

ZIUZ MEDICAL: PUTTING PATIENT SAFETY FIRST

Organization Description: ZiuZ is a visual intelligence specialist developing solutions for business and society. Healthcare is continuously improving and developing. The aim is to establish a correct diagnosis quickly so that a treatment plan can be prepared in the shortest possible time. However, it is sometimes difficult for doctors to distinguish between different illnesses and disorders because the symptoms can often be very similar or because it is difficult to distinguish between images of benign and malignant tissue using the naked eye. ZiuZ offers a solution for this. By using its knowledge of visual intelligence and experience of image-based identification, ZiuZ develops new products to help doctors analyze medical images. ZiuZ has launched several healthcare improvement projects in collaboration with various medical centers in the Netherlands.

Project Description:

Automatic dose dispensing and automated machines have been recommended as one potential means of improving efficiency and patient safety, and they are now being widely used in a growing number of hospitals. These machines enhance the efficiency of medication distribution, but their capacity to reduce medication errors is controversial and includes a variety of factors that must be considered when determining their success or failure.



ZiuZ Medical wanted to improve upon the existing automated medication dispensers by increasing both the speed and the accuracy of the procedure. They wanted to create a machine that could accurately match a prescription order to the pill or pills required, verify those exact medications were contained within a sealed packet, and then ultimately matched to the exact patient. All of this needed to take place in a matter of seconds.

ZiuZ began looking for partners with the experience and expertise who could lend their knowledge and skill to helping solve the issues.

Implementation Approach: The most significant component ZiuZ needed for this system to work was the barcode scanning function. The first step was to find a way not only to identify each pill within every given medication pack assembled but also to find a way to compare that information with what should be located inside each package and recognizing errors. This process required including difficult-to-recognize medicines and capsules, and situations with broken pills or crumbs.

The ZiuZ intelligent system started with a detailed photograph of the transparent side of each bag to show the contents of the pouch, but it needed the ability to reliably scan and decode the 1D and 2D barcodes printed on the reverse side of each pack containing the details of which medications should be found inside. Without this ability, their technology would not be able to perform the verification/comparison to deliver a match or error result. The need to find an enterprise-grade, high-performing scanning solution proved a challenge – until they discovered Code’s CortexDecoder.

In healthcare, as in other industries, time is a valuable resource. However, unique to healthcare, life and death decisions are made in seconds. The right scanning solution would make checking packs of medication fast and accurate while reinforcing a superior product reputation. ZiuZ turned to CortexDecoder barcode scanning software. Integrating CortexDecoder into the med-pack checking device delivered a scanning experience that exceeded all of their expectations.

Before finding CortexDecoder, ZiuZ Medical used a decoder that had an error rate of .05%. This meant 1 in every 200 barcodes was misread and the wrong medication could slip by or make its way to the wrong patient. ZiuZ found this unacceptable and began searching for a decoding algorithm that could keep up. The decoding software that ZiuZ needed had to deliver on three essential things:

- The error read rate needed to be lower
- It needed to be able to read 2D barcodes moving at a speed of about 6 inches per second
- It had to flawlessly decode from the reflective surface of the shiny, thin foil packs that tended to wrinkle easily

ZiuZ tested several decoding platforms, finding issues with each along the way. One platform’s business model didn’t match that of ZiuZ Medical with a licensing structure that was too complex. And others simply didn’t perform as well as they needed, falling short on several items. Fortunately, those failures led to ZiuZ discovering the power and versatility of Code’s CortexDecoder. After hearing about Code and arranging for a free test of CortexDecoder, they knew they had discovered the decoding solution they had been searching for.

Outcomes: In all accounts, the performance given by CortexDecoder exceeded their expectations. The error rate experienced with the previous decoder was nearly eliminated. CortexDecoder was able to scan thousands of barcodes before even one could be identified as unread (if they found any at all).

The 2D barcodes that print on the back of the medication packets hold the information about which pills and how many are supposed to be in every pack, and that information must match the photograph that the machine takes of the transparent side of the bag. These dispensing machines only have one chance to read each barcode that zooms by. CortexDecoder reads these barcodes with almost zero-miss reliability, allowing the verification process to happen with both speed and accuracy. ZiuZ Medical found that by integrating CortexDecoder into their system, their machines became more efficient and helped them move closer to improving patient safety worldwide.

Challenges and Pitfalls to Avoid: The most significant challenge was identifying a barcode scanning engine and the necessary software that could meet the demands of ZiuZ' design. Speed and accuracy were paramount. The biggest pitfall was settling for a scanning solution that couldn't perform at the level necessary. Errors in the system could equal detrimental results for patients, and that was something that ZiuZ found intolerable.

Conducting thorough research and testing the barcode scanning solutions at full speed with the incumbent challenges was the only way to identify the best option. ZiuZ was never willing to settle for anything less than the very best: too many lives depended on their success.

Lessons Learned/Advice to Share with Others: Among the lessons learned through this process, the most important was never to compromise. When the risks involve the health and wellbeing of patients, nothing less than the very best is acceptable. Delays in production are worthwhile if it means lives are not being jeopardized. Do the necessary research, keep looking for the best, and never settle for anything less than the ultimate. Schedules can be adjusted, sales can be made up, but lives lost due to errors can never be regained.