

# AutoOps AI - Skill-to-Task Matcher

## AutoOps AI – Skill-to-Task Matcher

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### 1. Introduction:

AutoOps AI – Skill-to-Task Matcher is an innovative system designed to automate internal workforce optimization. It analyzes employee skillsets and matches them intelligently with business tasks, reducing redundant departments and operational inefficiencies. This project has real-world applications in reducing organizational costs and streamlining human capital utilization.

### 2. Objective:

The main goal of this project is to build an AI model that automatically matches employee profiles to internal company tasks based on skill embeddings, providing recommendations for restructuring and automation.

### 3. Dataset Overview:

Two datasets were created:

- Employee Profiles: Contains employee\_id, name, role, and skills.
- Task Catalog: Contains task\_id, task\_description, automation\_possible, and suggested\_tool.

### 4. Data Preprocessing:

- Cleaned textual columns.
- Removed NaNs and duplicates.
- Normalized text using lowercase, punctuation removal, and trimming.

### 5. Embedding and Matching Approach:

- Used SBERT (Sentence-BERT) for high-quality sentence embeddings.
- Applied cosine similarity to calculate match scores between each employee's skill set and available tasks.

### 6. Matching Algorithm:

- For each employee, all task similarities were computed.
- Tasks were sorted based on cosine score.
- The top match was extracted with its automation flag and suggested tool.

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## 7. Results:

Final output includes:

- employee\_id, name, role, matched\_task, automation\_possible, suggested\_tool, match\_score

Example: HR Specialist matched with "Handle onboarding" (Automation: No, Score: 0.55)

## 8. Tools & Technologies:

- Python, Pandas, Numpy
- Sentence Transformers (SBERT)
- Google Colab
- Cosine Similarity

## 9. GitHub Integration:

The complete codebase, datasets, and README are available in the GitHub repository.

## 10. Real-World Application:

This project serves as a prototype for internal HR automation. Companies like Siemens, SAP, or Delivery Hero can use this for smart workforce alignment, reducing salaries, role duplications, and increasing efficiency.

## 11. Challenges:

- Creating realistic synthetic data.
- Ensuring meaningful embeddings for diverse roles and tasks.
- Handling overlapping skillsets.

## 12. Future Work:

- Expand to include employee interests, performance, and productivity metrics.
- Integrate a Streamlit dashboard for HR teams to interactively assign tasks.
- Add auto-generated restructuring reports.

## 13. Conclusion:

AutoOps AI - Skill-to-Task Matcher is a proof-of-concept showing how AI can reshape internal workforce management through embeddings, automation scoring, and intelligent suggestions.