# RadHARSimulator V2 Instruction

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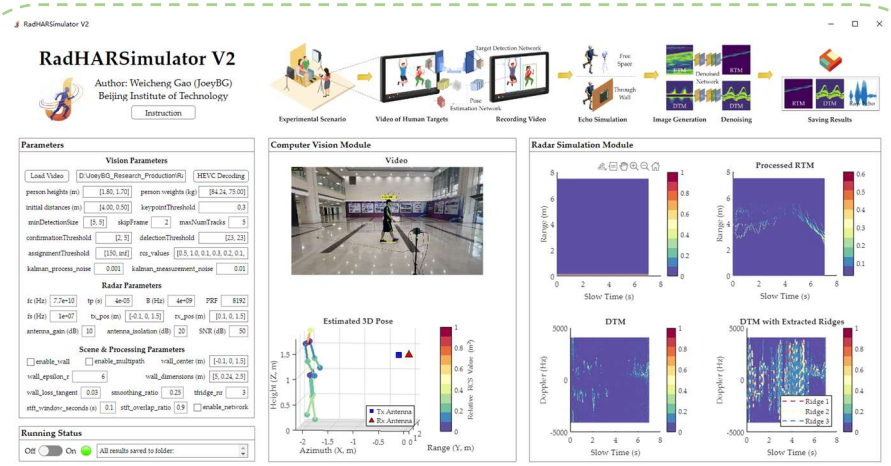
## Interface




## Information

This script presents an integrated pipeline for advanced human activity analysis from single-view video and subsequent physics-based radar signature simulation.

The process begins with computer vision techniques to extract detailed 3D human kinematics and culminates in the generation and analysis of corresponding radar data signatures.

Both computer vision and radar simulation pipelines are included:

**Computer Vision Pipeline:**

Multi-Object Detection → Multi-Object Tracking → 2D Pose Estimation → 3D Pose Reconstruction → Temporal Smoothing

**Radar Simulation Pipeline:**

Motion Interpolation → Echo Generation → Setting Propagation Scenarios (Free-Space/Through-the-Wall) → Data Product Generation

## Input

All parameters can be modified in the "Parameters" panel. Hovering the mouse over the parameter box will display a tooltip.

The following files and parameters are needed for input:

1. A video file (MP4 file, and **cannot be HEVC-coded**).
2. A 3D pose library file (Already stored inside the software).
3. User-defined parameters within the script, including person biometrics, detector thresholds, and radar/wall/processing configurations.
4. Neural network models (Already stored inside the software).

## Output

1. Real-time 2D visualization of tracking and pose estimation.
2. Real-time 3D visualization of estimated human pose.
3. Raw radar echo matrix with parameter settings.
4. Original/Processed range-time maps (RTMs), Doppler-time maps (DTM).