This device adopts ultrasonic image guided by the microcontroller, to achieve automatic venous catheterization” Huo et al (2017).

Abstract:

According to clinical PICC (Peripherally Inserted Central Catheter) catheter surgery, this project introduces a new scheme for vein puncturing device and its controlling system. This device adopts ultrasonic image guided by the microcontroller, to achieve automatic venous catheterization. This kind of automatic vein puncture device adopts double stepping motors and screws as its transmission. One motor drives the needle and the hose to puncture into vein through skin. The other one drives the hose to specified location, then triggers withdrawal button and then the needle withdraws back into its cylinder. Several key points were set in the process of puncturing, the velocity period and the acceleration period can be preselected respectively. Moving distance and velocity of the needle in vein puncturing were setup automatically according to diameter and depth of the vein, achieving controlling puncturing and placing hose accurately.

Reference:

Article describes automatic venipuncture device and control system
