

## **Research stay at Graz University of Technology, Austria**

### **Augmented reality for underground infrastructure**

Lasse Hedegaard Hansen, PhD student at Aalborg University, has established a cooperation with Graz University of Technology, Austria, which he will visit in the summer of 2020. He will work with top scientists in augmented reality (AR), which is a virtual technology that mixes virtual content with the physical world. The purpose is to develop outdoor AR systems for construction projects, focusing on buried utilities.

With a handheld AR unit, it is easier for professionals in the field to access and grasp information about engineering objects – especially hidden infrastructure buried under roads. For instance, contractors can use AR to visualise existing utilities buried under the road surface and thereby avoid damaging utilities and other underground infrastructure. Check out this video demonstration of own-developed prototype:

[https://www.linkedin.com/posts/lasse-hedegaard-hansen-798822113\\_ar-photogrammetry-realitycapture-activity-6643437742715875328-UGEY](https://www.linkedin.com/posts/lasse-hedegaard-hansen-798822113_ar-photogrammetry-realitycapture-activity-6643437742715875328-UGEY)

For more than 20 years, Clemens Arth and his team of scientists have worked to improve AR technology and are widely recognised in academia for their accomplishments. This is a unique opportunity for establishing a cooperation with them and drawing on their expertise. For instance, the research team has developed a compact GPS unit that delivers high geographical accuracy. Stable and accurate geographical positioning remains a weakness of AR. As one of the sub-goals, it is the intention to include this unit in a jointly developed AR system. Another sub-goal is to develop new techniques for visualising utility information in the field, rendering it easier to grasp. The end goal is to improve use of AR to make it more credible and useful to professionals in the field.

Consequently, the stay will contribute to further studying how actors in the infrastructure sector can use AR in decision-making processes for reducing miscommunication and construction errors. In that way, Lasse hopes that the stay abroad will help him move towards his future goal: To promote the application of AR technology in the infrastructure sector by contributing new development and work methods designed to increase the quality of infrastructure projects.