We present MoBat, a combined hard- and software system designed to locate and track multiple unmodified mobile devices on any regular table using passive acoustic sensing. Barely audible sound pulses are emitted from mobile devices, picked up by four microphones in the corners of a table and processed in a low-latency pipeline to extract position data. In contrast to other sound based tracking systems, MoBat is capable of continuously tracking multiple devices. Our system determines the position of the emitters 20 times per second. It has a maximum standard deviation of 2.2 cm and an average position error of 3.48 cm. It is therefore on par with similar tracking systems. Furthermore, MoBat is capable of tracking multiple devices simultaneously with comparable performance. The actual number of trackable devices is limited by the frequency response of the hardware. The position variance introduced by the continuous tracking approach is shown in the Figure on the right-hand side. We consider MoBat as a low-budget system suitable for medium precision applications on flat surfaces.

![Diagram](image.png)