

3D Foot Scanning System for Custom Footwear

Custom Hardware Design

Multi-Camera Imaging

3D Modeling Software

Manufacturing Integration

CLIENT

A leading leather research institute serving the orthopedic healthcare footwear market.

THE PROBLEM

Custom orthopedic footwear starts with an accurate model of the patient's foot, and the client's existing process for getting that model was manual measurement — slower than it needed to be, and only as precise as the person doing the measuring. They wanted to replace that with a scanning process that captured the foot's actual shape directly and fed straight into the manufacturing equipment that produces the footwear mould, without a manual modelling step in between.

WHAT WE BUILT

Capturing a foot's full shape needed more than one camera angle, so we built a hardware unit with multiple cameras positioned around the foot to capture images from several angles at the same time — along with the lighting and camera control electronics needed to keep image quality consistent across all of them, since inconsistent lighting between angles would have made the 3D reconstruction unreliable. The captured images feed into a PC application that builds a 3D model from them automatically. From there, the model can be refined and customized for the specific footwear design — this isn't just a passive scan, it's a working model the design team can adjust. Finally, that refined model connects directly to the client's manufacturing equipment to produce the physical mould, closing the loop from scan to physical product.

WHAT IT DOES

- ✓ Captures images of a foot from multiple angles simultaneously using a purpose-built multi-camera hardware unit
- ✓ Controls illumination and image capture across all cameras from connected software, keeping image quality consistent for accurate 3D reconstruction
- ✓ Automatically processes the captured multi-angle images into a 3D model of the foot
- ✓ Allows the 3D model to be refined and customized for the specific footwear design before manufacturing
- ✓ Connects directly to manufacturing equipment to produce a physical mould from the finished model — no manual modelling step in between

OUTCOME

The client replaced manual foot measurement with a scan-to-mould process — faster, more precise, and removing a step that previously depended entirely on an individual technician's measurements.