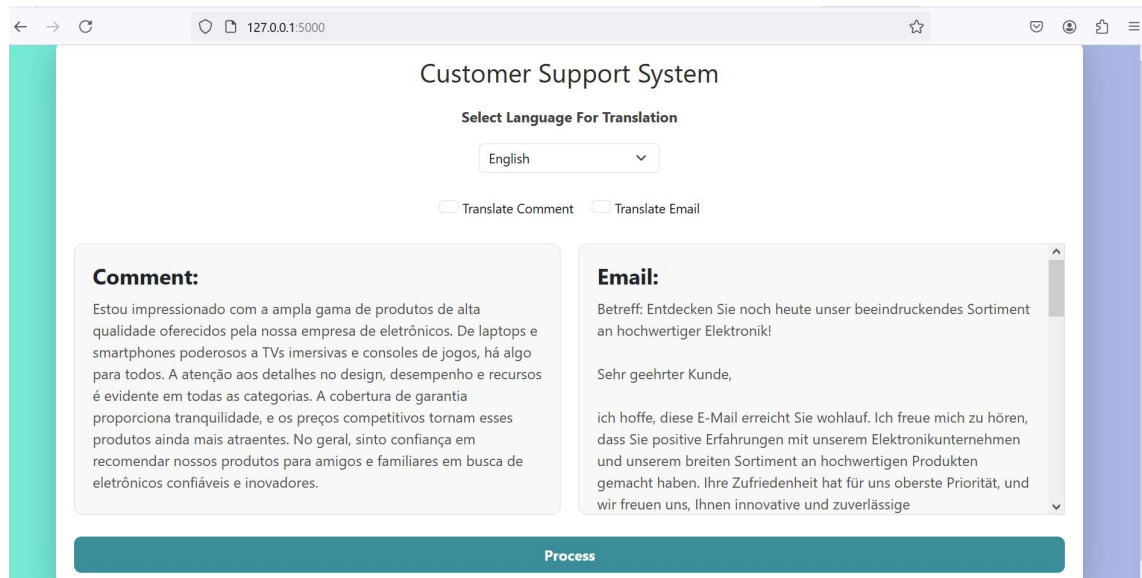
J'espère que cet e-mail vous trouve bien.

Je tenais à vous contacter personnellement pour exprimer notre gratitude pour vos aimables paroles concernant notre large gamme de produits électroniques. Votre feedback sur nos ordinateurs portables performants, nos ultrabooks élégants, nos smartphones polyvalents, nos téléviseurs immersifs et nos consoles de jeu puissantes signifie vraiment beaucoup pour nous.

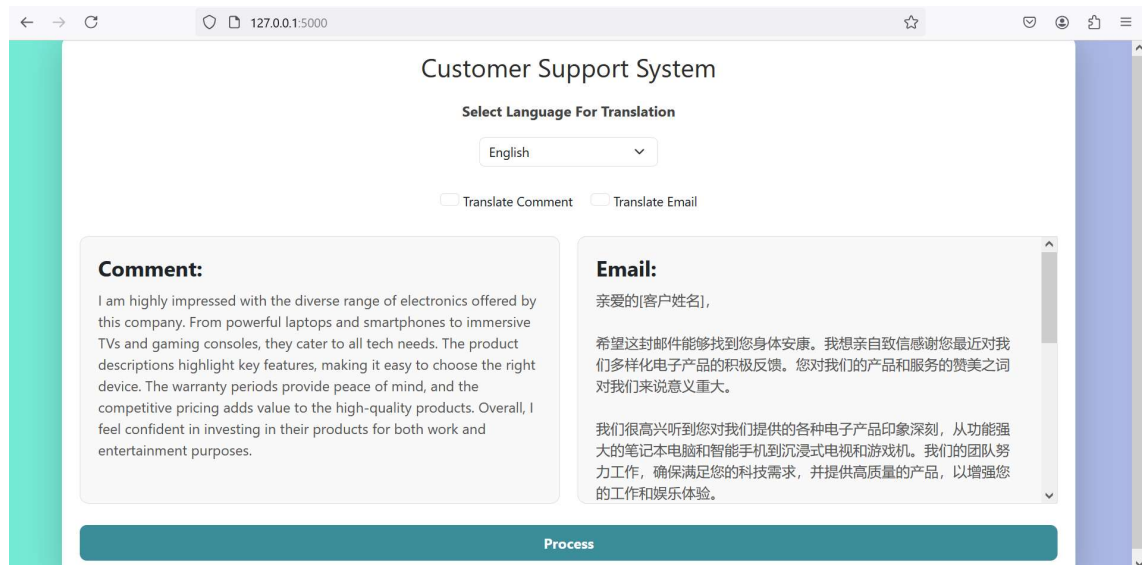
Process

Comment and Email both in German





## Comment in English, Email in Chinese



← → 127.0.0.1:5000 ☆

Customer Support System

Select Language For Translation

English

☐ Translate Comment ☐ Translate Email

Comment:

इस कंपनी के द्वारा पेश की गई उच्च गुणवत्ता वाले विभिन्न इलेक्ट्रॉनिक्स से मुझे प्रभावित हुआ है। शक्तिशाली लेपटॉप और स्मार्टफोन से लेकर जीवंत टीवी और गेमिंग कंसोल तक, हर किसी के लिए कुछ न कुछ है। नवाचारी विशेषताएँ, सुंदर डिज़ाइन, और प्रतिस्पर्धी मूल्य इसे मेरी सभी तकनीकी आवश्यकताओं के लिए एक लोकप्रिय स्थान बनाते हैं। वारंटी और रेटिंग विश्वसनीयता की आश्वासन देती हैं, और ग्राहक सेवा श्रेष्ठ है। समग्र रूप से, मैं इन उत्पादों की सर्वोत्तम तकनीक और एक शानदार खरीदारी अनुभव की सिफारिश करता हूँ।

Email:

Subject: आपके हार्ड-कॉलिटी इलेक्ट्रॉनिक्स पर आपकी सकारात्मक प्रतिक्रिया के लिए धन्यवाद

प्रिय [ग्राहक का नाम],

मुझे आशा है कि यह ईमेल आपको अच्छा लगे।

मैं व्यक्तिगत रूप से आपके गुणवत्ता वाले विभिन्न इलेक्ट्रॉनिक्स के बारे में आपकी तारीफ के लिए आपका आभार व्यक्त करना चाहता था। हमारे शक्तिशाली लेपटॉप, स्मार्टफोन, जीवंत टीवी, और गेमिंग कंसोल के बारे में आपके इस

Process