

3D CONVEYOR BELT SYSTEM

Overview

The Conveyor Belt System is a customizable Unity component that procedurally generates a 3D conveyor belt mesh, animates its UVs to simulate movement, and moves objects across its surface. It includes audio feedback, runtime control, and editor polish to support both production and prototyping workflows.

Features

- Parametric mesh generation (width, height, length, corner roundness)
- UV animation via material offset
- Optional physical movement of trigger zone objects
- Audio events for start/stop/running
- Editor customization with logo, foldouts, tooltips, and runtime buttons

Inspector Parameters

Profile Shape

- Length (Z axis) - Defines the conveyor's visual width.
- Height (Y axis) - Height of the conveyor's side profile.
- Corner Segments - How rounded the ends of the conveyor are (higher = smoother).

Extrusion

- Width (X axis) - Total length of the conveyor.
- Segments** - Number of segments along the length for mesh extrusion.

Material & UV

- Material - Material used for rendering the conveyor belt.
- UV Scale U - Tiling scale for width (side-to-side).
- UV Scale V - Tiling scale for length.
- Scroll Speed - UV scroll rate simulating motion.
- Scroll Speed Modifier - Correction factor to match UV and physical motion.
- Start Conveyor On Play - If true, conveyor begins moving when the game starts.
- Scroll Curve - Modulates scrolling speed over time.
- Texture Tiling U/World Unit - Controls how tightly the texture tiles across the width.

Audio

- Start Sound - Audio clip played on conveyor start.
- Running Sound - Looping audio clip during operation.
- Stop Sound - Audio clip played on conveyor stop.

Trigger Movement

- Move Objects In Trigger - If enabled, non-kinematic rigidbodies are moved with the belt.
- Trigger Size Offset - Expands the trigger zone size.

Events

- On Start - UnityEvent triggered when conveyor starts.
- On Stop - UnityEvent triggered when conveyor stops.

Debug

- Show Gizmos - Enables gizmo rendering in the Scene view.
- Gizmo Color - Color used to draw visual aids like motion direction and trigger bounds.

Runtime Behavior

- UV Scrolling - Material's UV offset is updated every frame to simulate belt motion.
- Physical Movement - Objects inside the trigger zone are pushed using `Rigidbody.MovePosition`.
- Audio Playback - Optional audio is played during state transitions and running state.

Gizmos

- Motion direction is drawn as a yellow arrow.
- Trigger zone is drawn in translucent orange.
- Segment points are visualized with spheres.

Requirements

- Unity 2020.3 or newer (URP or built-in pipeline).
- Material must support `BaseMap` offset for UV animation.
- AudioSource is added automatically as a child object.

Setup Instructions

1. Add `ConveyorBelt` component to any GameObject or use drop down menu: Game Object->3D Object->Conveyor Belt.
2. Assign a material to `Material`.
3. Tune width, height, length, and segments.
4. Optional: Enable trigger movement and assign audio clips.
5. Use Start/Stop buttons in the Inspector for manual control during runtime.

Support

For bugs, contact: support@faktorystudios.com

Discord: <https://discord.gg/mdZ2wCCA9f>