Movement System – Wall Running

Project Overview

The **Wall Running System** is a **fluid, high-mobility movement system** designed for Unreal Engine 5. This system enhances player movement by allowing characters to **run along walls**, maintaining momentum and agility in fast-paced gameplay.

Built using **C++** and **Unreal Engine's Enhanced Input System**, this system integrates seamlessly with existing third-person movement mechanics while providing **realistic gravity control, wall detection, and movement constraints**.

Key Features

- **Wall Running Mechanics** – Enables characters to run along vertical surfaces for a limited time.
- **Seamless Integration** – Designed to work with Unreal Engine's default character movement system.
- **Dynamic Gravity Control** – Adjusts player physics while wall running for smooth movement.
- **Enhanced Input System** – Fully compatible with UE5's new input mapping system.
- **Optimized & Extendable** – Lightweight, modular code allows for easy customization and expansion.

Project Goals

- **Enhance Player Mobility** – Provide a responsive, parkour-like movement experience.
- **Smooth & Natural Feel** – Ensure wall running blends seamlessly with traditional movement.
- **Easy Integration** – Allow developers to quickly implement and modify the system.
- **Scalability** – Support additional movement mechanics such as **wall jumping** and **advanced parkour**.

Target Audience & Use Cases

- **Game Developers** looking for a ready-to-use wall running system.
- **Level Designers** needing fast-paced, mobility-based traversal.
- **Action/Adventure & FPS Games** requiring enhanced movement mechanics.

- **VR/AR Experiences** incorporating parkour-like traversal.

Technical Specifications

- **Engine Version**: Unreal Engine 5.4.4
- **Language**: C++ (with Blueprint support)
- **Compatibility**: Third-person & first-person games
- **Dependencies**: Unreal's Character Movement System, Enhanced Input

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Client Deliverables

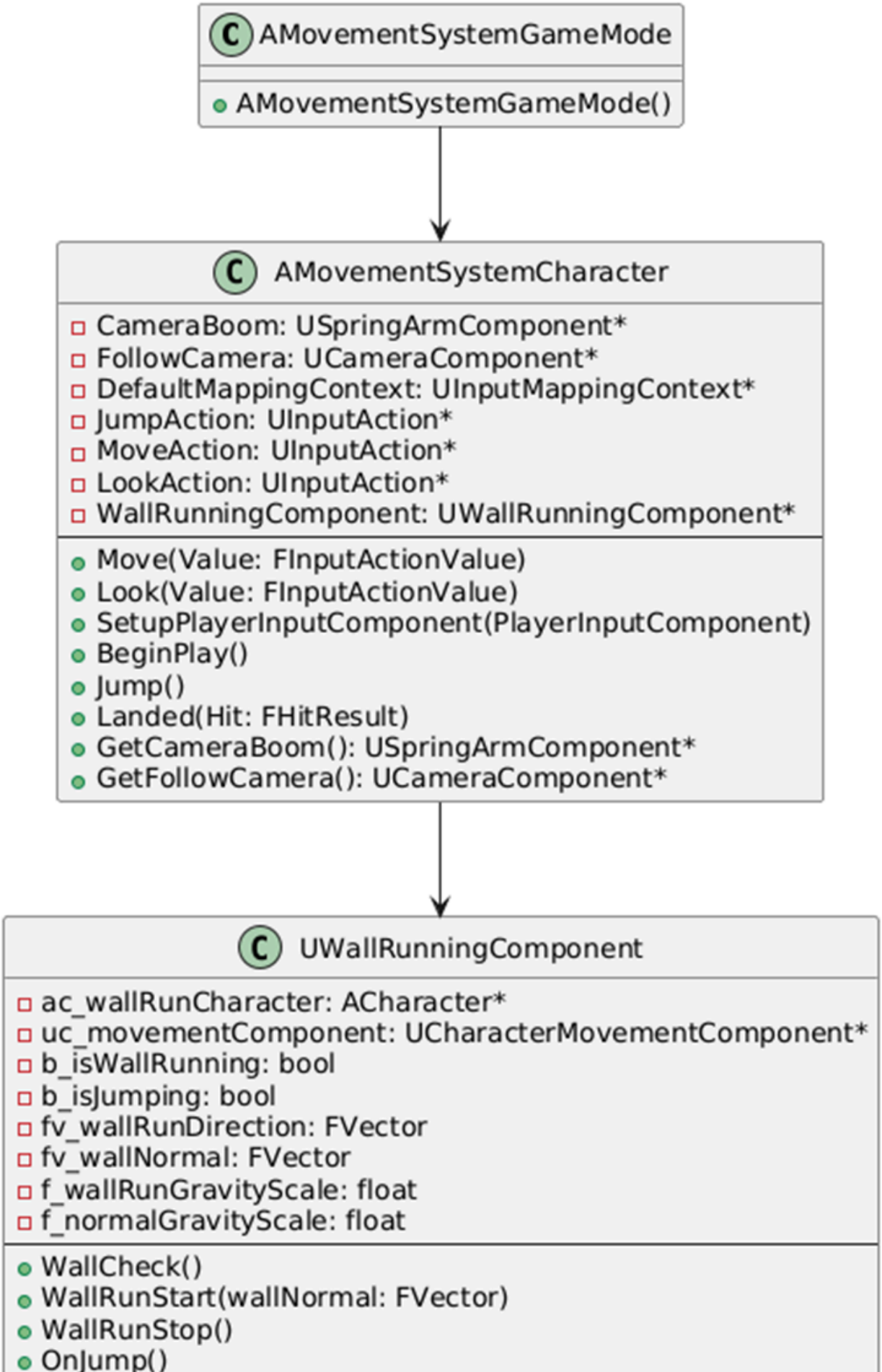
- **Fully functional Wall Running System** integrated into an Unreal Engine project.
- **C++ Source Code** with modular, well-documented classes.
- **Setup & Integration Guide** for easy implementation.
- **Demo Level** showcasing the wall running system in action.

Future Enhancements (Optional)

- **Wall Jumping & Parkour Mechanics**
- **Procedural Animation for Wall Running**
- **Camera Enhancements (Tilt & FOV Adjustments)**

Final Thoughts

The **Wall Running System** is designed to provide **fast, fluid, and intuitive movement**, making traversal more engaging and dynamic. By integrating this system, developers can **enhance player mobility and immersion** in any **action-adventure, shooter, or parkour based game**.


AMovementSystemGameMode
+ AMovementSystemGameMode()
AMovementSystemCharacter
- CameraBoom: USpringArmComponent*
- FollowCamera: UCameraComponent*
- DefaultMappingContext: UInputMappingContext*
- JumpAction: UInputAction*
- MoveAction: UInputAction*
- LookAction: UInputAction*
- WallRunningComponent: UWallRunningComponent*
+ Move(Value: FInputActionValue)
+ Look(Value: FInputActionValue)
+ SetupPlayerInputComponent(PlayerInputComponent)
+ BeginPlay()
+ Jump()
+ Landed(Hit: FHitResult)
+ GetCameraBoom(): USpringArmComponent*
+ GetFollowCamera(): UCameraComponent*
UWallRunningComponent
- ac_wallRunCharacter: ACharacter*
- uc_movementComponent: UCharacterMovementComponent*
- b_isWallRunning: bool
- b_isJumping: bool
- fv_wallRunDirection: FVector
- fv_wallNormal: FVector
- f_wallRunGravityScale: float
- f_normalGravityScale: float
+ WallCheck()
+ WallRunStart(wallNormal: FVector)
+ WallRunStop()
+ OnJump()