

Project 2: Interactive Infographic

1. Project Title

Interactive Infographic: Game-Theory & Video-Game Visualization

2. Abstract / Summary

This project is an **interactive infographic web application** that visually presents the concepts of **Game Theory** and **Video Games** using dynamic circular menus and background videos. Users can explore different categories and subtypes through animated main and sub-circles, with videos and statistics dynamically displayed. The app emphasizes **engaging user experience** and **data visualization** using modern web technologies.

3. Technologies Used

- **Frontend Framework:** React.js
- **Styling:** CSS, CSS Animations
- **Video Handling:** HTML5 `<video>` + Custom VideoController
- **Build Tool:** Vite
- **Assets:** Images & WebM videos

4. System Design / Architecture

The architecture follows a **component-based React structure**:

Components: - `App.jsx` - Root component - `MainCircle` - Central interactive circle - `TypesOfCircle` - Handles left/right main categories - `TypeofSubCircle` - Handles sub-categories arranged in semicircles - `BackgroundVideo` - Plays videos dynamically using `VideoController` - `SubcircleDetails` - Popup with images, video, and description

State Management: - Local state in components (`useState`) - Video control centralized via `VideoController.js`

Interactions: - Hovering triggers video playback - Clicking expands main/sub-circles - Selecting sub-circles opens detailed popups

Animation & Styling: - CSS transforms & transitions for pop-in/out effects - Semi-circle layout dynamically calculated via trigonometry (`generateSemiCircle`) - Fade-in/out handled with `Fade.jsx`

5. Modules / Features

1. **Main Circle:** Interactive central circle representing "Game-Theory & Video-Game"

2. **Left/Right Main Circles:** Two categories – Game Theory (left) and Video Game (right)
3. **Sub-Circles:** Semi-circular arrangement of subtypes, hoverable and clickable
4. **Detail Popups:** Displays video, image, and description for each sub-circle
5. **Background Videos:** Videos change based on user interactions with main or sub-circles
6. **Custom VideoController:** Handles playback, muting, and clearing videos globally
7. **Responsive Design:** Works on multiple screen sizes with dynamic positioning

6. Implementation Details

- **Dynamic Circle Generation:** Uses `generateSemiCircle()` to calculate positions based on circle radius and number of items
- **Video Handling:** `VideoController.js` ensures only one video with sound plays at a time
- **Interactive Animations:** CSS transitions for hover, pop-in, and fade effects
- **Popup Details:** Controlled via state, with `dangerouslySetInnerHTML` for formatted descriptions
- **Asset Management:** All images and videos imported as modules for easy maintenance

7. Screenshots / Demo

(Add screenshots of main circle, expanded sub-circles, and popups here)

8. Conclusion / Future Scope

This project successfully creates an **interactive, visually engaging, and educational infographic**.

Future Enhancements: - Fully **responsive design** for mobile and tablet - Adding **dynamic statistics charts** for each game subtype - **Audio effects** for interactions - Integration with **real-time data APIs** for game statistics