Humans: DI-Guy Human Simulation Software

DI-Guy SDK

DI-Guy Software Development Toolkit (SDK) is the core of the DI-Guy product line, providing realistic human characters to real-time visual simulations. DI-Guy characters move realistically, respond to simple high-level commands, and travel throughout the environment as directed. DI-Guy characters make seamless transitions from one activity to the next, moving naturally like real people. Whether you are a seasoned visualization professional or a fledgling start-up, the DI-Guy SDK will simplify and speed your task of adding realistic life-like humans to real-time 3D simulators, saving you time and money.

A Wide Range of Models and Movement Content

DI-Guy SDK includes models and behaviors for hundreds of human characters that represent people from all walks of life, including:

- Soldier characters with an extensive array of uniforms, weapons, and behaviors
- Flight deck crew (LSE, LSO, etc.)
- Policemen, firemen, first responders equipped with gas masks and other hazardous (MOPP) gear
- Civilian suspects and enemy combatants
- A wide range of civilian men, women, and children from a variety of cultural and ethnic groups
- Divers, dancers, street sweepers, people using wheelchairs, cyclists, commuters
- Animals including horses, mules, dogs, cows, kangaroos, and chickens

DI-Guy also includes hundreds of vehicles and props to support your human performances.

High-Performance, Real-Time Motion Engine

DI-Guy's advanced motion engine ensures that each model's behavior is lifelike and realistic. DI-Guy automatically creates natural-looking smooth behavior for its more than 2,000 motions and transitions, even when a character changes behavior from one action to the next.

The SDK allows you to work at a high level concentrating on telling characters where to go and what to do, while the software and content handles critical low-level details such as:

- Joint angle control and kinematics
- Smooth and realistic motion generation derived from motion capture
- Graphics hierarchy management
- Load management
- Realistic Geometry and Texture files

Because of DI-Guy's high-level control, you can concentrate on your application rather than on the time-consuming details of low-level animation.

Built to Run in Your Environment

DI-Guy SDK works out-of-the box with OpenGL, DirectX, OpenSceneGraph (OSG), and Vega Prime, as well as VT MÄK's other products. DI-Guy also works with a number of third-party rendering products including Rockwell Collins EPX, Quantum3D Mantis, FlightSafety VITAL X Lockheed Martin SEView, URS X-IG, and DiamondVisionics Genesis RTX. Interested in using DI-Guy in a simulation environment not on this list? The DI-Guy Graphics API module allows you to integrate with whatever rendering environment you choose.

FEATURES

- UNIQUE CHARACTER APPEARANCES
- MULTIPLE TEXTURES FOR HEIGHTENED REALISM
- CUSTOMIZABLE TO ANY RENDERING SOLUTION
- CUSTOMIZABLE BEHAVIORS, INCLUDING FORMATIONS, GESTURES, AIMING, GAZING, DYNAMIC STANDING
- GRAPHIC AND MOTION LEVEL-OF-DETAIL SWITCHING
- COMES LOADED WITH CONTENT

USE CASES

- GROUND AND URBAN COMBAT TRAINING
- MISSION PLANNING AND AFTER-ACTION REVIEW/DEBRIEFING
- PEACEKEEPER TRAINING
- LAW-ENFORCEMENT TRAINING
- DRIVING SIMULATORS
- URBAN VISUALIZATION
- ARCHITECTURAL WALK-THROUGHS
- DISASTER EVACUATION PLANNING

VT MÄK
A company of VT Systems

DI-Guy SDK supports DIS, HLA 1.3 and HLA 1516 networking and can present the characters it's modeling to a distributed simulation. It can also receive simulation protocols (DIS and HLA) and make the characters that other simulators are modeling perform according to the protocols. We also promote use of the DI-Guy Custom FOM and DI-Guy Custom PDUs to get higher fidelity performances in a distributed networking environment than is available standard with the HLA and DIS protocols. DI-Guy provides support for broadcasting, receiving, displaying, and controlling characters in networked simulations.

DI-Guy Scenario

DI-Guy Scenario is a powerful authoring application, as well as a flexible and customizable 3D visualization platform. DI-Guy Scenario simplifies the authoring of human performances and allows you to populate your world with real-time interactive characters that do what you want. DI-Guy Scenario lets you rapidly populate scenarios with people who move realistically, go in and out of buildings, and travel throughout the terrain.

DI-Guy Scenario is Real-Time

Everything about DI-Guy Scenario is real-time. DI-Guy Scenario lets you edit activity in the scenario and see the people act out their roles immediately, without a compilation delay. In fact, you can modify the scenario while the scenario plays. DI-Guy Scenario also supports embedded run-times, which allows you to export the scenarios you create to your own IG or third-party systems.

Comes with People

DI-Guy Scenario comes with a huge library of life-like human models. The DI-Guy Scenario characters move realistically, make natural transitions from one activity to the next, respond to high-level direction, and are generally intelligent about how they move. The DI-Guy Scenario people are completely operational and ready to go when you install the product. They go where you tell them to go, performing various tasks and actions. Each person has its own skeleton, texture-mapped geometry, behavior library, and real-time motion engine. DI-Guy Scenario seamlessly integrates the people, their behavior, and your environment, so you never have to get bogged down in the animation swamp.

FEATURES

- POINT AND CLICK CHARACTER CREATION WITHIN THE SCENARIO
- LUA SCRIPTING
- EXTENSIVE PATHING CAPABILITIES
- GESTURES, AIMING, FORMATIONS, GAZING
- COLLISION-BASED NAVIGATION
- CREATE FIRE, SMOKE, MISSILE AND DUST TRAILS, AND WEATHER VIA POWERFUL AND FLEXIBLE PARTICLE BASED EFFECTS SYSTEM
- TILED TERRAIN SUPPORT
- EXTENSIVE CAMERA CONTROL
- BUILT-IN VIDEO GENERATOR
- EXPRESSIVE FACES
- DIS/HLA NETWORKING

USE CASES

- GROUND AND URBAN COMBAT TRAINING
- MISSION PLANNING
- FLIGHT DECK TRAINING
- AIRCRAFT MARSHALLING
- PEACEKEEPER TRAINING
- LAW-ENFORCEMENT AND FIRST RESPONDER TRAINING
- SITE SECURITY PLANNING
- DRIVING SIMULATORS
- ARCHITECTURAL VISUALIZATION

Easy to Use

DI-Guy Scenario's graphical user interface makes it easy to use. Once you have loaded your terrain model into DI-Guy Scenario, you can use DI-Guy Scenario's innovative PeopleBlitz and CrowdBlitz modes to add a person to the scene with a single click-and-drag of the mouse. In a few minutes you can add a variety of people to your scenario, all performing seemingly complex tasks. In an hour you can populate a whole region.

DI-Guy AI

DI-Guy AI adds advanced Artificial Intelligence to DI-Guy Scenario to control humans and other virtual entities. DI-Guy AI lets you create autonomous, terrain-aware characters that navigate intelligently using social forces, collision avoidance, and path planning. These independent-thinking reactive agents are perfect for simulating large crowds and groupings, as well as highly intelligent and reactive individual characters.

Give Your Characters Independence

DI-Guy AI works as a layer on top of either DI-Guy Scenario or DI-Guy SDK.

If you're using DI-Guy SDK to render people in your IG, DI-Guy AI enables your IG to play performances created by others - and the characters will act out the performances appropriately.

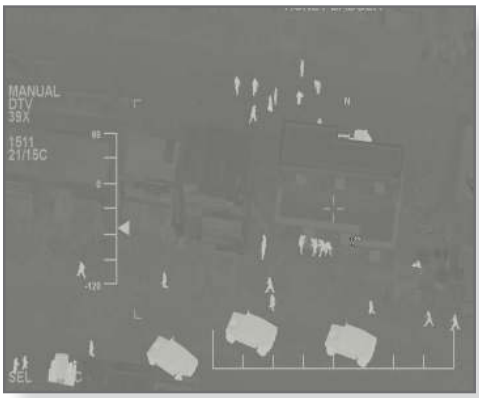
When creating performances with DI-Guy Scenario, your characters become independent; they figure out how to behave in the scenario on their own, meaning that you don't have to plan or script their actions. In addition to giving you independent characters, DI-Guy AI allows you to paint in areas of your scene to be filled with characters who move about and behave according to their independent AI state machine, written in Lua.

Base Behaviors Included with AI

DI-Guy AI includes base behaviors such as Wander, Mingle, Follow, Attack, Flee, and Travel. The characters perform collision avoidance with other people, stationary obstacles, and larger moving objects such as vehicles – and do so in a high performance manner so that thousands of characters can populate a world simulated on a single computer.

DI-Guy Lifeform Server

The Lifeform Server adds human character performances to your distributed simulation battle space. Using MÄK's DIS and HLA networking technology, add the individual human environment missing from platform level simulations.



Simulate Realistic Human Activity on a Large Scale

DI-Guy Lifeform Server can be used by itself, in conjunction with an individual man-in-the-loop trainer, or as a complement to existing SAFs that model air, land, or sea-based vehicles. Just attach DI-Guy Lifeform Server to your network and populate battlefields and cities with thousands of human characters that interact with the incoming entities from other computer generated forces or live trainees. The US Marine Corps, Air Force, and Army use the DI-Guy Lifeform Server to fill their virtual training exercises with thousands of intelligent and reactive blufor, opfor, and civilians.

FEATURES

- DI-GUY SCENARIO
- DIS/HLA NETWORKING

USE CASES

- UAV/MAV/ISR TRAINING
- CIVILIAN POPULATIONS
- FRIENDLY OR OPPOSING INFANTRY
- SUPPORT PERSONNEL
- ASYMMETRIC THREATS

DI-Guy Motion Editor

DI-Guy Motion Editor lets you add and extend motion behaviors for DI-Guy SDK and DI-Guy Scenario characters. Create motions by modifying and combining motions sourced from the entire DI-Guy library or by importing motions via the popular BVH motion file format.

Edit and Review Motion Data

The DI-Guy Motion Editor features a timeline-based editing tool for editing 3D human motion data and immediately reviewing the results. The editor features a number of blending and interpolation functions for rapid motion development. Characters are displayed in a real-time 3D window and reflect the latest motion changes from the timeline.

Integrate and Create New Motions

Using the Action Table Editor, users can integrate new motions into the DI-Guy motion engine and even create new actions. Once integrated, these new motions and actions are available throughout DI-Guy as if those motions were shipped with the product. All changes are stored in the custom directory, so custom motions can be easily propagated to other DI-Guy-enabled applications.

FEATURES

- TIMELINE-BASED VISUAL EDITOR
- WORK WITH SINGLE FRAME POSES AND MULTI-FRAME MOTIONS
- MULTI-TRACK DESIGN SUPPORTS DIFFERENT JOINT VARIABLES AS SPECIFIED BY USER
- SUPPORTS INDUSTRY-STANDARD BVH MOTION CAPTURE FORMAT IMPORT
- OUTPUT INTEGRATES EFFORTLESSLY ACROSS ENTIRE DI-GUY SOFTWARE SUITE
- EXERCISE NEW MOTIONS IN CONTEXT OF OTHER MOTIONS FOR TRANSITION MOTION DEVELOPMENT

DI-Guy Expressive Faces

DI-Guy Expressive Faces is facial animation for realistic, up-close 3D human simulation. Expressive Faces comes with many different interchangeable faces ready to personalize your DI-Guy characters. Lip synchronization, eye movement, and emotive expressions are all remarkably easy to author.

Expressive Facial Geometry

The DI-Guy Expressive Faces module enables users to enhance DI-Guy characters with expressive face geometry and therefore create a more "intimate" performance with their characters. This includes faces that show emotion, lips that sync with spoken words, and eyes that blink and gaze. DI-Guy Expressive Faces users also tend to make heavier use of some standard features of DI-Guy such as gesturing, pointing, and gazing. DI-Guy Expressive Faces is the perfect solution for simulations where communicating with other human characters is critical and characters are close to the camera.

FEATURES

- EMOTIONAL FACIAL EXPRESSIONS
- LIP SYNCHRONIZATION
- BLINKING AND GAZING

USE CASES

- INTERROGATION TRAINING FOR CRIMINAL INVESTIGATORS
- CULTURAL TRAINING
- USE-OF-FORCE TRAINING
- SPEECH RECOGNITION TRAINING
- MEDICAL EVALUATIONS

ECOSim

DI-Guy's Enhanced Company Operations Simulation (ECOSim) is a company-level training simulation that teaches leaders how best to deploy troops, UAVs, convoys, and other assets. ECOSim focuses on ease-of-use, rapid scenario generation, runtime operator control, and realistic & reactive human simulation. The fruit of a 5-year collaboration between the US Marines, JIEDDO, and DI-Guy, it is designed so that a Marine can be trained in 10 minutes to operate the system.

Rapid Scenario Generation

ECOSim embodies an intuitive authoring user interface built on top of layers of advanced DI-Guy AI. Because of this, ECOSim boasts a quick and trainer-friendly scenario creation capability so powerful that training missions can be quickly created within minutes and then modified on-the-fly during training.

Realistic and Reactive Human Simulation

ECOSim is a training system based on the following key human simulation components:

- Robust simulation of friendly force tactical behavior.
- Robust simulation of enemy "human networks". That is, modeling of a disparate group of people and specialists that work together to achieve a common purpose, such as recruitment or IED emplacement.
- Robust simulation of civilians, focusing on pattern-of-life and reactivity to ongoing events.
- Simulated video feeds, a 2D map interface with maneuverable icons, field reports, and biometrics recreate the fog of war that leaders must sift through to determine how best to deploy troops, UAVs, convoys, and other assets.

FEATURES

- CUSTOMIZABLE USER INTERFACE
- ONE-CLICK CREATION OF INDIVIDUALS, SQUADS, AND PLATOONS
- TERRAIN-AWARE FORMATION MOVEMENT
- INTELLIGENT VEHICLE CONVOYS
- INTELLIGENT HELICOPTER OPS
- DYNAMIC CHARACTER BIOMETRICS
- EXTENSIVE REPORT SYSTEM
- SENSORIZED VIDEO FEEDS
- SCALABLE AI
- EXTENDED FIREFIGHTS
- LARGE AREA TILED TERRAINS
- DIS NETWORKING

USE CASES

- IED DEFEAT MISSIONS
- ISR MISSIONS
- THREAT IDENTIFICATION AND DETECTION
- RAPID SCENARIO GENERATION FOR TRAINING MISSIONS

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