AI RESUME & COVER LETTER GENERATOR

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INTRODUCTION

- Resumes and cover letters are essential tools in job applications.

- Manual creation is time-consuming and often lacks personalization.

- AI offers a smart solution by generating role-specific and skill-based content quickly.

OBJECTIVE

- To develop a web-based tool that uses AI to automatically generate professional resumes and cover letters.

- Allow users to input details like skills, job role, and experience.

TECHNOLOGY USED

Component	Technology / Library	Purpose
🧠 Language Model	transformers >= 4.28	Generate text using pre-trained models (e.g., GPT-2, Falcon)
🦴 Deep Learning	torch >= 1.9	Backend computation for LLM inference
🧱 Tokenizer	tokenizers >= 0.13.3, sentencepiece >= 0.1.95	Efficient tokenization for model input/output
📦 Serialization	protobuf >= 3.20.0	Handles serialized model data (required by some transformer models)
🌐 Web UI	Gradio	Easy-to-use frontend for users to interact with the AI
📁 (Optional) PDF Export	reportlab / weasyprint	Convert generated text into downloadable resumes/letters

FEATURES

- Role-specific resume generation.
- Professional formatting.
- Cover letter customization.
- Export as PDF/DOCX.

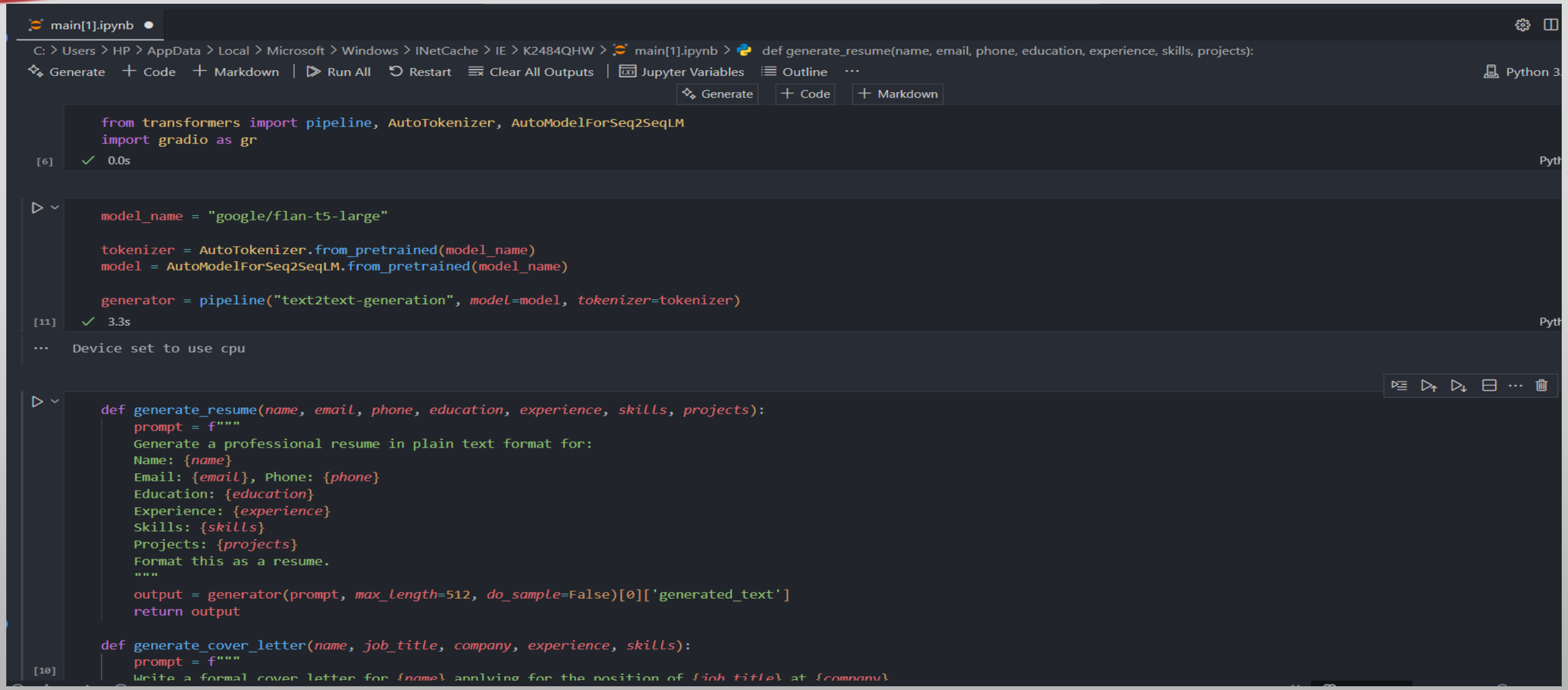
WORKING/METHODOLOGY

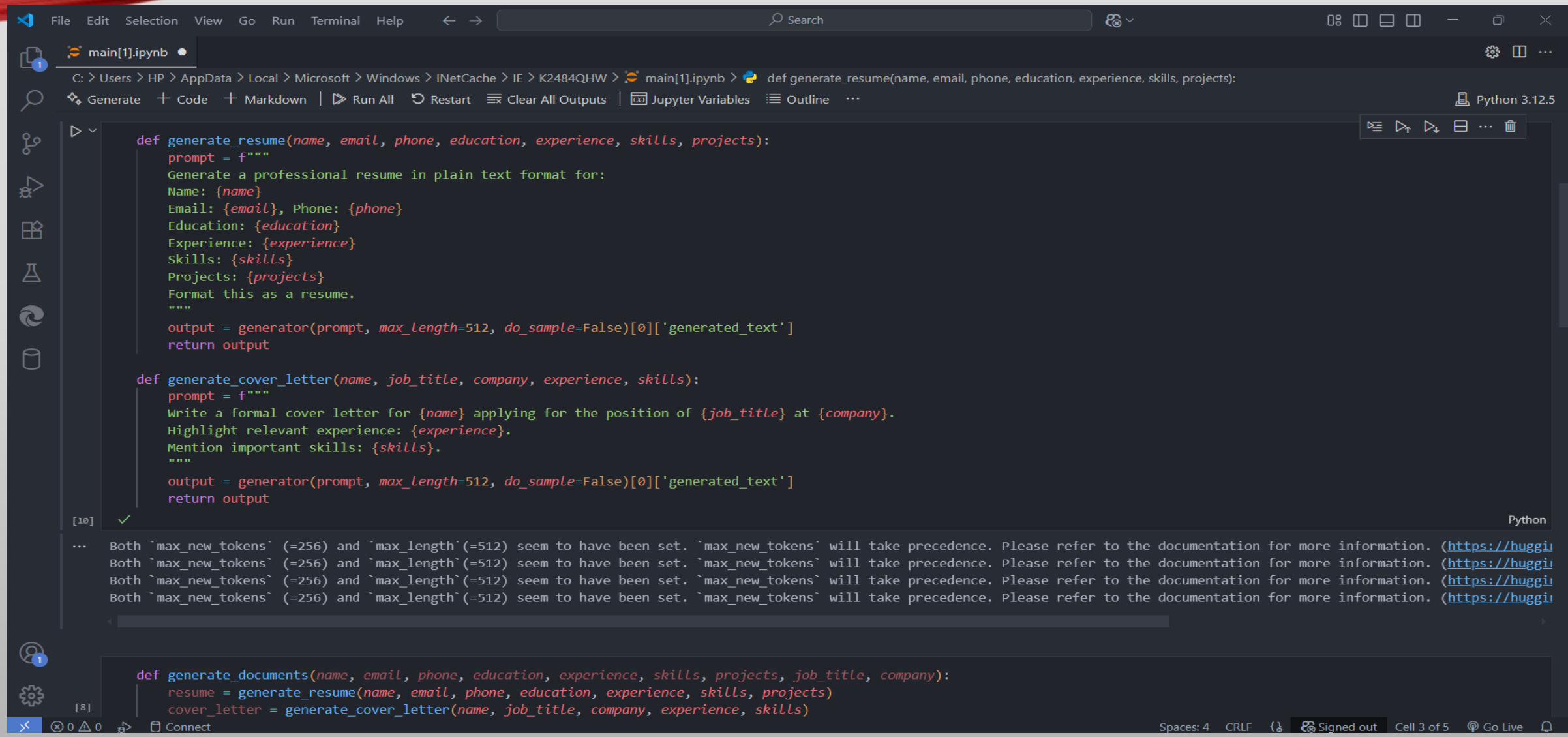
- User selects job role.
- Inputs skills, experience, goals.
- AI processes prompt and generates text.
- Preview & download options provided.

SCOPE OF THE PROJECT

- Web app that collects user input and generates content.
- Uses LLMs for personalized results.
- Output can be previewed and downloaded in PDF or DOCX.

UI SCREENSHOTS/DEMO




File Edit Selection View Go Run Terminal Help
Search
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C: > Users > HP > AppData > Local > Microsoft > Windows > INetCache > IE > K2484QHW > main[1].ipynb > def generate_resume(name, email, phone, education, experience, skills, projects):
Generate + Code + Markdown | Run All Restart Clear All Outputs | Jupyter Variables Outline ... Python 3.12.5
def generate_resume(name, email, phone, education, experience, skills, projects):
prompt = f"""
Generate a professional resume in plain text format for:
Name: {name}
Email: {email}, Phone: {phone}
Education: {education}
Experience: {experience}
Skills: {skills}
Projects: {projects}
Format this as a resume.
"""
output = generator(prompt, max_length=512, do_sample=False)[0]['generated_text']
return output
def generate_cover_letter(name, job_title, company, experience, skills):
prompt = f"""
Write a formal cover letter for {name} applying for the position of {job_title} at {company}.
Highlight relevant experience: {experience}.
Mention important skills: {skills}.
"""
output = generator(prompt, max_length=512, do_sample=False)[0]['generated_text']
return output
[10]
Python
... Both `max_new_tokens` (=256) and `max_length`(=512) seem to have been set. `max_new_tokens` will take precedence. Please refer to the documentation for more information. (https://huggi
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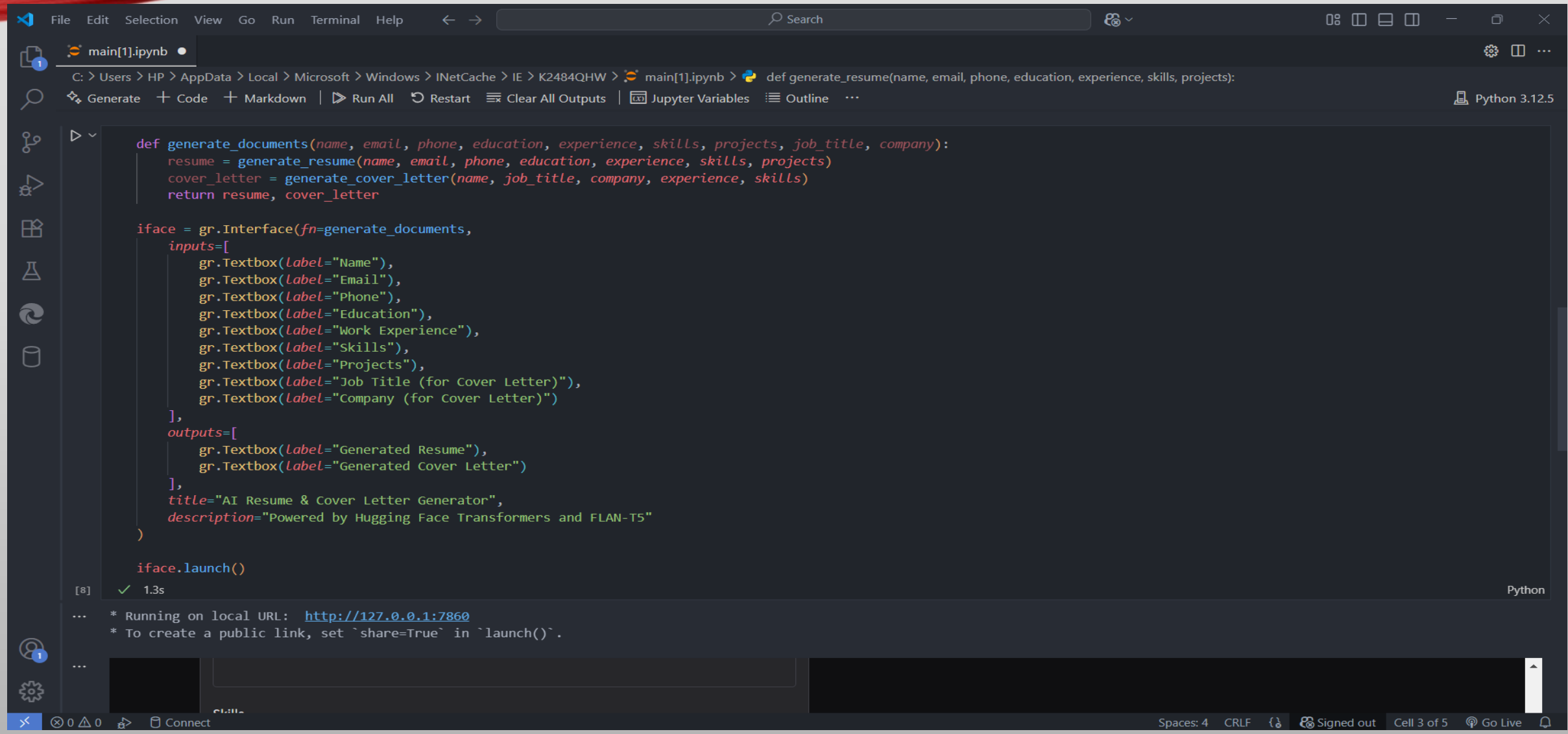
def generate_documents(name, email, phone, education, experience, skills, projects, job_title, company):
resume = generate_resume(name, email, phone, education, experience, skills, projects)
cover_letter = generate_cover_letter(name, job_title, company, experience, skills)
[8]
Connect
Spaces: 4 CRLF Signed out Cell 3 of 5 Go Live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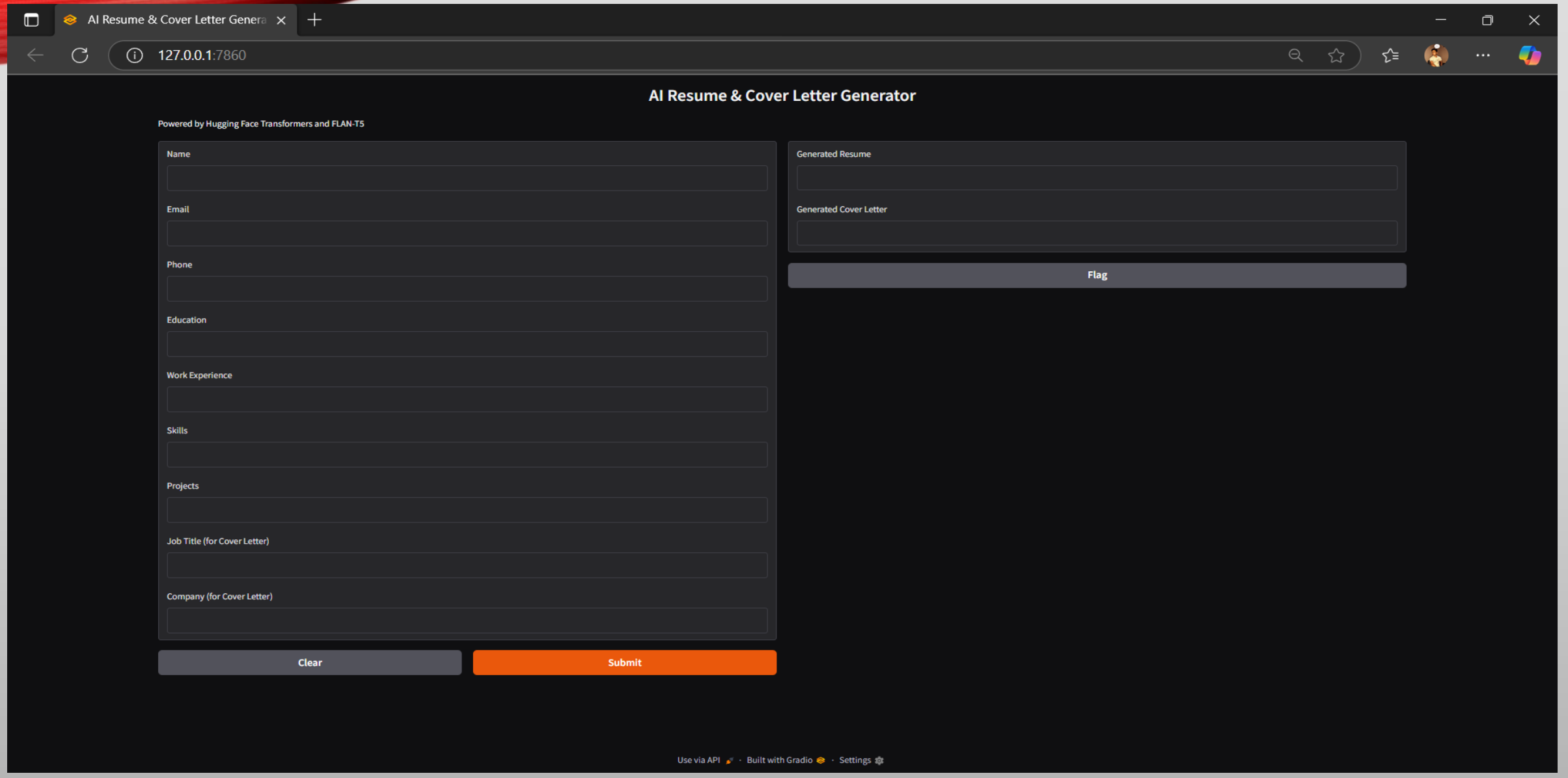
resume = generate_resume(name, email, phone, education, experience, skills, projects)
cover_letter = generate_cover_letter(name, job_title, company, experience, skills)
return resume, cover_letter
iface = gr.Interface(fn=generate_documents,
inputs=[
gr.Textbox(label="Name"),
gr.Textbox(label="Email"),
gr.Textbox(label="Phone"),
gr.Textbox(label="Education"),
gr.Textbox(label="Work Experience"),
gr.Textbox(label="Skills"),
gr.Textbox(label="Projects"),
gr.Textbox(label="Job Title (for Cover Letter)"),
gr.Textbox(label="Company (for Cover Letter)")
],
outputs=[
gr.Textbox(label="Generated Resume"),
gr.Textbox(label="Generated Cover Letter")
],
title="AI Resume & Cover Letter Generator",
description="Powered by Hugging Face Transformers and FLAN-T5"
)
iface.launch()
[8]
1.3s
Python
* Running on local URL: http://127.0.0.1:7860
* To create a public link, set `share=True` in `launch()`.
Connect
Spaces: 4 CRLF
Signed out
Cell 3 of 5
Go Live


AI Resume & Cover Letter Genera
127.0.0.1:7860
AI Resume & Cover Letter Generator
Powered by Hugging Face Transformers and FLAN-T5
Name
Email
Phone
Education
Work Experience
Skills
Projects
Job Title (for Cover Letter)
Company (for Cover Letter)
Clear
Submit
Generated Resume
Generated Cover Letter
Flag
Use via API · Built with Gradio · Settings

PROBLEM STATEMENT

- Job seekers struggle with writing effective resumes and cover letters.

- Existing tools are either too generic or complicated.

- Lack of AI-driven personalization limits impact.

CHALLENGES FACED

- Prompt accuracy and output formatting.

- Maintaining context and grammar.

- Handling diverse user input.

SOLUTIONS TO CHALLENGES

- Improved prompt engineering.
- Pre-defined templates and formatting logic.
- Extensive testing for various roles and profiles.

TESTING & RESULTS

- Tested with different user profiles.

- Output quality validated with feedback.

- High user satisfaction and usability.

CONCLUSION

- AI-driven resume & cover letter tool saves time and improves quality.

- Useful for students, professionals, job seekers.

FUTURE SCOPE

- Multilingual support.

- LinkedIn and ATS integration.

- Voice-based input and smart recommendations.

REFERENCES & BIBLIOGRAPHY

- Hugging Face Transformers.

- Gradio / Streamlit Documentation.

- Research on LLMs and resume optimization.

THANK YOU !!!