Virtual Roboraptor

Computer Games Technology

Bing Li

Jascha Zapp

Mattias Nissler

Benjamin Seidler

Contents

1. The real Roboraptor toy

2. Our project goals

3. Implementation ideas

Real Roboraptor

- Movements: turning head and neck; whipping tail actions; walking

- Autonomous environmental interaction

- Mood dependent behavior: aggressive/hunting mood; nervous/cautious mood; friendly/playful mood

- Multi-sensory: touch sensors in his tail, chin and mouth; sonic sensors

- Infra-red vision system detects objects in his path, or approaching him

www.roboraptoronline.com

Real Roboraptor

Infrared Vision Sensors

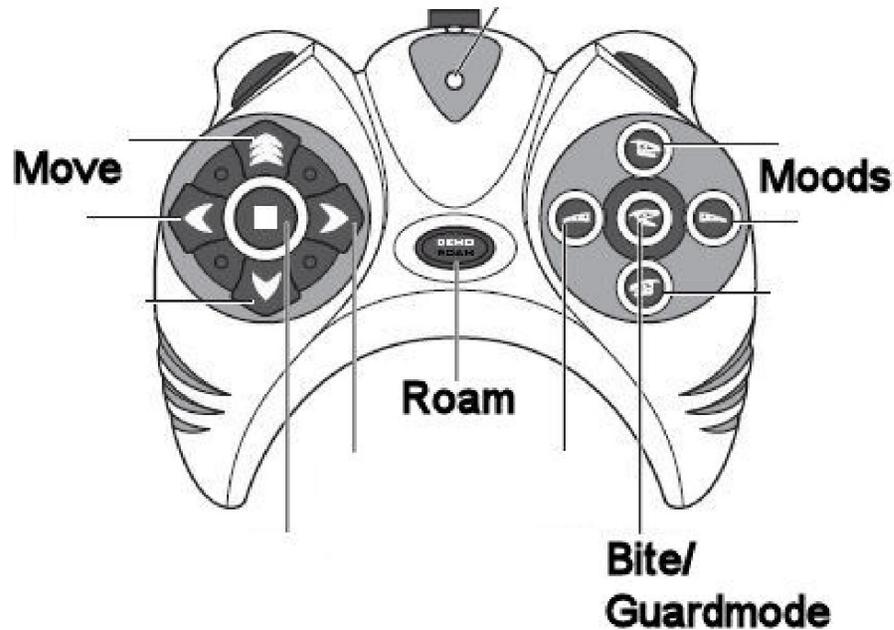Stereo Sound Sensor

Tail Touch Sensors

Mouth Touch Sensor

Chin Touch Sensor
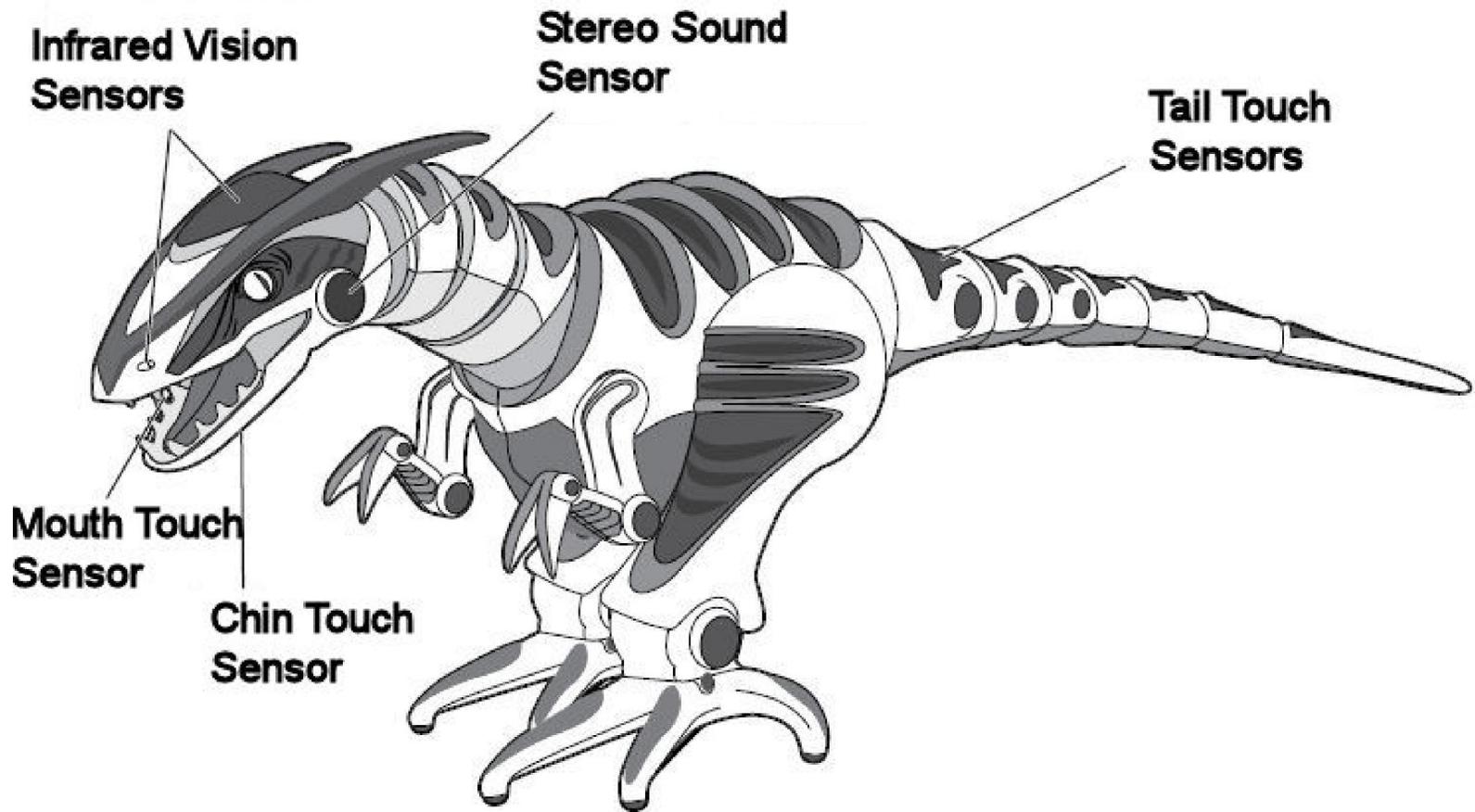
www.roboraptoronline.com

Real Roboraptor

Remote Controller

Move

Moods

Roam

Bite/
Guardmode

Laser Targeting System

Front View

Top View

www.roboraptoronline.com

Project Goals

- Attention-grabbing game that is fun to play
  - Interesting interaction
  - Exciting AI
  - "Like playing with your pet"
- Create an animated 3D-model of Roboraptor in a virtual environment
- Create an "intelligent" Roboraptor that can act on its own
- User should be able to interact with Roboraptor

Raptor model

- Create a Roboraptor-like model
  - Probably from scratch or modifying a suitable existing one
  - Add textures to the model
  - Make animations for the different actions the raptor will do

Raptor behavior

- Raptor actions we can think of
  - Walk around
  - Jump
  - Sleep
  - Bite
  - Hunt its tail
  - Manipulate objects
  - Breath fire
  - etc.

Raptor behavior

- Give the raptor moods: angry, tired, bored etc.
- The moods affect Roboraptor's actions, e.g.
  - when tired, Roboraptor isn't interested in environment and user orders, but lays down to sleep
  - when angry, Roboraptor starts biting everything it can get hold of

User interaction

- Give the user the possibility to take over control of the Roboraptor
- Let the user manipulate the virtual environment, e.g. placing and moving objects
- Maybe control the Roboraptor by speech:
  - Shouting
  - Simple orders

AI

- Roboraptor should avoid hitting objects when walking around

- Control Roboraptor's moods

- Decide which action to choose

- If we have the time, maybe build some simple learning behavior into Roboraptor:
  – allow the user to give rewards
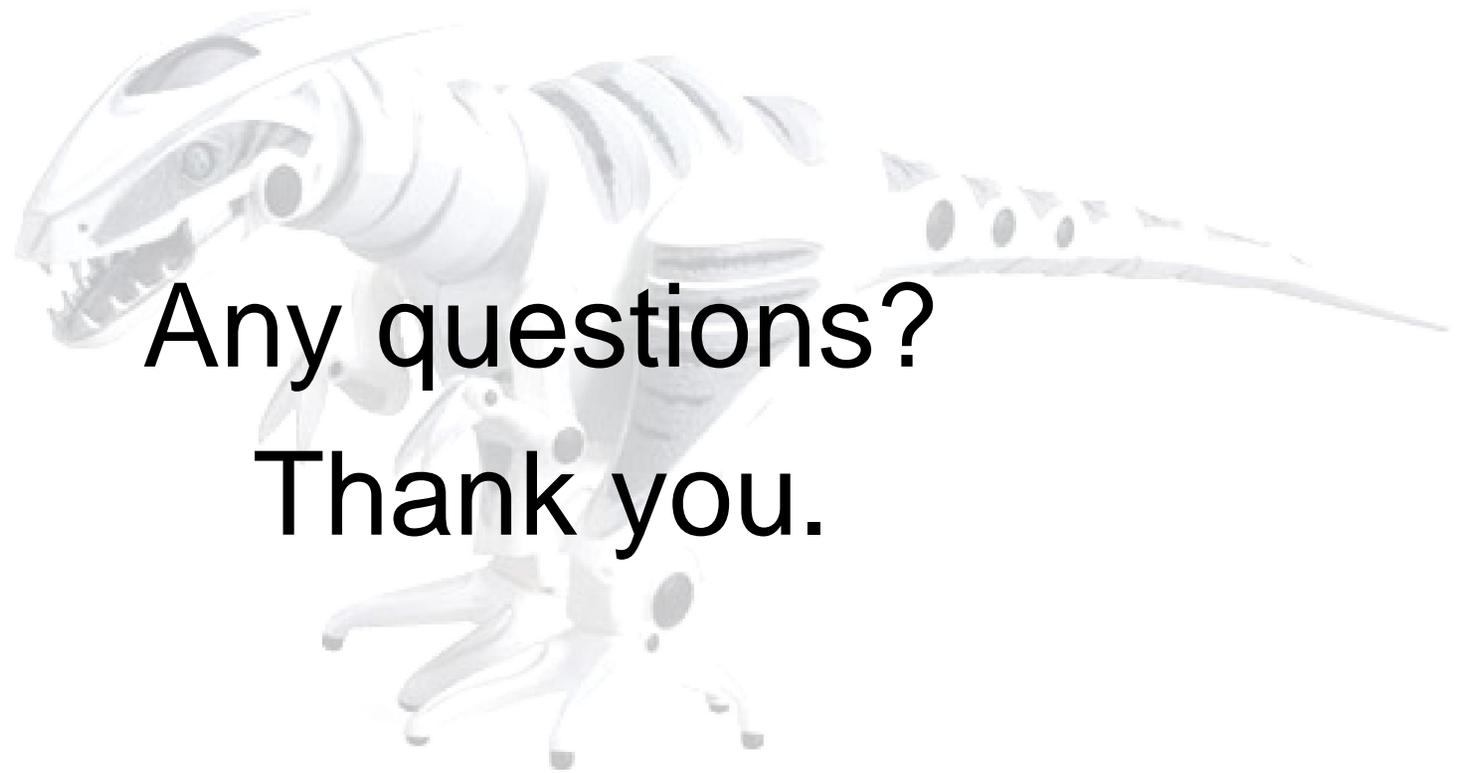 – raptor changes behavior accordingly

Implementation plan

1. Make an animated model of the virtual Roboraptor

2. Use a game engine to create the virtual environment

3. Make a user interface that enables the user to control the game

4. Implement some AI capabilities controlling Roboraptor's behavior

Software & Tools

- For modeling and animation of the Raptor, we will probably use Blender (www.blender.org)

- We plan to get most other objects (plants, raptor food etc.) from the web

- Game Engine: not decided, maybe Irrlicht (http://irrlicht.sourceforge.net/)

- Maybe we want to use some AI toolkit, but we don't know about that one yet

Any questions?
Thank you.