

Technical Report

1. Project Overview

The AI Resume Builder is an intelligent system designed to generate professional, ATS-friendly resume summaries based on user inputs. It leverages NLP models to create compelling summaries tailored to job roles and descriptions.

2. Architecture Decisions & Technology Stack

- Frontend: Gradio for building an interactive web interface.
- Backend: Python with Hugging Face Transformers for text generation.
- Model: Falcon7BInstruct for instructiontuned text generation.
- PDF Export: FPDF library for generating downloadable resumes.
- Deployment: Hugging Face Spaces for hosting the application publicly.

Architecture Diagram

User - Gradio UI - Resume Generation Logic - Hugging Face Model - Output Summary & PDF

3. API Integration Methodology

Hugging Face pipeline API is used for text generation.

- Model: tiiuae/falcon7binstruct.
- Parameters: max_length=250, temperature=0.7, do_sample=True for creative yet formal outputs.

Example: CODE

```
from transformers import pipeline
```

```
generator = pipeline("text-generation", model="tiiuae/falcon-7b-instruct")  
  
result = generator(prompt, max_length=250, temperature=0.7, do_sample=True)
```

4. Template Design Approach

- UI Templates: Simple Grid Layout with input fields for job title, skills, experience, education, and job description.
- PDF Template: Structured sections for Summary, Skills, ATS Keywords, Experience, and Education.

5. Performance Optimization Techniques

- Selected Falcon-7B-Instruct for balance between quality and performance.
- Tuned max_length to avoid overly long outputs.
- Removed unnecessary sampling for deterministic outputs when needed.

6. Known Limitations

- Limited to English language.
- Single resume template for PDF export.
- Requires internet for Hugging Face model inference.

7. Future Enhancements

- Add multilingual support.
- Provide multiple resume templates.
- Integrate LinkedIn profile import.
- Enable offline inference with quantized models.

