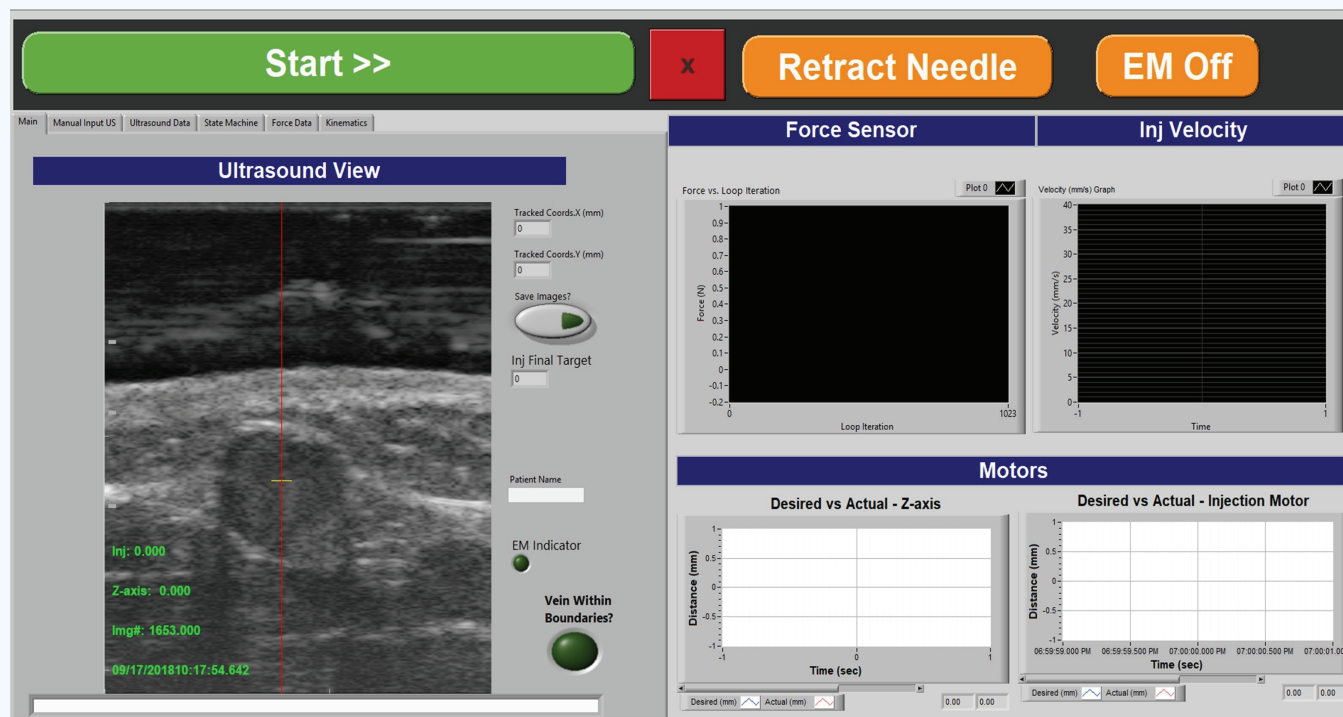**SUPPLEMENTARY INFORMATION**

Supplementary Figure 1 Graphical user interface (GUI) of the hand-held venipuncture device software. The major displays of the GUI are the ultrasound image stream, force sensor, injection motor velocity, and desired versus actual position for both *Z*-axis and injection motors. The red line in the ultrasound image is the needle trajectory; this is where the needle will intersect the ultrasound imaging plane. The user is tasked with manually placing the device such that the imaged vessel (dark ellipse) is centered with the needle trajectory line.

Supplementary Table 1 Inclusion and exclusion criteria for participation in this human study.

Inclusion criteria	Exclusion criteria
18 years of age and older	Excluded if participant exhibits the presence of a: hematoma, rashes, gauze dressings, casts, edema, tubes, open sores or wounds, withered arms or limbs, missing, damaged, or occluded veins, allergies to cleansing reagents, burned or scarred tissue, an existing shunt or IV access, or evidence of infection on either arm.
Able to understand English	Have received chemotherapy within the last 4 weeks.
Willing to sign consent	Suffer from hemophilia, thrombophilia, or other blood clotting disorders.
	Be pregnant.
	History of losing consciousness during blood draws or other venipuncture procedures.