

# CS F429 - Natural Language Processing

## Group 2

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### Structure of the Code:

The structure of the codebase can be understood in the following way:

- data: This directory contains the original text file for each welfare scheme.
- images: This directory contains the final images generated for each scheme and each section (such as “Beneficiary and Problem Statement”, and so on,i.e. 3 images for each scheme).
- requirements.txt: This file outlines the requirements for the project. You can replicate our conda environment by simply running:

```
conda create -- name < env > -- file requirements.txt
```

- scheme\_writeups\_T5: This directory contains all the write-ups (3 write-ups for each welfare scheme) as generated by T5.
- scheme\_writeups\_gpt: This directory contains all the write-ups (3 write-ups for each welfare scheme) as generated by gpt-4o.
- information\_extraction.ipynb: This notebook contains the code to generate the 3 write-ups for each welfare scheme.
- context\_generation.ipynb: This notebook contains the code to generate the additional character context which we are providing the image generation model.
- T5\_summarization.ipynb: This notebook contains the code to generate summaries using the T5 model. We have shown all outputs for the same in the codeblocks. (Note: The keyboard interrupt appears because it was taking too long to generate all 10 of the summaries and only 5 summaries were required, hence we interrupted after getting 5 and ran further code blocks).
- pegasus\_summarization.ipynb: This notebook contains our experiments working with the pegasus model for summarization.
- image\_prompts: This directory contains the prompts given to the text-to-image model.
- image\_prompt\_context: This directory contains the additional prompts which we are adding to give the image prompts more context with regards to the character.

This is done to ensure uniformity of characters throughout the images generated for each welfare scheme, and also gives the text-to-image model added context.

- `swe_agent`: This is a tool used for our own purpose to help us manage the codebase
- `pr_review_agent`: This is a tool used for our own purpose to help us manage the codebase.
- `src`: This contains the skeleton of the code for the paper we plan to implement in the next stage of the project.

## Introduction:

Our basic pipeline is as follows: (Screenshots for some prompts are shown to give a rough idea. Please check the code from the notebooks mentioned to go through the detailed augmentations done to the prompts).

- 1) We convert each text document into 3 write-ups. This is generated using gpt-4o. The prompt used is as follows:

```
prompt = f"Summarize the following welfare scheme description\ninto the section '{prompt_section}':\n\n{write_up}\n\n"
```

Here `prompt_section` refers to the section such as “Beneficiary and Problem Statement” and so on as mentioned in the project description for generating the 3 write-ups. **See `image_generation.ipynb` for this step.**

- 2) We generate extra character context from these

```
prompt = (\n\n        f"Generate a very brief character description (such as name,\n        age, gender and occupation) for someone who qualifies for this\n        welfare scheme in the Indian context: {prompt}"\n\n    )
```

Here the other parameter `prompt` contains the summarized write-up for all sections combined. **See `context_generation.ipynb` for this step.**

- 3) We generate the image generation prompt. We add the extra character context also added to the prompt.

```
prompt = (
```

```
f" {selected_base} \n\n"  
  
f"Character Profile: {character} \n"  
  
f"Context: {context} \n"  
  
f"Summary: {summary} \n\n"  
  
"Generate a detailed visual description for the poster:  
  
)
```

**See `image_prompt_generation.ipynb` for this step.**

- 4) Finally we generate the image using dalle-3. The prompt for this is:

```
final_prompt = f"""Generate a poster with minimal text for this  
welfare scheme in the Indian context : {prompt}  
  
Make it visually appealing with very  
minimal text"""
```

**See `image_generation.ipynb` for this step.**

- 5) To view the experiments with T5 and Pegasus view  
`T5_summarization.ipynb` and `pegasus_summarization.ipynb` respectively.

## Task 1 : Data Processing and Understanding

Following welfare schemes were chosen:

1. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)
2. Pradhan Mantri Awas Yojana (PMAY)
3. Pradhan Mantri Gram Sadak Yojana (PMGSY)
4. Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)
5. Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)
6. National Social Assistance Programme (NSAP)
7. Aajeevika - National Rural Livelihoods Mission (NRLM)
8. PM Suraksha Bima Yojana
9. Pradhan Mantri Matritva Vandana Yojana
10. Antyodaya Anna Yojana (AAY)

These welfare schemes cover areas such as rural employment, affordable housing, rural infrastructure, skill development, health insurance, financial assistance for vulnerable groups, livelihood promotion, accident insurance, maternal health, and food security.

## Task 2 : Information Extraction

### Self-Evaluation of Information Retention

To validate that each write-up comprehensively these steps were followed.

1. **Identify Key Points and Entities in Original Text:**
  - The major topics and key points were identified from each welfare scheme.
  - Key points included the target beneficiaries, identified problems, application steps, benefits, expected outcomes, and impact.
2. **Comparison of Key Points and Entities:**
  - Compared the identified key points and entities in the original text with those in the generated write-ups.
  - Marked points or entities that are missing or altered.
  - Assessed if any deviations significantly impact the quality or comprehensiveness of the write-ups in the context of generating a visual.
3. **Refinement (if necessary):**
  - Based on identified gaps the prompts were changed to improve the retention and representation of essential information.
4. **Additional Comparison using LLM :**
  - After comparing the write-ups manually, we used GPT-4o to compare them with the original text.

Based on multiple iterations of changing the prompt we faced the following issues wherein the summary was not meeting the standards of the original text.

## Task 3 : Summarisation using Transformer based LLMs

### Model Selection:

- We experimented with both **Pegasus** and **T5** models and observed that T5 produced better summaries, especially with the T5-large variant compared to T5-base.

### Sliding Window Approach for Long Texts:

- Since welfare scheme write-ups can exceed the model's maximum token limit (512 tokens), a sliding window approach was implemented to handle long inputs.

- By summarizing chunks of text with an overlap between windows, we maintained context across segments.
- Summaries from previous windows were provided as input for subsequent windows to ensure continuity.

#### **Refinement Function (T5-based):**

- It was observed that the generated summary contained multiple repetitions of the same sentences. Therefore to resolve this issue the summary was again passed to T5 with a different prompt to improve its fluency and consistency.

#### **Evaluation Metrics:**

- **BLEU** and **ROUGE** scores were calculated to evaluate the generated summaries against ground truth summaries.
- These scores helped quantify the quality of summaries in terms of both precision and recall.
- The results can be seen at the end of the notebook T5\_summarization.ipynb. Appropriate screenshots are pasted below for your reference.

```
BLEU Score for ABPMJAY_Outcome_and_Impact.txt: 0.22217193823708134
BLEU Score for NRLM_Application_Process_and_Benefits.txt: 1.7959576944393866e-78
BLEU Score for AAY_Beneficiary_and_Problem_Statement.txt: 0.15384298044693662
BLEU Score for NRLM_Beneficiary_and_Problem_Statement.txt: 2.239238178682016e-78
BLEU Score for NRLM_Outcome_and_Impact.txt: 0.17777857862828253
BLEU Score for ABPMJAY_Application_Process_and_Benefits.txt: 0.23077003876352636
BLEU Score for AAY_Application_Process_and_Benefits.txt: 7.788709901982841e-79
BLEU Score for AAY_Outcome_and_Impact.txt: 0.13076807930794349
BLEU Score for ABPMJAY_Beneficiary_and_Problem_Statement.txt: 0.21668197249881999
```

```

ROUGE Scores for ABPMJAY_Outcome_and_Impact.txt:
rouge1: Score(precision=0.5142857142857142, recall=0.1666666666666666, fmeasure=0.2517482517482517)
rouge2: Score(precision=0.2647058823529412, recall=0.08411214953271028, fmeasure=0.1276595744680851)
rougeL: Score(precision=0.37142857142857144, recall=0.12037037037037036, fmeasure=0.1818181818181818)
ROUGE Scores for NRLM_Application_Process_and_Benefits.txt:
rouge1: Score(precision=0.49056603773584906, recall=0.12807881773399016, fmeasure=0.20312500000000003)
rouge2: Score(precision=0.15384615384615385, recall=0.039603960396039604, fmeasure=0.06299212598425197)
rougeL: Score(precision=0.32075471698113206, recall=0.08374384236453201, fmeasure=0.13281249999999997)
ROUGE Scores for AAY_Beneficiary_and_Problem_Statement.txt:
rouge1: Score(precision=0.3584905660377358, recall=0.17117117117117, fmeasure=0.23170731707317074)
rouge2: Score(precision=0.19230769230769232, recall=0.09090909090909091, fmeasure=0.1234567901234568)
rougeL: Score(precision=0.2641509433962264, recall=0.12612612612611, fmeasure=0.17073170731707316)
ROUGE Scores for NRLM_Beneficiary_and_Problem_Statement.txt:
rouge1: Score(precision=0.4716981132075472, recall=0.2083333333333334, fmeasure=0.28901734104046245)
rouge2: Score(precision=0.11538461538461539, recall=0.05042016806722689, fmeasure=0.07017543859649122)
rougeL: Score(precision=0.32075471698113206, recall=0.1416666666666666, fmeasure=0.19653179190751444)
ROUGE Scores for NRLM_Outcome_and_Impact.txt:
rouge1: Score(precision=0.6744186046511628, recall=0.21323529411764705, fmeasure=0.3240223463687151)
rouge2: Score(precision=0.19047619047619047, recall=0.05925925925925926, fmeasure=0.0903954802259887)
rougeL: Score(precision=0.4186046511627907, recall=0.1323529411764706, fmeasure=0.2011173184357542)
ROUGE Scores for ABPMJAY_Application_Process_and_Benefits.txt:
rouge1: Score(precision=0.4857142857142857, recall=0.136, fmeasure=0.21250000000000002)
rouge2: Score(precision=0.29411764705882354, recall=0.08064516129032258, fmeasure=0.12658227848101267)
rougeL: Score(precision=0.37142857142857144, recall=0.104, fmeasure=0.1625)
ROUGE Scores for AAY_Application_Process_and_Benefits.txt:
rouge1: Score(precision=0.1666666666666666, recall=0.06179775280898876, fmeasure=0.0901639344262295)
rouge2: Score(precision=0.0, recall=0.0, fmeasure=0.0)
rougeL: Score(precision=0.10606060606060606, recall=0.03932584269662921, fmeasure=0.05737704918032787)

```

```

ROUGE Scores for AAY_Outcome_and_Impact.txt:
rouge1: Score(precision=0.48214285714285715, recall=0.23275862068965517, fmeasure=0.313953488372093)
rouge2: Score(precision=0.2, recall=0.09565217391304348, fmeasure=0.12941176470588237)
rougeL: Score(precision=0.39285714285714285, recall=0.1896551724137931, fmeasure=0.25581395348837205)
ROUGE Scores for ABPMJAY_Beneficiary_and_Problem_Statement.txt:
rouge1: Score(precision=0.42857142857142855, recall=0.13043478260869565, fmeasure=0.2)
rouge2: Score(precision=0.23529411764705882, recall=0.07017543859649122, fmeasure=0.1081081081081081)
rougeL: Score(precision=0.2857142857142857, recall=0.08695652173913043, fmeasure=0.1333333333333333)

```

## Prompt Design and Hyperparameter Tuning:

- For each scheme section, a tailored prompt was crafted to guide the model in identifying relevant information.
- Prompts Used :
- “**Beneficiary and Problem Statement**”: "Identify the key beneficiaries of the welfare scheme and the problems they face.",
  - “**Application Process and Benefits**”: "Identify the application process and benefits provided by the scheme.",
  - “**Outcome and Impact**”: " Identify the outcomes and impact of the scheme on its beneficiaries."
- It was observed that setting ‘max\_length’ as 80 improved generated summary over 60 and 40.

## Task 4 : Image Prompt Generation

To convey the information of the welfare scheme without using any text in the poster we tried to generate prompts which would describe a particular scene corresponding to each write-up using the same previously generated character.

Example: Base Prompts -

- **Beneficiary and Problem Statement:** "Create a promotional poster highlighting the benefits and problems faced by the people in need. Show people in need of the welfare scheme actively receiving/using the benefits:"
- **Application Process and Benefits:** "Create a poster introducing the welfare scheme to its target beneficiaries. Show the problems being addressed:"
- **Outcome and Impact :** "Create an impactful poster showing the positive outcomes and transformations. Show before/after scenarios."

These base prompts were combined with character profile and summary before passing to the model.

#### **Final Prompt Structure :**

```
prompt = (
    f"{selected_base}\n\n"
    f"Character Profile: {character}\n"
    f"Context: {context}\n"
    f"Summary: {summary}\n\n"
    "Generate a detailed visual description for the poster:"
)
```

#### **Example of generated prompt:**

Create a poster with minimal text with the image from this image prompt : The poster features an inspiring and dynamic scene centered around Anjali Singh, a 22-year-old aspiring IT technician from a small village in India. Anjali is depicted as a confident and determined young woman with a bright smile, showcasing her enthusiasm and hope for the future. She is wearing a vibrant ensemble that blends traditional Indian clothing with contemporary elements, symbolizing her connection to her roots and her forward-looking aspirations.

In the background, the setting transitions from her rural village to a modern training facility. On one side, you see a picturesque rural landscape with lush fields and traditional village homes, representing her community and origins. On the other side, there is a state-of-the-art training center equipped with computers and IT equipment, highlighting her journey towards a career in technology.

The poster visually communicates the essence of the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) by depicting diverse groups of young people engaged in various skill development activities. This includes a group working with agricultural tools, a team

learning construction techniques, individuals practicing retail management, and others in healthcare and hospitality training sessions.

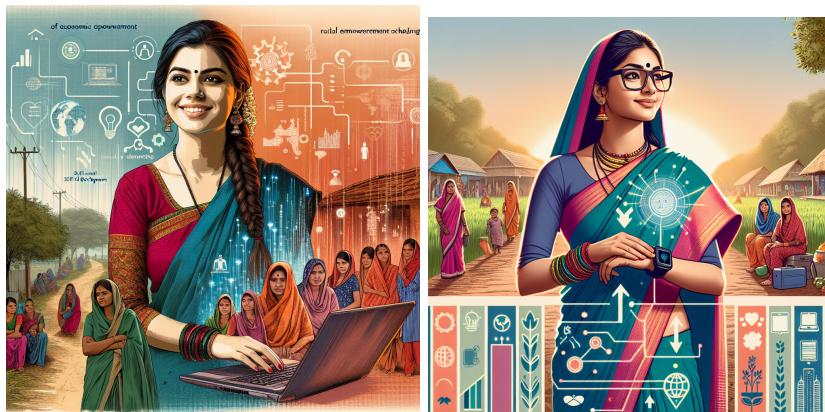
Anjali is in the foreground, actively participating in a computer training session, her eyes focused on the screen as she types away, symbolizing her dedication to bridging the digital divide. Around her, other young women and men from marginalized communities are also shown, mirroring her enthusiasm and determination.

Above, a bright sky with rays of sunlight breaking through symbolizes hope, empowerment, and the promise of a better future. The overall composition of the poster captures the essence of empowerment, opportunity, and community upliftment that the DDU-GKY scheme aims to provide to rural youth, especially women and socially disadvantaged groups.

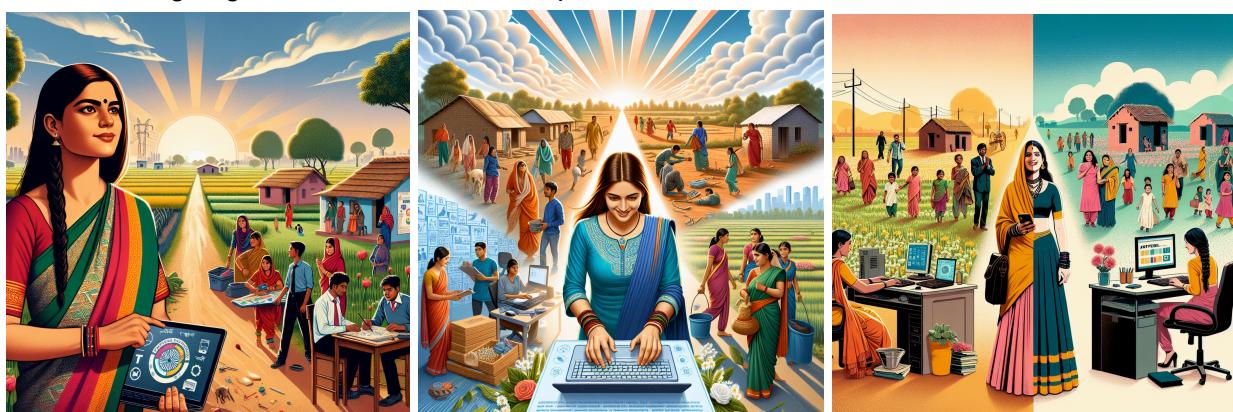
## Experimentation

Initially the same prompt was used across all 3 write-ups. This caused the images for name1 and name 2 to be very similar and not highlighting the key aspects describing the scheme . So different prompts were used as per the need of each write-up.

Example of images before and after the write-up changes:



**Before** - Images generated for all 3 write-ups are similar to each other.



**After** - Images are distinct and there is a clear chronology between them.

## Task 5 : Ensuring Entity Consistency Across Prompts

### Combining Write-ups for Context:

- The three write-ups ("Beneficiary and Problem Statement," "Application Process and Benefits," "Outcome and Impact") were combined into a single comprehensive summary of the welfare scheme. This was done to provide a holistic view of the scheme when creating the character for the poster.

### Character Creation:

- A gpt-4o API was used to generate a character based on the combined summary. The LLM was prompted to create a character with a name, age, gender, and occupation relevant to the welfare scheme's target audience.
- This character is used to provide more context to the image generation prompts, and ensures that the base character for each scheme remains roughly the same over the three different posters created for each scheme.
- **Example:** Character generated for Deen Dayal Upadhyaya Grameen Kaushalya Yojana  
**\*\*Name:\*\*** Anjali Singh  
**\*\*Age:\*\*** 22  
**\*\*Gender:\*\*** Female  
**\*\*Occupation:\*\*** Aspiring IT Technician  
**\*\*Description:\*\*** Anjali Singh is a bright and ambitious young woman from a small village in India. At 22, she is eager to secure a better future for herself and her family. She is currently participating in the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), a government initiative aimed at providing skill development training to rural youth. Anjali is particularly focused on honing her computer and IT skills, preparing for a career in technology. A trailblazer in her community, she is determined to bridge the digital divide and inspire other young women to pursue their dreams. Anjali embodies a blend of traditional values and modern aspirations, which is mirrored in her attire—a vibrant mix of traditional Indian clothing with a touch of contemporary style.

### Generating Image Prompts:

- The character created in the previous step was then used in each of the three write-ups to ensure consistency.
- Each write-up was transformed into a detailed image prompt by incorporating the character and the specific details of the scheme. The prompts focused on the setting, actions, and elements that were most relevant to each section of the write-up.

## Final Outputs with Image Generation and Evaluation

## **1. Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)**

### **Introduction**

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is a skill development and placement initiative launched by the Ministry of Rural Development (MoRD), Government of India, on September 25, 2014. This program aims to enhance the employability of rural youth by providing them with market-relevant skills and facilitating their placement in sustainable wage employment. DDU-GKY is a crucial component of the National Rural Livelihood Mission (NRLM), which seeks to alleviate poverty through livelihood enhancement.

### **Objectives**

The primary objectives of DDU-GKY include:

- Skill Development: To provide high-quality skill training to rural youth aged 15 to 35 years from poor families.
- Placement Support: To ensure that at least 70% of trained candidates secure jobs that offer regular monthly wages at or above the minimum wage.
- Empowerment: To empower marginalized groups, including women and socially disadvantaged communities, through skill training and employment opportunities.
- Economic Diversification: To diversify income sources for rural households, thereby reducing dependency on agriculture.

### **Key Features**

- Market-Led Approach: DDU-GKY focuses on demand-driven training programs aligned with market needs, ensuring that the skills imparted are relevant to employers.
- Training Duration: The program offers skill training ranging from 576 hours (approximately 3 months) to 2304 hours (approximately 12 months), depending on the complexity of the trade.
- Wide Range of Sectors: Training is provided across various sectors, including agriculture, construction, retail, hospitality, health care, and information technology.
- Post-Placement Support: The program includes support for candidates after placement, helping them adjust to their new roles and providing career progression opportunities.
- Public-Private Partnerships (PPP): DDU-GKY is implemented through partnerships between government agencies and private organizations, enhancing resource mobilization and expertise sharing.

### **Implementation Structure**

DDU-GKY follows a three-tier implementation model:

1. National Level: The DDU-GKY National Unit at MoRD serves as the policy-making and technical support agency.
2. State Level: State Skill Missions are responsible for co-funding and supporting project implementation.
3. Project Implementing Agencies (PIAs): These agencies execute the training and placement projects on the ground.

### Funding

Funding for DDU-GKY projects varies based on project duration and whether they are residential or non-residential. The financial support ranges from approximately ₹25,696 to over ₹1 lakh per person. The scheme is fully funded by the central government.

### Eligibility Criteria

To be eligible for DDU-GKY, candidates must:

- Be aged between 15 to 35 years.
- Belong to economically weaker sections of society.
- Meet specific criteria set by the Participatory Identification of Poor (PIP) process to ensure inclusivity.

### Achievements

Since its launch, DDU-GKY has made significant strides:

- Skill Training: Over 5 million rural youth have been trained under the program.
- Placement Rate: The program has achieved a placement rate exceeding 70%, ensuring that a majority of trained candidates secure employment.
- Focus on Inclusivity: A substantial portion of beneficiaries includes women (33%), Scheduled Castes (50%), Scheduled Tribes (15%), and persons with disabilities.

### Challenges

Despite its successes, DDU-GKY faces several challenges:

- Awareness and Accessibility: Many eligible youth remain unaware of the program or face barriers in accessing training opportunities.
- Quality Assurance: Ensuring consistent quality in training across various regions can be challenging due to differing local capacities.
- Monitoring and Evaluation: Continuous monitoring is essential to track outcomes effectively and make necessary adjustments to improve program efficacy.

### Conclusion

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana plays a vital role in transforming the livelihoods of rural youth in India. By focusing on skill development, placement assistance, and post-placement support, DDU-GKY not only enhances employability but also contributes significantly to poverty alleviation and economic empowerment in rural areas. Continued efforts towards improving awareness, quality assurance, and monitoring will be essential for maximizing its impact on rural livelihoods.

## 2. Write-up 1 : Beneficiary and Problem Statement

\*\*Beneficiary and Problem Statement:\*\*

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) targets rural youth aged 15 to 35 years from economically weaker sections of society, focusing on marginalized groups, including women and socially disadvantaged communities. The

program addresses the problem of unemployment and limited income sources among rural households by offering market-relevant skill training and facilitating sustainable wage employment. Despite significant progress in training over 5 million youths and achieving a placement rate exceeding 70%, challenges remain in terms of awareness, accessibility, quality assurance, and effective monitoring.

### **3. Write-up 2 : Application Process and Benefits**

**\*\*Application Process and Benefits:\*\***

**\*\*Application Process:\*\*** To apply for the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), candidates must be aged between 15 to 35 years and belong to economically weaker sections of society. Eligibility is determined through the Participatory Identification of Poor (PIP) process, ensuring inclusivity for marginalized groups.

**\*\*Benefits:\*\*** DDU-GKY offers high-quality skill training for rural youth to enhance employability across diverse sectors such as agriculture, construction, retail, hospitality, healthcare, and information technology. The program ensures that at least 70% of trained individuals secure jobs with regular wages at or above the minimum wage. Post-placement support and career progression opportunities are also provided to help candidates adjust and succeed in their new roles. The initiative focuses on empowering marginalized communities, including women and socially disadvantaged groups, while also contributing to economic diversification and poverty alleviation in rural areas. The scheme is fully funded by the central government, with financial support ranging from approximately ₹25,696 to over ₹1 lakh per person.

### **4. Write-up 3: Outcome and Impact**

**\*\*Outcome and Impact:\*\***

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) has significantly transformed the livelihoods of rural youth in India by providing skill development and ensuring placement in sustainable employment. Since its inception, over 5 million rural youth have received training, with a placement rate exceeding 70%, aligning with the program's goal of securing jobs with regular wages for trained individuals. DDU-GKY has been particularly inclusive, with a notable proportion of beneficiaries being women, Scheduled Castes, Scheduled Tribes, and persons with disabilities. By diversifying income sources and reducing agricultural dependency, the program contributes to poverty alleviation and economic empowerment in rural areas. Its implementation through public-private partnerships and adherence to a market-led approach has further reinforced its positive impact, despite challenges in awareness, accessibility, and quality assurance.

### **5. Image Prompts**

**Prompt 1 :** Create a poster with minimal text with the image from this image prompt :  
The poster features an inspiring and dynamic scene centered around Anjali Singh, a 22-year-old aspiring IT technician from a small village in India. Anjali is depicted as a confident and determined young woman with a bright smile, showcasing her enthusiasm and hope for the future. She is wearing a vibrant ensemble that blends traditional Indian clothing with contemporary elements, symbolizing her connection to her roots and her forward-looking aspirations.

In the background, the setting transitions from her rural village to a modern training facility. On one side, you see a picturesque rural landscape with lush fields and traditional village homes, representing her community and origins. On the other side, there is a state-of-the-art training center equipped with computers and IT equipment, highlighting her journey towards a career in technology.

The poster visually communicates the essence of the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) by depicting diverse groups of young people engaged in various skill development activities. This includes a group working with agricultural tools, a team learning construction techniques, individuals practicing retail management, and others in healthcare and hospitality training sessions.

Anjali is in the foreground, actively participating in a computer training session, her eyes focused on the screen as she types away, symbolizing her dedication to bridging the digital divide. Around her, other young women and men from marginalized communities are also shown, mirroring her enthusiasm and determination.

Above, a bright sky with rays of sunlight breaking through symbolizes hope, empowerment, and the promise of a better future. The overall composition of the poster captures the essence of empowerment, opportunity, and community upliftment that the DDU-GKY scheme aims to provide to rural youth, especially women and socially disadvantaged groups.

**Prompt 2 :** Create a poster with minimal text with the image from this image prompt :  
The poster features a vibrant and hopeful scene set in a rural Indian village, highlighting the positive impact of the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY). In the foreground, Anjali Singh, a 22-year-old aspiring IT technician, stands confidently. She has a warm, determined expression on her face, embodying both traditional values and modern aspirations. Anjali is dressed in a colorful saree that combines traditional Indian patterns with a modern twist, symbolizing her blend of cultural heritage and future ambitions.

Around her, a group of young villagers, both male and female, are engaged in various skill development activities. Some are gathered around computers in a makeshift training center, attentively learning IT skills under the guidance of an instructor. Others are

working on different vocational skills such as tailoring, carpentry, and agriculture, showcasing the diverse training opportunities provided by the scheme.

The background features a picturesque rural landscape, with small houses, lush fields, and a clear sky, emphasizing the village setting. The poster captures a moment of transformation and hope, with rays of sunlight illuminating the scene, symbolizing growth and new opportunities.

In the distance, a banner represents the DDU-GKY program, depicting its logo and emblem, subtly conveying the initiative without using text. The overall atmosphere is one of optimism and empowerment, highlighting the program's role in bridging the digital divide and uplifting rural communities.

**Prompt 3 :** Create a poster with minimal text with the image from this image prompt :  
The poster showcases a compelling before-and-after transformation of Anjali Singh, highlighting the positive impact of the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY).

**\*\*Before Scenario:\*\***

On the left side of the poster, Anjali is depicted in her rural village setting. She is dressed in traditional Indian attire, symbolizing her cultural roots. The background features a modest village scene with simple homes and fields, illustrating the limited opportunities available. Anjali appears hopeful yet contemplative, holding a basic mobile phone, representing her initial connection to technology.

**\*\*After Scenario:\*\***

On the right side of the poster, Anjali is transformed into a confident and skilled IT technician working in a modern office environment. Her attire is a vibrant blend of traditional Indian clothing and contemporary style, reflecting her journey and aspirations. She is now working at a sleek computer desk, surrounded by high-tech gadgets and monitors displaying complex software code and digital interfaces. Her expression is one of determination and satisfaction, embodying her success and empowerment.

**\*\*Central Elements:\*\***

The center of the poster features a visual representation of the DDU-GKY initiative's impact: a group of diverse young individuals, including women and people from marginalized communities, celebrating their achievements and newfound opportunities. The backdrop transitions from rural fields to a dynamic cityscape, symbolizing the journey from rural beginnings to urban success.

The overall color palette is vibrant and optimistic, with a blend of earthy tones for the village scene and bright, modern hues for the cityscape, illustrating the positive change and growth brought about by the program.

## 6. Generated Images & Evaluation

This evaluation scheme is being used to rate the images

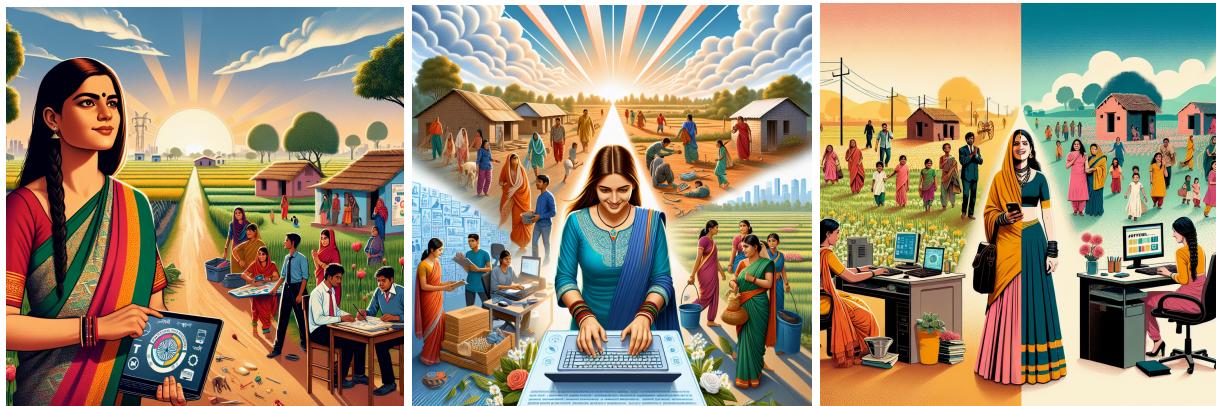
**5/5:** The image fully captures the prompt with clear alignment, necessary details, and accurate expression.

**4/5:** The image is mostly accurate, with minor deviations in detail or expression.

**3/5:** The image captures the essence but lacks several minor or one significant element.

**2/5:** The image only partially reflects the prompt, with noticeable inconsistencies.

**1/5:** The image fails to represent the prompt meaningfully.



### Evaluation based on Coherence Scores:

1. **5/5:** The image not only accurately reflects the beneficiary, but also shows other characters who can benefit from the scheme in the background.
2. **5/5:** The image accurately fully captures the benefits of the scheme across various groups in the society as well. The generated character clearly belongs to the group eligible for the scheme.
3. **5/5:** The image accurately reflects the impact of the scheme on the applicants with necessary details. It also demonstrates uniformity of the entity across all three images.

### Consistency Scores: 5/5

1. All the images are consistent and depict the same character throughout all 3 images. This seems to be a direct result of the additional character context given in the prompt.
2. The chronology of the images is also maintained.
3. The backgrounds are detailed and without any unnecessary artifacts due to extreme detail in which the prompt describes it.

**Comments:** Overall the image is an accurate representation of the prompt. It also conveys the idea of the scheme without any text, making it universally understandable. The generated character clearly shows the target demographic of the welfare scheme. The third image clearly shows contrast between the before and after scenarios while maintaining the same central figure.

### 1. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

Introduction

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a landmark legislation enacted in India in 2005, aimed at enhancing livelihood security in rural areas by providing a legal guarantee for at least 100 days of unskilled wage employment in a financial year to every rural household. This act represents a significant step towards poverty alleviation and rural development.

### Objectives

The primary objectives of MGNREGA include:

- Employment Generation: To provide at least 100 days of guaranteed wage employment to every rural household.
- Livelihood Security: To enhance livelihood security in rural areas by creating durable assets and infrastructure.
- Empowerment: To empower rural communities, particularly marginalized groups, by providing them with the means to earn a sustainable livelihood.

### Key Features

- Legal Guarantee: MGNREGA provides a legal right to work, ensuring that every rural household can demand employment.
- Wage Payment: Workers are entitled to receive wages at least equal to the minimum wage set by the state government, which is periodically revised.
- Work Allocation: The act mandates that work should be provided within 15 days of application. If employment is not provided, the applicant is entitled to an unemployment allowance.
- Focus on Sustainability: The works undertaken under MGNREGA are aimed at creating durable assets such as roads, ponds, wells, and irrigation canals, which contribute to sustainable development.
- Decentralized Planning: The planning and execution of projects are decentralized, allowing local self-governments (Panchayati Raj Institutions) to play a crucial role in decision-making.

### Implementation

MGNREGA is implemented through a decentralized framework involving:

- Central Government: Formulates policies and provides funds.
- State Governments: Responsible for implementing the scheme at the state level, including planning and execution of works.
- Gram Panchayats: Local self-governments that play a vital role in identifying works, maintaining records, and ensuring transparency.

### Impact

Since its inception, MGNREGA has had several positive impacts:

- Poverty Reduction: By providing guaranteed employment, it has helped lift many households above the poverty line.
- Empowerment of Women: The scheme has significantly increased women's participation in the workforce, promoting gender equality.

- Rural Infrastructure Development: Many rural areas have benefited from improved infrastructure due to the construction of roads, irrigation facilities, and other community assets.

### Conclusion

MGNREGA has been instrumental in transforming rural livelihoods in India by providing a safety net for vulnerable populations. While challenges remain, ongoing reforms and increased awareness can enhance its effectiveness and ensure that it continues to serve as a vital tool for rural development and poverty alleviation.

## 2. Write-up 1 : Beneficiary and Problem Statement

**\*\*Beneficiary and Problem Statement:\*\***

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) targets rural households in India, guaranteeing at least 100 days of wage employment annually to enhance livelihood security. The primary beneficiaries include marginalized rural communities, particularly women, who gain empowerment and a sustainable means of income through this scheme. The core problem addressed by MGNREGA is rural poverty and unemployment. By legally ensuring the right to work and focusing on the creation of durable assets, MGNREGA aims to alleviate poverty, bolster rural infrastructure, and contribute to sustainable development. It also addresses the issue of rural-urban migration by providing local employment opportunities.

## 3. Write-up 2 : Application Process and Benefits

**\*\*Application Process and Benefits:\*\***

Under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), every rural household is entitled to apply for employment, with work mandated to begin within 15 days of application. If employment is not provided within this period, applicants are entitled to receive an unemployment allowance. MGNREGA guarantees at least 100 days of unskilled wage employment annually, offering wages at or above the state-mandated minimum. This scheme empowers marginalized groups by allowing them to earn a sustainable livelihood, contributing to poverty reduction and enhancing livelihood security. Additionally, the works undertaken support rural infrastructure development through the construction of durable assets like roads, ponds, and irrigation canals, promoting sustainable development. MGNREGA also has a significant impact on gender equality by increasing women's workforce participation.

## 4. Write-up 3: Outcome and Impact

**\*\*Outcome and Impact:\*\***

Since its inception, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has had significant positive impacts, including poverty reduction by lifting many households above the poverty line through guaranteed employment. It has also

empowered women by significantly increasing their participation in the workforce, thereby promoting gender equality. Additionally, the scheme has led to substantial rural infrastructure development, with many areas benefiting from the construction of roads, irrigation facilities, and other essential community assets. Overall, MGNREGA has been instrumental in transforming rural livelihoods in India, providing a crucial safety net for vulnerable populations.

## 5. Image Prompts

**Prompt 1 :** Create a poster with minimal text with the image from this image prompt : Create an inviting and informative poster featuring Meena Kumari, a 35-year-old MGNREGA worker from a small village in Rajasthan, India. In the center, depict Meena Kumari, a confident and determined woman, wearing a vibrant saree that reflects the rich cultural heritage of Rajasthan. Have her engaged in a community development project, such as constructing an irrigation canal, with lush green fields and a clear blue sky in the background.

Surrounding her, illustrate scenes representing the benefits of the MGNREGA scheme:

1. Show a group of women, dressed in colorful traditional attire, working together on building a durable road, symbolizing community engagement and infrastructure development.
2. Include a visual of a family in a simple, yet well-maintained rural home, enjoying a meal together, representing the improved quality of life and livelihood security gained through the scheme.
3. Illustrate a village meeting where Meena is seen discussing with other villagers, symbolizing her leadership and the empowerment of women through workforce participation.
4. Depict a calendar or a symbolic representation of 100 days to emphasize the guarantee of wage employment provided by the scheme.

Use warm and earthy colors to convey a sense of community, growth, and empowerment, and incorporate elements of rural Indian life, such as traditional tools or local flora, to give an authentic feel to the poster.

**Prompt 2 :** Create a poster with minimal text with the image from this image prompt : The poster should depict a vibrant and inspiring scene in a rural setting in Rajasthan, India. At the center of the image, feature Meena Kumari, a 35-year-old MGNREGA worker. She is portrayed as a strong and determined woman, wearing a colorful and traditional saree that showcases the rich cultural heritage of Rajasthan. Her expression is one of pride and commitment as she engages in her work.

Surrounding Meena are several other community members, both men and women, actively participating in developmental projects such as building a road and constructing an irrigation canal. The scene is bustling with activity, highlighting teamwork and collaboration among the villagers. The rural landscape is dotted with modest homes, fields, and distant hills, reflecting the typical setting of a small Indian village.

In the background, display the newly constructed infrastructure, such as a smooth road and a functional irrigation canal, symbolizing the tangible benefits of the MGNREGA scheme. The poster captures the essence of empowerment and progress, with villagers, especially women, visibly benefiting from the improved infrastructure and local employment opportunities.

The overall tone of the poster should be uplifting and hopeful, emphasizing the positive impact of the MGNREGA scheme in alleviating poverty, reducing rural-urban migration, and enhancing the quality of life for marginalized communities. The colors should be bright and lively, reflecting the vibrancy of rural life and the transformation brought about by the scheme.

**Prompt 3 :** Create a poster with minimal text with the image from this image prompt :  
Title: Transformation through MGNREGA

Visual Description:

1. \*\*Before Scenario (Left Side of the Poster):\*\*

- Depict a rural village setting in Rajasthan, India, with dusty, unpaved roads and a lack of basic infrastructure.
- Show Meena Kumari, a 35-year-old woman, wearing a simple, yet vibrant saree, indicative of her cultural heritage. Her expression is one of determination and resilience.
- Illustrate her working alongside a few other villagers, engaged in manual labor, such as trying to construct a road or dig a canal with basic tools, showing the initial stages of development.
- The landscape appears dry and barren, reflecting the challenges faced by the community before the impact of MGNREGA.

2. \*\*After Scenario (Right Side of the Poster):\*\*

- Present the same village, now transformed with paved roads and a newly built irrigation canal, signifying infrastructure development.
- Meena Kumari stands proudly in the foreground, her attire still a vibrant saree, but now with a more confident and fulfilled expression, symbolizing empowerment and leadership.
- Include a group of women and men working together, reflecting increased workforce participation and unity, with more advanced tools and equipment.

- The environment is lush and green, indicating improved agricultural conditions and quality of life due to the irrigation facilities.
- Show villagers smiling and interacting, highlighting a sense of community and improved livelihoods.

### 3. \*\*Background and Details:\*\*

- The background is a blend of traditional Rajasthani architecture and the natural beauty of rural India, with the sun setting in warm hues, representing hope and a brighter future.
- Include subtle details like traditional jewelry and patterns on the sarees to emphasize cultural pride.
- Use vibrant colors to convey positivity and transformation, with a clear distinction between the before and after scenarios.

This poster aims to visually capture the transformative impact of the MGNREGA scheme on Meena Kumari and her community, celebrating their journey towards empowerment and development.

## 6. Generated Images & Evaluation



### Evaluation based on Coherence Scores:

1. 3/5: While the image accurately depicts the beneficiary it also hallucinates and generates irrelevant text, with the wrong name of the scheme, which is misleading.
2. 4/5: The image accurately fully captures the benefits of the scheme across various groups in the society as well. However, the text on the top is very generic and does not capture the essence of the welfare scheme. The image is somewhat lacking in depicting the application process.
3. 4/5: The image accurately reflects the impact of the scheme on the applicants with necessary details. It also demonstrates uniformity of the entity across all three images. However, the before and after text has not been generated correctly.

**Consistency Score:** 5/5

The images do maintain consistency among the characters, this is largely due to the additional character context we have introduced. The character also accurately reflects the target demographic of the welfare scheme.

**Comments:**

Overall, the images generated are pretty accurate and close to the expectations of a poster, however the text generated is not relevant and is in fact misleading. The text on the poster could have been avoided or should have been written correctly.

## **1. Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY)**

### Introduction

The Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) is a flagship health insurance scheme launched by the Government of India on September 23, 2018. It aims to provide accessible and affordable healthcare to the economically vulnerable sections of society. As one of the largest health assurance schemes globally, PMJAY is designed to cover approximately 50 crore beneficiaries, targeting the bottom 40% of the Indian population.

### Objectives

The primary objectives of PMJAY are:

- Universal Health Coverage: To achieve universal health coverage by providing financial protection against high medical expenses.
- Access to Quality Healthcare: To ensure that every eligible family has access to quality secondary and tertiary healthcare services without financial burden.
- Empowerment of Vulnerable Groups: To empower marginalized communities, including women, children, and the elderly, by ensuring their access to necessary healthcare services.

### Key Features

- Health Insurance Coverage: PMJAY offers a health insurance cover of up to ₹5 lakh per family per year for secondary and tertiary hospitalization.
- Comprehensive Coverage: The scheme covers more than 1,400 medical procedures, including surgeries, treatments, and diagnostics.
- Cashless Treatment: Beneficiaries can avail themselves of cashless treatment at any empanelled public or private hospital across India using an Ayushman card.
- No Cap on Family Size or Age: There is no limit on family size or age in the scheme, ensuring inclusivity for all members of a family.
- Pre-existing Conditions Covered: All pre-existing medical conditions are covered from day one of enrollment in the scheme.
- Transport Allowance: Beneficiaries are entitled to receive a defined transport allowance for hospitalization.

### Implementation Structure

PMJAY operates through a well-defined structure:

1. National Health Authority (NHA): Responsible for implementing and overseeing the scheme at the national level.
2. State Governments: Each state is responsible for executing PMJAY in their respective regions, including identifying beneficiaries and empaneling hospitals.
3. Empanelled Hospitals: Hospitals that meet certain criteria are empanelled to provide services under PMJAY.

#### Eligibility Criteria

To qualify for PMJAY, families must meet specific criteria based on the Socio-Economic Caste Census (SECC) 2011 data:

- Families classified as economically weaker sections based on deprivation and occupational criteria are eligible.
- The scheme is particularly aimed at households without any formal health insurance coverage.

#### Enrollment Process

Eligible families can enroll in PMJAY through:

- Ayushman Card: Beneficiaries receive an Ayushman card that allows them to access healthcare services under the scheme.
- Common Service Centres (CSCs): Enrollment can also be done at designated CSCs where assistance is provided in obtaining the Ayushman card.

#### Achievements

Since its launch, PMJAY has made significant progress:

- Beneficiary Coverage: The scheme aims to cover over 10.74 crore families (approximately 50 crore individuals).
- Hospitalizations: Millions of hospitalizations have been recorded under PMJAY, demonstrating its impact on improving access to healthcare.
- Awareness Campaigns: Extensive awareness campaigns have been conducted to educate eligible families about the benefits of PMJAY.

#### Conclusion

The Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana represents a significant step towards achieving universal health coverage in India. By providing comprehensive health insurance coverage to economically vulnerable populations, PMJAY aims to alleviate financial burdens associated with healthcare and improve overall health outcomes. Continued efforts towards enhancing awareness, quality control, and monitoring will be essential for maximizing its impact on public health in India.

## **2. Write-up 1 : Beneficiary and Problem Statement**

**\*\*Beneficiary and Problem Statement:\*\***

Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) targets the economically vulnerable segments of Indian society, specifically aiming to cover the

bottom 40% of the population, which includes approximately 50 crore individuals. The beneficiaries include marginalized groups such as women, children, and the elderly, who often lack access to essential healthcare services. The problem addressed by the scheme is the limited financial capability of these groups to afford quality medical care, which leads to significant health coverage gaps and high out-of-pocket medical expenses. PMJAY seeks to provide these beneficiaries with financial protection and access to necessary secondary and tertiary healthcare services, thereby empowering them and reducing the healthcare burden./

### **3. Write-up 2 : Application Process and Benefits**

**\*\*Application Process and Benefits:\*\***

Eligible families for the Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) can enroll through the Ayushman Card, which provides access to healthcare services, or at Common Service Centres (CSCs) for assistance. The scheme benefits include providing health insurance coverage of up to ₹5 lakh per family per year for secondary and tertiary hospitalization, covering over 1,400 medical procedures. It ensures cashless treatment at empanelled hospitals, includes comprehensive coverage for all pre-existing conditions, and offers a transport allowance for hospitalization. The scheme is particularly aimed at economically weaker sections identified by the Socio-Economic Caste Census (SECC) 2011 and aims to cover approximately 50 crore individuals, enhancing access to quality healthcare for the bottom 40% of India's population.

### **4. Write-up 3: Outcome and Impact**

**\*\*Outcome and Impact:\*\***

The Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) has significantly advanced universal health coverage in India by providing comprehensive health insurance to approximately 50 crore economically vulnerable individuals. The scheme has facilitated millions of hospitalizations through its cashless treatment model at empanelled hospitals, thereby reducing financial barriers to accessing quality healthcare. By focusing on marginalized groups, including women, children, and the elderly, PMJAY has empowered these communities and improved their access to secondary and tertiary healthcare services. Extensive efforts, including awareness campaigns, have further contributed to the scheme's reach and effectiveness, establishing it as a pivotal component of India's public health strategy.

### **5. Image Prompts**

**Prompt 1 :** Create a poster with minimal text with the image from this image prompt :

The poster should depict a heartwarming and hopeful scene centered around Anjali Mehra, a 35-year-old female textile worker, as she experiences the benefits of the Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) scheme.

1. \*\*Central Focus\*\*: Anjali should be portrayed with a warm smile, standing outside a modern hospital. She is holding her young son's hand, with her elderly parents beside her, all looking relieved and content. This symbolizes the peace of mind and support brought by the health scheme.

2. \*\*Background\*\*: Include the facade of a modern hospital in a small Indian town, with visible signage indicating it as part of the PMJAY network. The hospital should appear welcoming and efficient, reflecting accessible and quality healthcare.

3. \*\*Supporting Elements\*\*:

- Other beneficiaries, such as women, children, and elderly individuals, should be depicted entering or leaving the hospital. They should appear diverse and represent various Indian ethnicities, showcasing inclusivity.

- Medical staff inside the hospital, visible through windows or doors, should be seen attending to patients with care and professionalism, symbolizing the quality medical services provided.

4. \*\*Symbolic Details\*\*:

- Visual elements such as the PMJAY logo subtly incorporated into the scene, perhaps on banners or posters at the hospital entrance, to indicate the scheme's presence.

- Include subtle, uplifting symbols like birds flying or the sun rising in the background, representing hope and a brighter future.

5. \*\*Atmosphere\*\*: The overall atmosphere should be one of optimism and relief, with warm lighting to convey a sense of safety and community support.

This visual narrative should capture the essence of the PMJAY scheme's impact on economically vulnerable families, highlighting both the challenges faced and the transformative benefits received.

**Prompt 2 :** Create a poster with minimal text with the image from this image prompt :  
The poster features a vibrant and heartwarming scene set in a small town in India. At the center is Anjali Mehra, a 35-year-old female textile worker. She is depicted standing confidently in front of a modern hospital, holding her young son's hand with her elderly parents beside her, all smiling with relief and gratitude. The background shows the bustling yet modest town, highlighting the contrast between her challenging daily life and the promise of accessible healthcare.

In the foreground, an Ayushman Card is prominently displayed, symbolizing the gateway to healthcare services. Around the card, visual representations of healthcare benefits unfold: a doctor attending to a patient, a nurse assisting in a hospital room, and various medical equipment like stethoscopes and X-ray machines, emphasizing comprehensive coverage.

To the side, a depiction of a Common Service Centre (CSC) is shown, where individuals like Anjali can be seen receiving assistance for the enrollment process. This illustrates the accessibility and support provided by the scheme.

Additionally, a transport vehicle is depicted, symbolizing the transport allowance for hospitalization, ensuring that no beneficiary is left without access to necessary medical facilities.

The poster's atmosphere is hopeful and uplifting, with warm colors and light that convey the transformative impact of the Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY) on Anjali's life and countless others, showcasing the promise of universal health coverage for the economically weaker sections of India's population.

**Prompt 3 :** Create a poster with minimal text with the image from this image prompt : The poster should vividly illustrate the transformative journey of Anjali Mehra, showcasing the positive outcomes brought about by the Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY).

**\*\*Left Side - Before:\*\***

1. **Setting:** A modest, dimly lit room in a small Indian town, depicting Anjali's life before the health scheme. The room should contain simple furniture and a sewing machine, indicating her occupation as a textile worker.
2. **Anjali's Appearance:** Anjali, a 35-year-old woman, appears weary and stressed. She is dressed in traditional Indian attire, which looks slightly worn out. Her expression reflects concern as she tends to her young son and elderly parents, highlighting the burden of being the sole breadwinner.
3. **Family Scene:** Her young son sits nearby, studying with old books, while her elderly parents rest on a basic cot. The atmosphere conveys a sense of financial struggle and limited access to healthcare.

**\*\*Right Side - After:\*\***

1. **Setting:** A brighter and more vibrant environment, symbolizing hope and improvement. The setting is a clean, modern hospital, indicating access to quality healthcare.
2. **Anjali's Appearance:** Anjali now looks relieved and content. She is still in traditional attire, but her posture is more relaxed, and she has a gentle smile, representing newfound optimism and stability.

3. \*\*Family Scene:\*\* Her son appears healthier and happier, holding new books, while her parents look more at ease, receiving care in a hospital setting. A caring doctor or nurse attending to them subtly reinforces the healthcare support they are receiving.

4. \*\*Symbolic Elements:\*\* Include subtle symbols of healthcare, such as a medical cross or stethoscope, to emphasize the theme of health coverage.

The overall composition should highlight the stark contrast between the two scenarios, emphasizing the positive impact of the PMJAY scheme on Anjali and her family's life. The transformation should evoke a sense of hope, relief, and gratitude, portraying the essence of universal health coverage.

## 6. Generated Images & Evaluation



### Evaluation based on Coherence Scores:

1. 4/5: The image accurately depicts the target demographic of the welfare scheme. The PMJAY text is subtly expressed in the background. There are slight distortions in the limbs.
2. 3/5: The image is consistent with the characters. The application process is depicted in a general manner in background, but the faces are disfigured. There is an inaccuracy of a man standing in a wheelchair.
3. 5/5: The image accurately reflects the impact of the scheme on the applicants with necessary details. It also demonstrates uniformity of the entity across all three images.

### Consistency Score:

The images consistent with the central figure( Anjali) but with her child as well. This is due to clearly defining the character for all 3 prompts.

### Comments:

Overall, the images generated are pretty accurate and close to the expectations of a poster, however the key features of the welfare scheme ( insurance coverage) is missing. There are slight distortions in faces limbs and objects. The backgrounds are extremely detailed because all the aspects were covered in the prompt.