**Project Proposal**

**Prepared By:** Sab Aarif

**Email:** sabaarif607@gmail.com

**Project Name:** Cyber Baby

**Project Type:** AI/ML Web Application

**Date: October 2025**

**1. Project Overview:**

The Cyber Baby project aims to introduce a revolutionary concept of digital parenthood powered

by AI and Machine Learning. Through this web-based platform, users can upload images of two

parents, and the system will generate a 3D digital baby that evolves week by week—visually,

emotionally, and behaviorally.

The baby model will be created using a combination of deep learning models for facial recognition,

generative AI for appearance synthesis, and 3D rendering for lifelike visualization. The application

will feature a friendly interface that allows users to observe their baby's growth, manage profiles,

and interact with the 3D model.

This project demonstrates the fusion of emotional engagement and technical innovation, targeting

both educational and entertainment audiences.

**2. Project Objectives:**

• To develop an interactive web application simulating the concept of digital parenthood.

• To use AI for generating realistic baby models from parent images.

• To enable real-time 3D visualization of the baby’s growth over time.

• To integrate authentication and secure data management with MongoDB.

• To explore free and paid AI/ML resources for cost-effective scalability.

**3. Core Features:**

• User Authentication: Secure Google login system for both parents.

• Photo Upload: Each parent uploads 1–3 facial images for AI-based baby generation.

• AI Baby Generation: The system combines parent features using DeepFace and Stable

Diffusion to create a stylized 3D baby face.

• Growth System: The baby evolves through 11 growth stages—from embryo to newborn—with

weekly updates.

• 3D Visualization: The model is displayed in a futuristic holographic cradle using TripoSR and

Mixamo for 3D animation.

• Dashboard: Displays current stage, growth progress, and “Essence Match” (percentage

resemblance to each parent).

• Data Persistence: All user and baby data stored securely in MongoDB.

**4. Technology Stack**:

• Frontend: HTML5, Tailwind CSS, React.js (responsive, modern interface)

• Backend: Python (Flask or FastAPI for APIs and AI model handling)

• Database: MongoDB (NoSQL database for flexible data storage)

• Authentication: Google OAuth

• Hosting: Render, Vercel, or AWS (depending on scalability needs)

• 3D Rendering: Three.js / Babylon.js integrated into React

**5. AI/ML Tools:**

**Free Tools**:

**• DeepFace** – Facial analysis, gender and age detection (FREE, Python library).

**• Stable Diffusion** – Generative AI for creating stylized baby images (FREE, Google Colab).

• **TripoSR** – Converts 2D images into realistic 3D models (FREE).

**• Mixamo** – Adobe's free tool for animating 3D models (FREE).

**Paid Alternatives:**

**• Face++ API:** Advanced face similarity analysis – $199/month.

• **Leonardo.ai:** AI art and photo generation with enhanced realism – $29/month.

**• Luma AI**: High-quality 3D reconstruction and texture rendering – $49/month.

• **RunwayML**: For advanced generative modeling – $15/month (Starter plan).

**6. Project Timeline (6 Weeks):**

**Week 1**: Requirement gathering, UI/UX design, defining user flow and architecture.

**Week 2**: Frontend development using React and Tailwind CSS; static components and layout

setup.

**Week 3**: Backend setup with Flask/FastAPI, MongoDB integration, Google Authentication.

**Week 4**: AI/ML integration: implementing DeepFace and Stable Diffusion for photo analysis and

generation.

**Week 5**: Integration of 3D visualization using TripoSR and Mixamo; connecting 3D baby model with

UI.

**Week 6**: Testing, debugging, performance optimization, and deployment on hosting platform.

**7. Deliverables:**

• Fully functional Cyber Baby web prototype.

• User authentication with linked parent accounts.

• AI-based 3D baby generation and weekly evolution system.

• Interactive dashboard and 3D baby environment.

• MongoDB database for data storage and retrieval.

• Deployment-ready application.

**8. Conclusion:**

The Cyber Baby project blends artificial intelligence, emotional design, and 3D visualization into an

interactive digital experience that represents the next step in human–AI connection. It leverages

both free and paid AI/ML resources to balance innovation and cost-efficiency, making it a scalable

and future-ready solution.

This project is not only technically challenging but also creatively inspiring, pushing the boundaries

of what AI can achieve in the realm of digital simulation and emotional engagement.