

# Natural Language-Driven AI Avatar Motion with Video-Based Motion Data (AniGEN)

Presented by:

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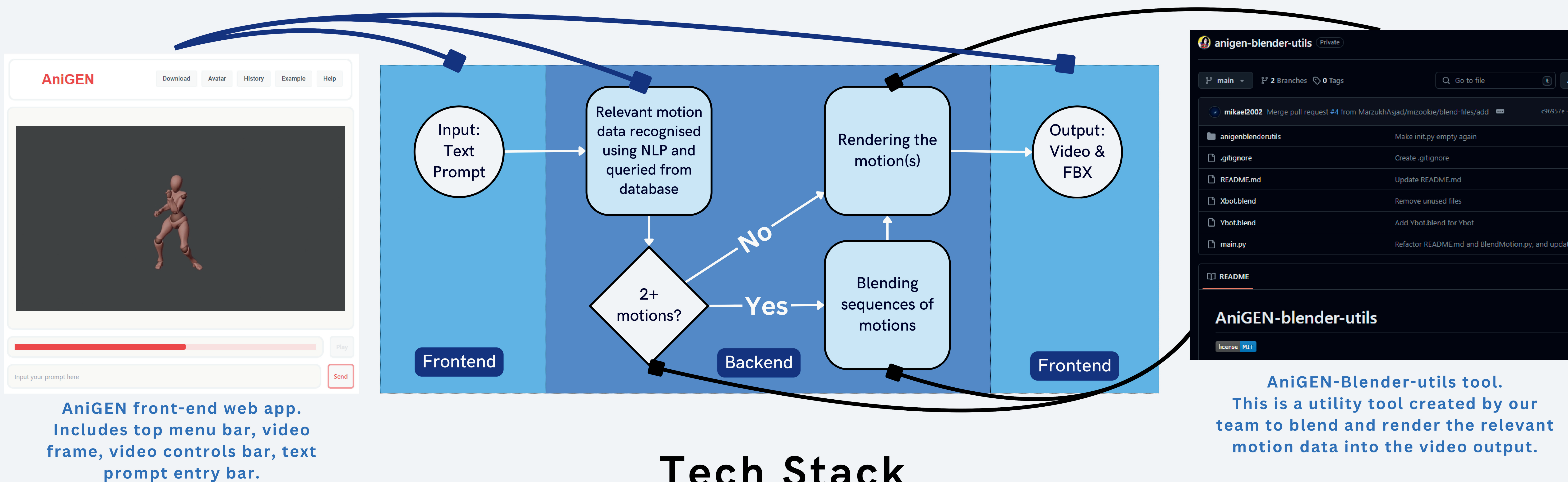
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## Introduction

In this project, we implemented a method to transform a text prompt into a 3D avatar animation sequence through Natural Language Processing (NLP) and blending motion data. AniGEN aims to help 3D animators and game developers produce high quality animations which are modifiable, editable, interactive and consistent, with an easy-to-use web-based interface. The user needs to provide the text input of the motion prompt, and then once the rendering is complete, the output animation will be ready as both a video and the ready-to-edit downloadable file (FBX).

## Workflow Overview



## Tech Stack

### Node.js & React

**JavaScript Runtime Environment and Library.**  
Chosen due to low setup difficulty and library extensiveness.

### Bootstrap & TailwindCSS

**CSS Frameworks.** In particular, TailwindCSS allows a unified CSS stylesheet for the whole web app.

### Blender

**Software used for motion and rendering.** In particular, its Non-Linear Animation (NLA) function, a well-documented industry standard, is used for blending motions.

### FireBase

**Database.** Selected due to its space and cost suitability for the project. The database stores motion data from Mixamo, a motion data library from Adobe.

### Python

One of the **main Scripting Languages used.** Used for Blender and also to create the AniGEN-blender-utils tool. Chosen due to its intuitive structure and easy-to-understand documentation.

### Gemini

**Large Language Model** for obtaining file names from text prompts using Natural Language Processing (NLP). Selected due to its easy access and availability to the team.