

CMPM 146: Game AI

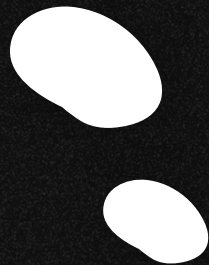


AI PET COMPANION SYSTEM

AI as a Pet



Shanaya Malik, Matthew Streib, Trinity Wu, Luan Ta



Project Overview

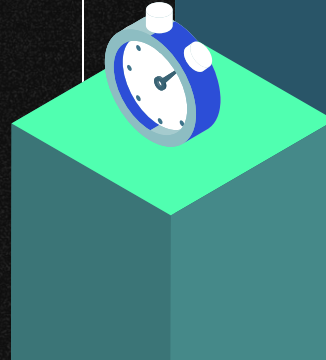
What Is This About?

- Adopt a dynamic virtual pet and have LLM-driven interactions
- The virtual pets learn and adapt their responses depending on player's tone
- Learn their behaviors and respond to their engineered needs



Problems Addressed

Current Interactive Games Offer
Preplanned Communication and
Responses



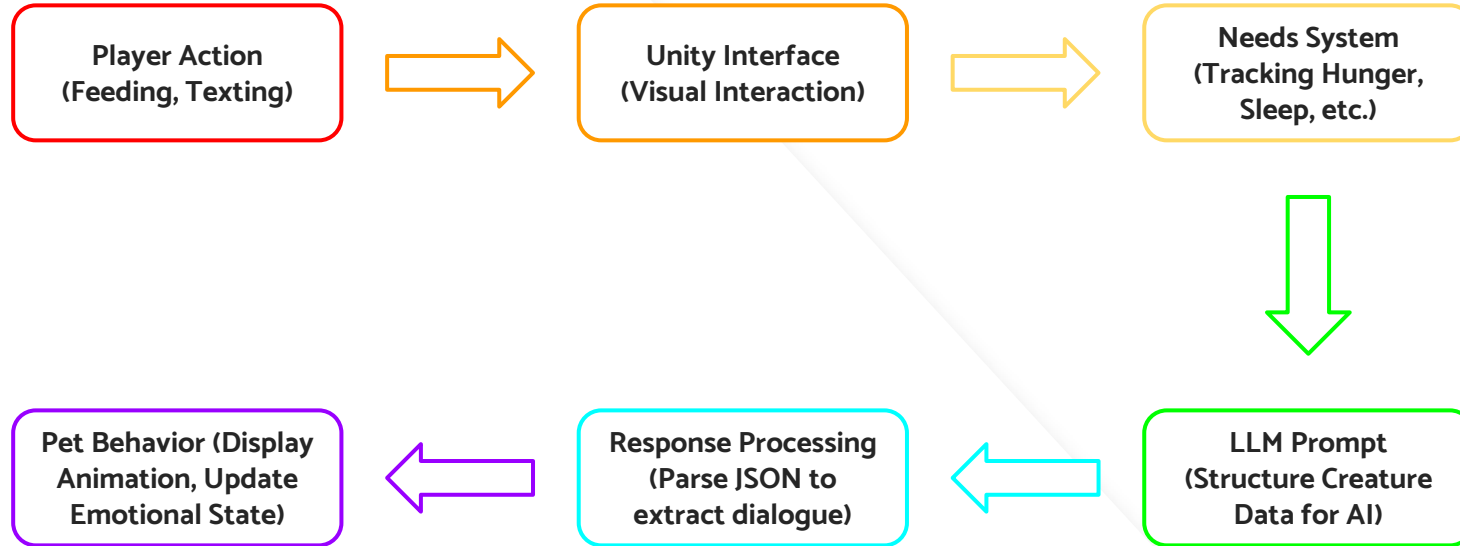
Traditional Virtual Pets Respond
Similarly, Regardless of Previous
Interactions



Most Pet Simulators Provide
Limited Emotional Connection
Due to Shallow or Predictable
Responses



Technical Solution





Demo + Fun Bit



Novelty



Traditional Virtual Pets

- Similar games include Talking Tom and The Sims Pets
 - It uses predefined animation cycles
- The interactions rely on scripted dialogue options
- Most games follow predictable response patterns

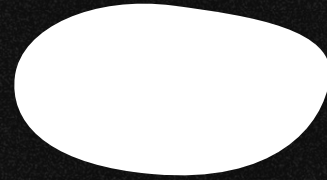


AI Pet Companion

- The AI pet evolves based on long-term player interactions
 - It uses an LLM, creating unlimited conversational opportunities
- The game maintains consistent character while the pet adapts

Benefits

- Unique Player Experience
 - Each player receives a truly personalized companion experience based on their specific care patterns and interaction style
- Enhanced Emotional Connection
 - Players develop more meaningful relationships with pets that remember interactions and evolve their personalities over time
- Educational Value
 - Realistic virtual pets can teach responsibility, empathy, and care



Thank You!

$$\iiint x^2 \, dx \, dy \, dz =$$

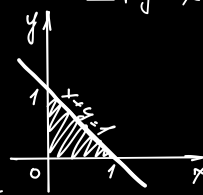
$$10(x+3y), x+y=1$$

$$y=0, z=0$$

$$10(x+3y)$$

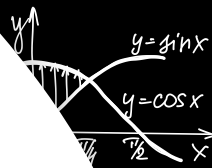
$$\int x^2 \, dz =$$

$$10(x+3y) \, dy =$$



$$\arccos y$$

$$\int_0^1 f(2x) \, dx =$$



$$x = 2y^2 + 3, x = 5$$

$$z = 1 + \sqrt{9x^2 + 4y^2}$$

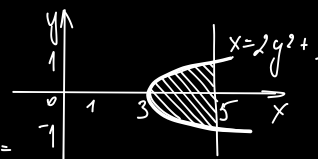
$$z = 4 + \sqrt{9x^2 + 4y^2}$$

$$V = \int_{-1}^1 dy \int_{2y^2+3}^5 \int_{1+\sqrt{9x^2+4y^2}}^{4+\sqrt{9x^2+4y^2}} dz =$$

$$= \int_{-1}^1 dy \int_{2y^2+3}^5 (4 + \sqrt{9x^2 + 4y^2} - 1 - \sqrt{9x^2 + 4y^2}) \, dx =$$

$$= 3 \int_{-1}^1 dy \int_{2y^2+3}^5 dx = 3 \int_{-1}^1 (5 - 2y^2 + 3) \, dy = 6 \int_{-1}^1 (1 - y^2) \, dy =$$

$$= 6 \left(y - \frac{1}{3} y^3 \right) \Big|_{-1}^1 = 6 \left(1 - \frac{1}{3} + 1 - \frac{1}{3} \right) = 8.$$



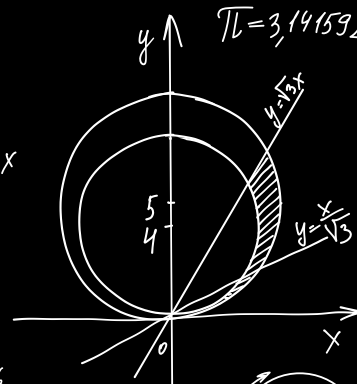
$$y^2 - 8y + x^2 = 0$$

$$y^2 - 10y + x^2 = 0$$

$$y = \frac{x}{\sqrt{3}}, y = \sqrt{3}x$$

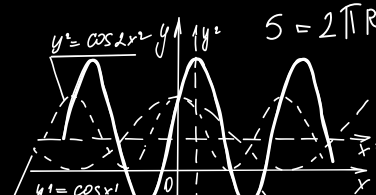
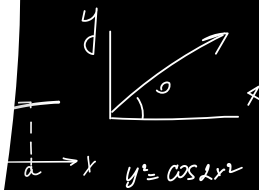
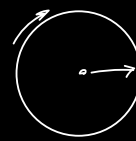
$$\int x = r \cos y$$

$$y = r \sin y$$



$$d\varphi = 18 \int_{\pi/6}^{\pi/3} \sin^2 \varphi = 9 \int_{\pi/6}^{\pi/3} (2 - \cos 2\varphi) \, d\varphi =$$

$$\int d\varphi = 9 \left(\frac{\pi}{3} - \frac{\pi}{6} - \frac{1}{2} \left(\sin \frac{2\pi}{3} - \sin \frac{\pi}{3} \right) \right) = \frac{3\pi}{2}.$$



$$5 = 2\pi R$$