Automatic Basketball Return Chute that uses Color Tracking to Rebound the Ball to the Player as they Move around the Court

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Even with all the basketball return chutes on the market, basketball players–including my sister–have no options when it comes to an affordable and reliable basketball return chute. After hearing my sister complain of the problems with current basketball return devices, we set out to create a return chute that would detect a person on the court, rotate to face them, and return the ball right into their hands. Over the past year, we designed, tested and fine tuned our return chute. The mechanical side of the project consists of a rotating rim (or swivel rim) which is suspended below the basketball rim. The swivel rim is driven by stepper motors attached to a metal shield surrounding the front of the basketball rim. Attached to the bottom of the swivel rim is a modified Spaulding Basketball Return to return the ball. Next, we designed the tracking system which, after determining the sensor to use, turned out to be simpler than we expected. Our system uses a webcam mounted on the bottom of the return chute to detect the color red (on a vest worn by the player). A computer then determines if the red vest is to the left or right of the center and turns the chute accordingly. By the end of our testing, our project met our criteria of being durable, relatively affordable, and easy to use. With our basketball return chute, players can say goodbye to the days of wasted time spent chasing after rogue basketballs.

Awards Won:

Fourth Award of $500