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Innovative automated robotic device for faster blood testing

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The research team created a device that includes an image-guided robot for drawing blood from veins, a sample-handling module and a centrifuge-based blood analyser



Researchers from Rutgers University, New Brunswick, US have created an automated blood drawing and testing device that provides rapid results, potentially improving the workflow in hospitals and other health-related institutions to allow health care practitioners to spend more time treating patients.

Diagnostic blood testing is the most commonly performed clinical procedure in the world, and it influences most of the medical decisions made in hospitals and laboratories.

However, the success rate of manually drawing blood samples depends on clinicians' skill and patient physiology, and nearly all test results come from centralised labs that handle large numbers of samples and use labour-intensive analytical techniques.

The research team created a device that includes an image-guided robot for drawing blood from veins, a sample-handling module and a centrifuge-based blood analyser.

Their device provides highly accurate results from a white blood cell test, using a blood-like fluid spiked with fluorescent microbeads. The testing used artificial arms with plastic tubes that served as blood vessels.

The device could provide rapid test results at bedsides or in ambulances, emergency rooms, clinics and doctors' offices.

"With our relatively simple chip design and analysis techniques, the device can be extended to incorporate a broader panel of tests in the future," said Max Balter, who led the study.