

ResumeFlow: An LLM-facilitated Pipeline for Personalized Résumé



Generation and Refinement

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Motivation

Job seekers often go through a very **time-consuming** and **laborious** process to craft a perfect résumé.

63%

of recruiters seek customized résumés

50-100

résumés are needed to secure a single role

32%

increase of salary with professional résumés

Solution

ResumeFlow tackles this challenge head-on:

- Leverages **LLMs to automate personalized résumé creation**.
- Extracts and matches relevant information efficiently.

Our solution optimizes résumés for human readers and Application Tracking Systems (ATS), increasing chances of recruitment.

How can AI empower Job seekers to create tailored résumés promptly?

Result



Metrics

Token Space

User Personalization Score

0.957

↑ (new resume, old resume)

Job Alignment Score

0.325

↑ (new resume, job details)

Job Match Score

0.437

↑ [old resume, job details]

Latent Space

User Personalization Score

0.838

↑ (new resume, old resume)

Job Alignment Score

0.459

↑ (new resume, job details)

Job Match Score

0.501

↑ [old resume, job details]

Job Alignment scores above **0.4** suggest good tailoring to job requirements, while User Personalization scores above **0.8** indicate strong content preservation from the original resume.

Our Proposed Pipeline

job-aligned-resume.streamlit.app

Get **Job Aligned** **Personalized** Resume

Job Description Text ☐ Job URL

Paste job description text here...

Upload your resume or any work-related data (PDF, JSON). [Recommended templates](#)

Drag and drop file here
Limit 200MB per file • JSON, PDF

Browse files

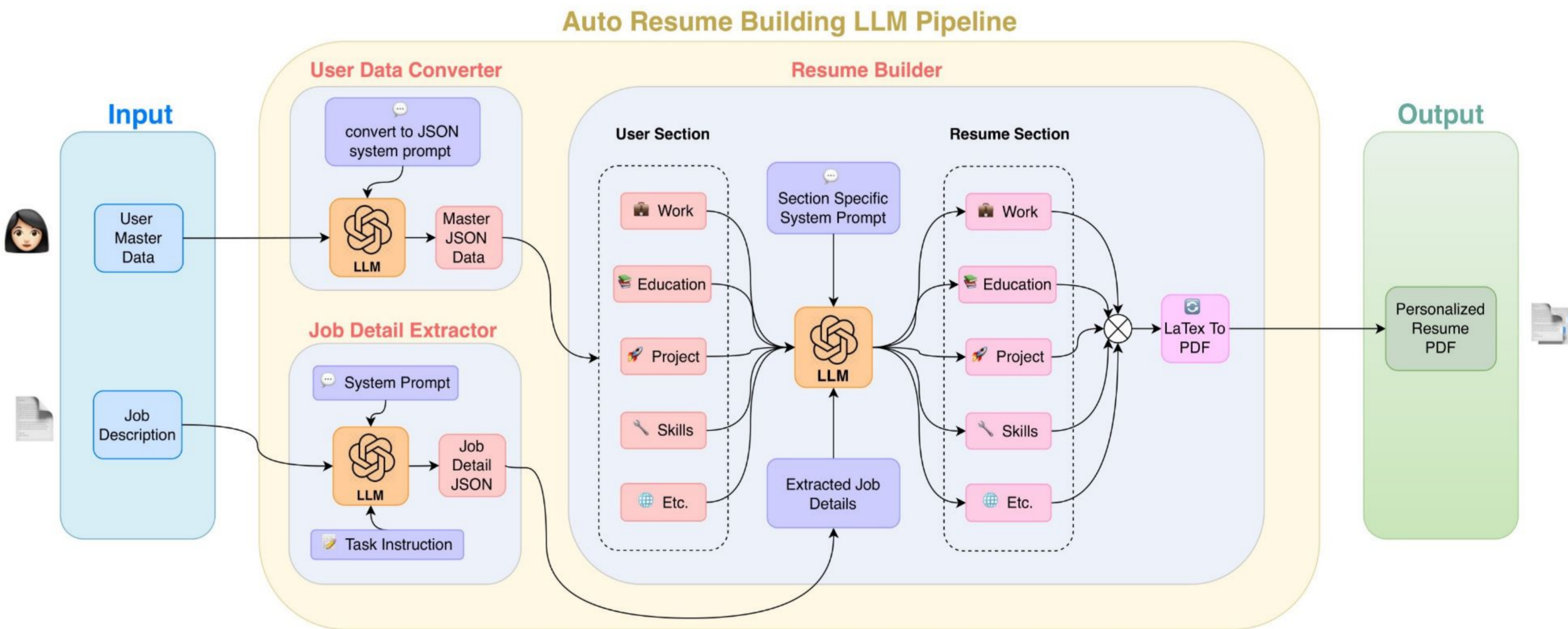
Select LLM provider (OpenAI, Gemini Pro):
gemini-pro

Enter API key:

GPT-4 is recommended for better results.

Get Resume Get Cover Letter Resume + Cover letter

Report Feedback, Issues, or Contribute!



Evaluation

- Well-defined benchmarking metrics were not previously established
- Two new metrics for analyzing quality of new résumés:**

	Job Alignment	User Personalization
Definition	Measure of how well new résumé fits the job description.	Measure of the content preserved from previous versions of the résumé.
Purpose	Quantifies tailoring effectiveness to job requirements.	Ensures accuracy and prevents hallucination.
Token Exact Word Matching	$\frac{ \mathcal{W}(\mathcal{D}^{gen}) \cap \mathcal{W}(\mathcal{J}) }{\min(\mathcal{W}(\mathcal{D}^{gen}) , \mathcal{W}(\mathcal{J}))}$	$\frac{ \mathcal{W}(\mathcal{D}^{gen}) \cap \mathcal{W}(\mathcal{D}^{user}) }{\min(\mathcal{W}(\mathcal{D}^{gen}) , \mathcal{W}(\mathcal{D}^{user}))}$
Latent Semantic Context Matching	$\cosine_sim(\mathcal{E}(\mathcal{D}^{gen}), \mathcal{E}(\mathcal{J}))$	$\cosine_sim(\mathcal{E}(\mathcal{D}^{gen}), \mathcal{E}(\mathcal{D}^{user}))$

\mathcal{D}^{gen} : New résumé \mathcal{J} : job info \mathcal{E} : encoding \mathcal{W} : unique words \mathcal{D}^{user} : old résumé

- Use:** The combination of ▲ high job_alignment and ▼ low user_personalization may suggest potentially unethical hallucination. These scores are displayed to users for transparency.

Conclusion

- Successfully developed an innovative LLM-based pipeline for résumé customization.
- Leverages state-of-the-art LLMs (e.g., GPT-4, Gemini) for information extraction and résumé tailoring.
- Implements novel evaluation metrics: job_alignment and content_preservation.
- Balanced automation with ethical considerations through transparent evaluation metrics.

Future Work

- Develop robust anti-hallucination measures using tools like knowledge graphs and self-corrective RAG.
- Investigate the use of federated learning to enhance privacy and safety in résumé generation.
- Enhance evaluation metrics.
- Create adaptive templates that evolve based on industry trends and user feedback.
- Develop multilingual support to cater to global job markets.