A robot that can juggle five balls (w/ video)

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(PhysOrg.com) -- You can add another check to the column of things that a robot can do that an average human can't. In this case the column we are getting beat out on is juggling. Students in the Department of Control Engineering at Prague's Czech Technical University have created a robot that can juggle up to five balls at once, a feat that many human jugglers have problems with mastering.

The system creates balance by pairing the arms paired with and interesting system for ball management. Three linear motors are used, one is attached to each arm, to power the arms that slide up and down on vertical tracks, and the last one is used for a central collection unit. The collection unit is able to collect any balls that fall and send them back into the juggling cascade. Each arm is also equipped with circular grippers that move horizontally.

Arms, of course, are not all that you need in order to juggle. The system uses a high-speed camera in order to track the paths of the balls, though the majority of the actual calculations come not from the view, but from a feedback loop with data built into the motors. This means that the system only has to make minor changes on the fly, which significantly speeds the process.

Juggling robots are more than just cool. They are able to demonstrate the capability of robots to track and control items that are going at a high speed. The robot is already learning to work more efficiently, it originally began with only three balls and the research team was able to work its way up to five balls at the same time.

More information: dce.fel.cvut.cz/juggler/