

PROJECT CODE: 311393/AAU

**CALL: UBIQUITOUS DATA AND SERVICES –
RESEARCHER PROJECT/COLLABORATIVE PROJECT,
IKT-PLUSS PROGRAM (THE NORWEGIAN RESEARCH
COUNCIL)**

PERIOD: 36 MONTHS

BUDGET: 1.594.384,18€

**PRINCIPAL INVESTIGATOR: JOAQUÍN OLIVARES
BUENO**

Planning for the surgical extraction of liver cancer is a complex process. Surgeons distinguish the healthy part of the liver from the part that is to be removed, without there being consensus on the ideal way to go about this. The Oslo University Hospital in Norway has been a pioneer for 25 years in this type of surgery, and it is there where the ALIVE project came about, in which the University of Córdoba participates through a team coordinated by Professor Joaquín Olivares Bueno.

The ALIVE European project seeks to improve liver cancer surgery practices by researching new methods for surgical planning through geometric modeling using Artificial Intelligence, computer visualization techniques, and the two-dimensional viewing of liver operations. Thanks to them, the exact sections can be pinpointed to extract the tumor from the liver with the greatest possible accuracy.

ALIVE works on the calculations to yield reconstructions of the operation on the tumor to be extracted in real time



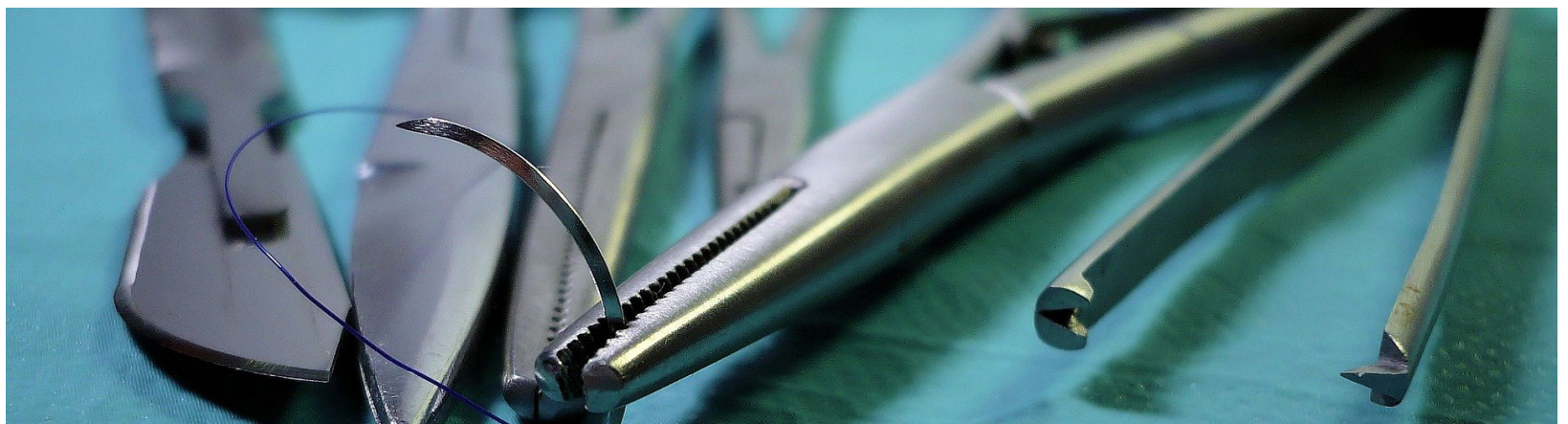
so that this is done in the most precise way possible. The goal is to be able to develop plans that guide surgeons in the operation, telling them where they have to cut and make the incision with the least possible damage and in the fastest way.

**ALIVE pursues the optimization
of computer-assisted tools that
allow surgeons to fine-tune liver
cancer operation plans**

The UCO research group explains that calculating the entire process requires a lot of time. Thus, it is necessary to expedite it so it is done in real time during

surgery. Along this line, they report that they have great expectations thanks to the results of the preceding project, HiPerNav, which consisted of improving registration, segmentation and image enhancement processes thanks to high-performance computing techniques. They also highlight the handling and viewing of organs through HoloLens glasses, designed by Microsoft. This technology has allowed them to virtually project the liver and study how to approach liver cancer surgery more meticulously.

For the research team at the UCO, participating in a European project has meant applying all the knowledge acquired in previous studies, strengthening professional ties with multidisciplinary research teams and prestigious international researchers, and honing their skills in a field of European development of great interest.



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