

## **Project Title:** Realistic AI Art Tool (Prompt-to-Image Generator)

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**Objective:** Build a web-based AI art generator that allows users to generate high-quality images using natural language prompts through free-tier AI APIs. This project mimics the functionality of tools like Leonardo AI or Midjourney, optimized for students using open-source resources.

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### **Key Features:**

- **Prompt Input System:** Simple and user-friendly input interface for entering image descriptions.
  - **AI Image Generation:** Use free APIs from Hugging Face or Replicate to convert prompts into images.
  - **Image Gallery Preview:** Users can view the generated results in a gallery format.
  - **Download Function:** Download generated images in one click.
  - **Image Upscaling (Optional):** Integrate tools like Real-ESRGAN to enhance output resolution.
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### **Technology Stack:**

- **Frontend:** React.js
  - **Backend:** Node.js or serverless (optional)
  - **API Services:**
    - Hugging Face Inference API (e.g., CompVis/stable-diffusion)
    - Replicate API (Stable Diffusion 1.5 or 2.1)
    - Real-ESRGAN (for optional upscaling)
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### **Job Description & Responsibilities:**

- Create a responsive React UI for prompt input and image display.
  - Integrate the chosen AI model API and handle asynchronous requests.
  - Secure API keys via environment variables.
  - Implement loader animations and error messages.
  - Enable image downloads and display history.
  - Deploy final version to GitHub Pages or Vercel.
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**Tenure:** 8 weeks

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### **Milestones:**

1. **Week 1-2:** Project setup, UI design, environment preparation.
2. **Week 3-4:** Integrate free APIs (Replicate/Hugging Face), test responses.
3. **Week 5-6:** Display results in gallery, add download and optional upscaling.
4. **Week 7:** UI polishing, error handling, deployment.
5. **Week 8:** Final documentation and submission.

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**Deliverables:**

- Working React-based AI Art Generator
  - Source code in GitHub repository
  - README with setup and usage instructions
  - Demo video or presentation
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**Additional Notes:**

- Use only free-tier API services.
  - Do not exceed inference limits—optimize usage.
  - Store API tokens in .env and avoid pushing to GitHub.
  - Allow customization of output resolution and style if possible.
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**Evaluation Criteria:**

- Image quality and relevance to prompts
  - UI/UX design quality and mobile responsiveness
  - Proper API usage and error management
  - Clarity of final documentation and code structure
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**Final Output:**

- GitHub repo with code
  - Optional live demo
  - Final presentation slides
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