1. **Five Recent and Relevant Sources.**

[**https://ieeexplore.ieee.org/abstract/document/9917383**](https://ieeexplore.ieee.org/abstract/document/9917383)

1. **Literature Map.**
2. **Literature Review.**

***Paper 1:*** The Role of AI in Game Development and Player Experience

* **Research Aim**

To explore how AI enhances player experience and game design through dynamic difficulty adjustment, procedural content generation, and adaptive NPCs.

* **Dataset**

The study is a literature review; it does not use empirical datasets but synthesizes findings from 30 peer-reviewed sources.

* **Algorithm**

Surveys use AI techniques including machine learning, neural networks, GANs, DDA, and emotional AI in modern AAA games.

* **Evaluation**

Analyzes how these systems were implemented in games like The Last of Us Part II and Red Dead Redemption 2. Highlights game-specific case studies and qualitative impacts.

* **Limitations**

Does not include quantitative benchmarks or comparative evaluations. Limited to descriptive analysis.

* **Recommendations**

Encourages research into personalized AI systems that adapt to player psychology and deeper integration of AI in storytelling.

***Paper 2:*** A Systematic Review of Coevolution in Real-Time Strategy Games

* **Research Aim**

To systematically review the use of coevolutionary algorithms in RTS games, analyzing their purposes, implementations, challenges, and emerging trends across three developmental stages

* **Dataset**

This is a systematic review, so no empirical datasets were used. However, 53 relevant publications were analyzed using NVivo for qualitative synthesis.

* **Algorithm**

Focuses on coevolutionary algorithms such as Genetic Algorithms (GA), Genetic Programming (GP), and hybrid models. Discusses Hall-of-Fame (HoF), Layered Pareto Coevolution Archive (LAPCA), influence maps, and simulation-based agent controllers.

* **Evaluation**

Synthesizes findings from literature using thematic analysis. Evaluates coevolution purposes (NPCs, game strategies, content), agent controllers, evolutionary memory, and coordination vs cooperation.

* **Limitations**

Performance comparison across systems was not feasible due to lack of code availability, varying implementation environments, and absence of unified benchmarks.

* **Recommendations**

Suggests exploring multi-objective coevolution, improving convergence stability, better memory handling, evolving content alongside agents, and enhancing agent coordination. Emphasizes the need for more robust systems and shared testing environments.

***Paper 3:*** A System for Orchestrating Multiple Procedurally Generated Content for Different Player Profiles

* **Research Aim**

To develop and evaluate a modular system that orchestrates the procedural generation of multiple game content types (levels, quests, enemies) tailored to different player profiles, enhancing personalization and gameplay diversity in real-time.

* **Dataset**

Empirical study using gameplay data from 83 players, who played 204 levels and completed both pretest and post-test questionnaires. Player profiles were derived from psychometric questions, and gameplay metrics were used to analyse system effectiveness.

* **Algorithm**
* **Evaluation**
* **Limitations**
* **Recommendations**

***Paper 4:*** Applications of Artificial Intelligence in Game Algorithms

* **Research Aim**

To review the historical evolution, current applications, and future prospects of artificial intelligence in game algorithms, emphasizing player interactivity and developer efficiency.

* **Dataset**

No specific dataset was used. The paper is a comprehensive review of literature and existing technologies.

* **Algorithm**

Discusses a variety of AI techniques including Finite State Machines, Behavior Trees, Decision Trees, Neural Networks, Genetic Algorithms, Reinforcement Learning (AlphaGo, OpenAI Five), and Procedural Content Generation (PCG).

* **Evaluation**

Evaluation is qualitative, based on summarizing achievements of AI systems like AlphaGo and OpenAI Five, and their implications in game design such as NPC behavior, pathfinding, and personalized gameplay.

* **Limitations**

Lacks empirical testing or data-driven validation. Primarily a theoretical review without performance metrics.

* **Recommendations**

Future work should explore the integration of real-time AI feedback systems and deeper personalization strategies with reinforcement learning and neural networks.

***Paper 5***

* **Research Aim**
* **Dataset**
* **Algorithm**
* **Evaluation**
* **Limitations**
* **Recommendations**

1. **Comparison Table.**