**Graduation Project Proposal**

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| **Title of project** | **Advanced Text to Image Generation** | |
| **Track** | **AI& Data science** | **Generative AI- professional** |
| **Year** | 2024-2025 | |
| **Group Code** | ONL2\_AIS3\_S1 | |
| **Instructor** | Eng. Mohammed Agoor | |

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| **A black background with a black square  Description automatically generated with medium confidence** | **Group Members** | | |
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| Project proposal | |
| Project description | **The project is an intelligent system that converts user-input text into high-quality images using artificial intelligence and deep learning technologies. The system supports multiple artistic styles and allows the user to save the generated images.** |
| Technologies | * **Python: Versatile programming language for AI development.** * **PyTorch: Flexible deep learning framework for research.** * **TensorFlow: Scalable framework for deploying AI models.** * **Stable Diffusion: Advanced model for text-to-image generation.** * **OpenCV: Library for image processing and computer vision.** |
| Work plan | **Phase 1: Research and Planning (Omar Tarek)**  **Phase 2: Data Collection and Preparation (Belal Mohamed)**  **Phase 3: Building Model and Testing (Seifeldin Khaled)**  **Phase 4: Optimization and Fine tuning (Moataz Hassan)**  **Phase 5: Deployment (Yousef Hazem)**  **Phase 6: Documentation and Final Presentation** |
| Work breakdown structure | **├── 1. Project Initiation**  **│ ├── 1.1. Define project scope and objectives**  **│ ├── 1.2. Identify stakeholders and team roles**  **│ ├── 1.3. Research existing solutions**  **│ └── 1.4. Select technology stack**  **├── 2. Data Collection and Preparation**  **│ ├── 2.1. Identify and gather datasets**  **│ ├── 2.2. Clean and preprocess data**  **│ └── 2.3. Split data into training, validation, and testin**  **├── 3. Model Development**  **│ ├── 3.1. Set up development environment**  **│ ├── 3.2. Implement the text-to-image generation model**  **│ └── 3.3. Fine-tune the model**  **├── 4. Testing and Optimization**  **│ ├── 4.1. Test the model's performance**  **│ └── 4.2. Fix bugs and optimize the system**  **├── 5. Deployment**  **│ ├── 5.1. Prepare for deployment**  **│ ├── 5.2. Deploy the model**  **│ └── 5.3. Monitor and maintain the system**  **└── 6. Documentation and Final Presentation**  **├── 6.1. Document the project**  **├── 6.2. Prepare the final presentation**  **└── 6.3. Conduct a live demo** |
| Functional requirements | 1. **Text-to-Image Conversion**   **The system shall allow users to input text descriptions.**  **The system shall generate high-quality images based on the input text.**   1. **Art Style Selection**   **The system shall provide users with options to choose from multiple artistic styles (e.g., realistic, cartoon, abstract).**  **The system shall apply the selected style to the generated image.**   1. **Image Saving**   **The system shall allow users to save the generated images to their local devices.**  **The system shall support common image formats (e.g., PNG, JPEG).** |
| Non-functional requirements | * **Performance: The system shall generate images in less than 5 seconds.** * **Image Quality: Generated images shall have a minimum resolution of 1024x1024 pixels.** * **Availability: The system shall be operational 99.9% of the time.** |
| Git-hub repository | [**https://github.com/belalmohamedd/Text\_to\_image-generation-project**](https://github.com/belalmohamedd/Text_to_image-generation-project) |