

# Project I-Scan

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Open Source 3D Scanner

# The Concept

- Modular, adaptable structure with movable and stationary modules
- Movable modules traverse the Z-axis, reorienting sensors to converge on dynamic center points
- Stepper and servo motors coordinate linear and angular positioning, managed via REST API
- Mathematical logic ensures optimal sensor focus and perspective at any position
- Fixed modules can also dynamically target new center points for flexible scan paths

# Goals & Advantages

## Primary Goal:

- Movable modules generate more perspectives than fixed arrays, eliminating blind spots and enabling gapless digitization of complex, non-convex geometries
  - Overcomes limitations of static camera setups (e.g., cavities, undercuts, reentrant angles)

# Goals & Advantages

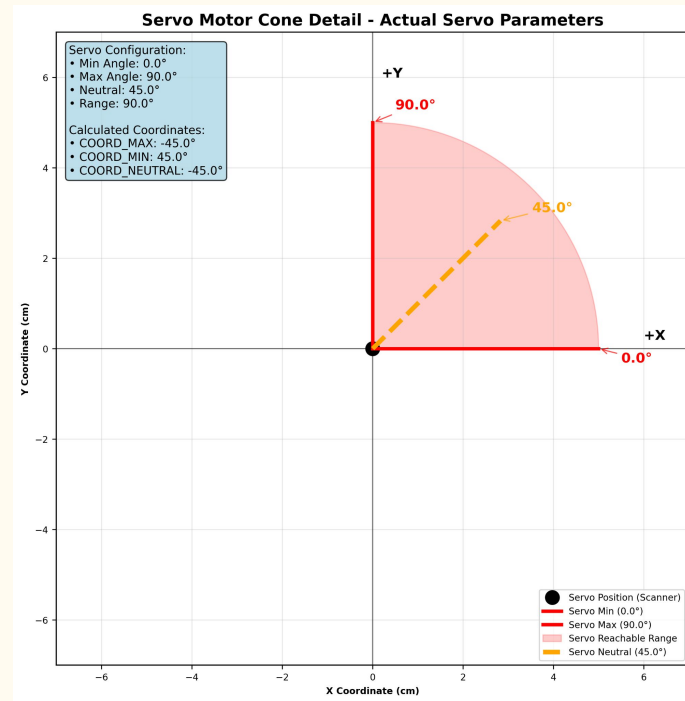
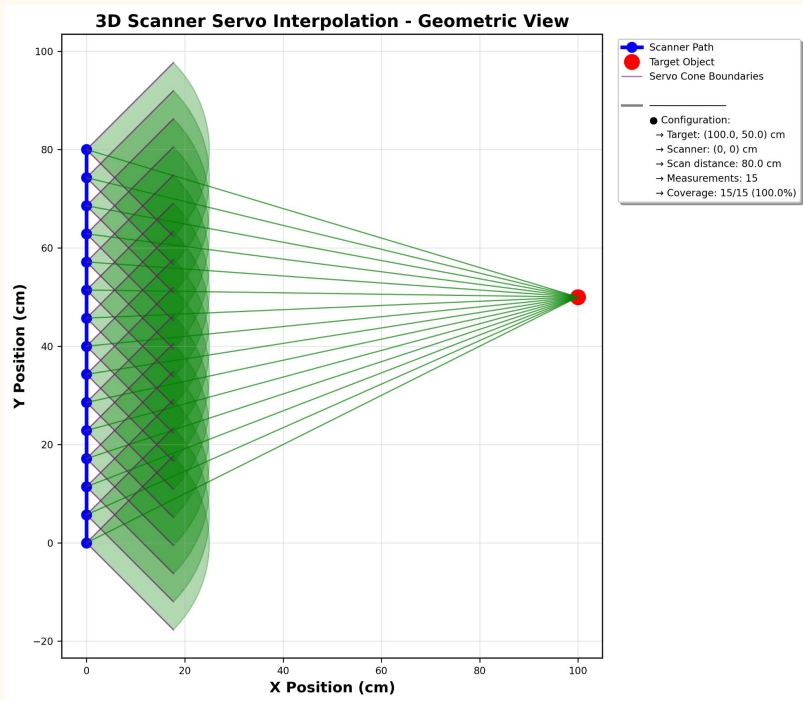
## Secondary Goal:

- Modular architecture allows easy integration of diverse sensors (e.g., cameras, LiDAR, ToF) and supports advanced techniques like structured light scanning

# Geometric Angle Calculation

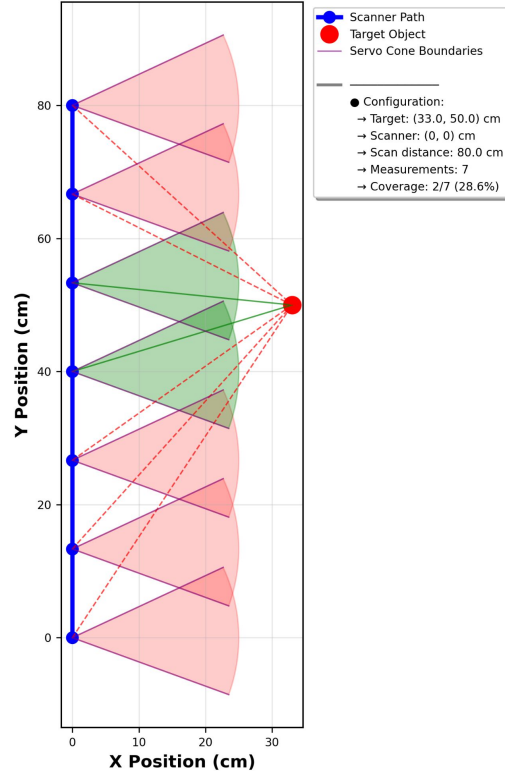
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# Servo Interpolation with Physical Correction

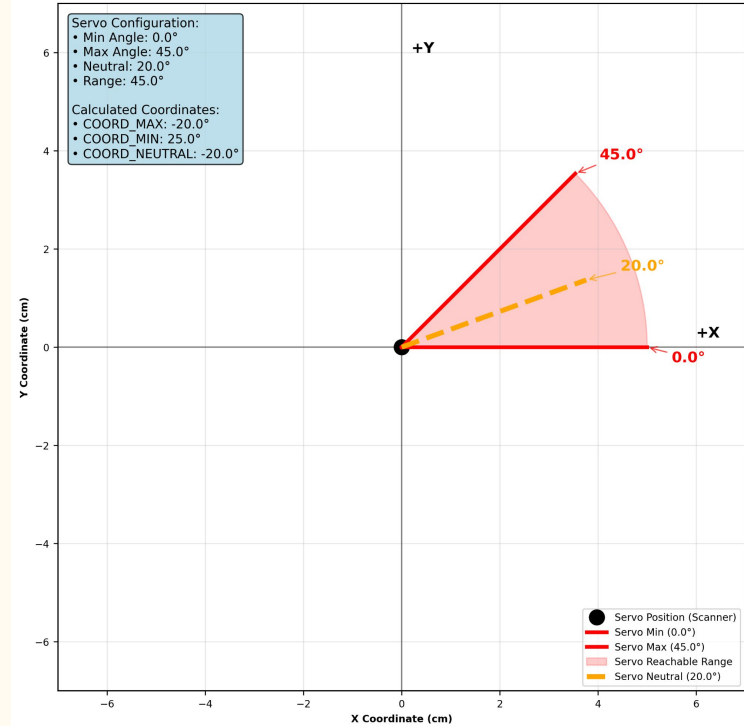


# Other Configuration

3D Scanner Servo Interpolation - Geometric View



Servo Motor Cone Detail - Actual Servo Parameters



# Servo Interpolation with Physical Correction

show in Program

- math calculation
- csv generation
- camera Json Config



# Practical Benefits

1. **Known Cam Pos :** Each camera's spatial vector is precisely known, allowing for defined scan areas and extracting all possible perspectives.
2. **Easy Configuration :** Scan settings, camera configurations, and workflow steps are easily accessible via JSON or CSV files.
3. **Faster Processing :** Significantly accelerates Meshroom processing by largely skipping camera position determination.

# Meshroom

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