

# Santiago Barra

**Game Programmer | Specializing in AI, Simulations & Gameplay Mechanics**

[barrasanti@gmail.com](mailto:barrasanti@gmail.com) | +54 9 11 3004-1854 | Tigre, Argentina

[GitHub](#) | [Itch.io](#) | [LinkedIn](#)

---

## Professional Summary

Game Developer with deep expertise in AI, simulation systems, and gameplay programming using Unity C# and Unreal Engine C++. Experienced in building real-time systems involving procedural content, behavior-driven AI, and custom networking solutions. Committed to writing scalable, modular, and player-centric code. Eager to contribute to innovative and collaborative game development teams.

---

## Professional Experience

### Freelance Game Developer

*Remote | Feb 2025 – Present*

- Completed 4 client projects ranging from mobile puzzle games to AI-driven simulations using Unity and Unreal Engine.
  - Designed and implemented core gameplay mechanics, procedural content systems, and UI/UX features tailored to each project's scope.
  - Integrated third-party SDKs (e.g., Ads, Analytics, Multiplayer APIs) and optimized game performance across platforms.
  - Collaborated closely with clients and artists, delivering polished builds under tight deadlines and varying design constraints.
- 

## Game Development Projects

### Mystic Merchant – Unity | C# | [Itch.io](#)

*Business Simulation | NavMesh AI | Procedural Systems*

- Implemented AI-driven client behavior with Unity NavMesh, including emotional response systems based on pricing and inventory.
- Built a real-time pricing system simulating supply and demand, affecting NPC behavior and enhancing player strategy.
- Developed a modular inventory system with persistent save/load functionality.

- Created a fully synchronized day/night cycle with dynamic lighting, particle effects, and real-time shader transitions.
- Architected a decoupled event system using delegates, improving scalability and game logic maintainability.

#### **Highlights:**

- Multi-threaded coroutine controller for concurrent AI logic.
  - Procedural character generation with behavior variability.
  - Reliable save/load system enabling persistent gameplay state.
- 

### **AI Ecosystem Simulation – Unity | C# | [GitHub](#)**

*Genetic Algorithms | Neural Networks | ECS | Pathfinding*

- Simulated predator-prey dynamics using evolving neural networks governed by genetic algorithms.
- Integrated multithreaded FSMs (Finite State Machine) and parallel GA evaluation, enabling real-time AI decision-making.
- Developed custom A\* pathfinding integrated into an ECS (Entity-Component-System) framework for spatially adaptive navigation.
- Tuned performance for hundreds of AI agents using optimized memory management and concurrent data structures.

#### **Highlights:**

- Modular neural “brains” for movement, combat, and flocking behavior.
  - Real-time simulation with adaptive learning and pathfinding across 100+ agents.
- 

### **Multiplayer Sync & Networking System – C# | .NET | [GitHub](#)**

*UDP | Distributed Systems | Netcode*

- Built a custom multiplayer framework using UDP with prioritization, ACKs, and auto-resend features.
- Developed reflection-based synchronization to reduce bandwidth by sending only updated data fields.
- Implemented matchmaking with ELO ranking, dynamic server allocation, and sub-100ms response time optimization.

- Ensured 99.9% message reliability using sequence tracking and fault-tolerant reconnect logic.

### Highlights:

- Delta sync engine with reflection-driven field tracking.
  - Server orchestration for reliable real-time gameplay.
  - 60+ FPS performance via object pooling and lightweight caching.
- 

## Education

### Video Game Development Technician

*IMAGE Campus – Buenos Aires, Argentina | 2022 – 2024*

### Bachelor's in Computer Science

*Universidad Austral – Buenos Aires, Argentina | 2019 – 2021*

---

## Technical Skills

- Languages: C++, C#, Python, Java, Lua, GDScript
  - Engines: Unity, Unreal Engine, Godot
  - Tools: Git, Jira, ClickUp, Photoshop, Maya
  - Key Concepts: OOP, Modular Architecture, AI (FSMs, GAs, Neural Networks), ECS, Multithreading
- 

## Languages

- Spanish (Native)
  - English (Advanced)
- 

## Community & Volunteering

- Presenter at EVA Argentina (2023–2024)
- Showcased indie projects at Nucleo Video Game Expo (2023)