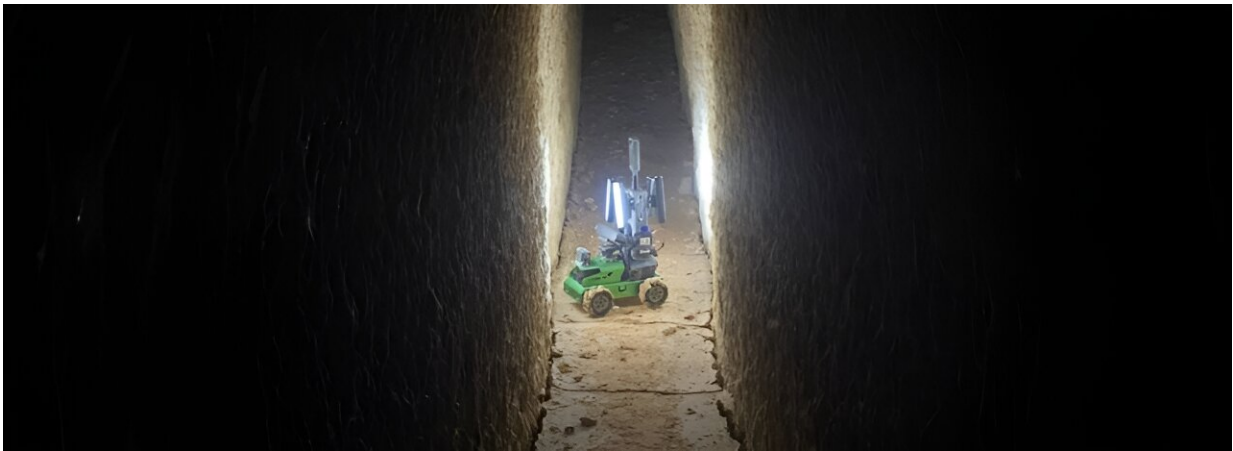


Investigating ancient irrigation tunnels with a remote controlled car

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Credit: Leiden University

In ancient times, the desert in the Udhruh region in Jordan was transformed into a green oasis. An intricate network of underground water channels was part of an ancient system of water management, storing water and preventing loss through evaporation.

Archaeologist Mark Driessen has found a new way to investigate and map these channels: a remote controlled car.

Deep under the desert

In 2022 the team started to excavate a 20 meter deep water channel (qanat) shaft, only one of more than 200 shafts that are part of this specific system. Mark Driessen descended into the shaft, entering the horizontal water channels below.

"Here I already saw signs that indicate the way of construction," he explains. "We want to map this out further by meticulously 3D scanning the shaft and corridors, but after about 30m of walking on both sides, at the end of the horizontal channel, came a closed-off vertical shaft, blocking further access."

However, on one side the barricade was incomplete. "I could partly look further into the next segment of the horizontal water [channel](#). However, digging through the debris in the shaft is not without risk for my own safety. Therefore I decided to push our new robot car that we affectionately named Qnat-E through the gap." In August 2023, the robot car saw its first action.



Descending through the shaft. Credit: Leiden University



Mark Driessen testing the remote car in the Schervenschaal. Credit: Leiden University

Robot at work

The remote controlled car was outfitted with lights, a depth camera, a 360° camera and a camera for 3D photogrammetry, after which it was hoisted down the shaft. There it started its exploration of the qanat system. The operation drew a lot of attention. The [story](#) was covered by the Jordan media and the well-known Jordan TV presenter Diala Dabbas visited the project.

Now the first images and videos are coming in, hopefully leading to new insights in regards to the architecture and use of the ancient qanat system

that once reshaped the desert of the Udhruh region into a green oasis.

Provided by Leiden University

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