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Handsfree documentation on-site to enhance situational awareness and the use of AI for a more cost-effective way of reporting by using speech-to-text

The „Jodapro”

The „Jodapro” project began when crime scene investigator Oddvar Moldestad in the Norwegian police found out about a voice-controlled camera used in parts of Norwegian healthcare. The camera made it possible to stream, among other things, wound treatment of patients in their own homes, to doctors sitting in their offices. In Norway, the distances can be quite large, and in this way the healthcare system saves both time and money.

Moldestad presented the idea of using this camera, made by the American (USA) manufacturer „RealWear” with Norwegian software from „Jodapro” within the police. The project was underway!

As mentioned, the camera is made by Realwear and is called the „Realwear Navigator 520”. This is a camera that in many ways works like a smartphone, in that you can install apps and enter what you think is necessary to carry out different types of crime scene work. The main use, for our part, is streaming to experts and logging as an alternative to using pen and paper at the crime scene. Then, the speech will be transcribed on the laptop afterwards.

The need for artificial intelligence to transcribe speech will, based on the workflow and methodology of forensic sections, be mainly twofold. One will be when working out at a crime scene. The second will be when working in a laboratory / examination room. It is obvious in this project to combine speech and video, as this can easily be combined digitally. By combining voice and video, the needs will expand somewhat.

At the crime scene

Video recording. Documentation during the initial review of the crime scene before tracing.

Verbal description of the crime scene. Done at the same time as video filming of the crime scene during the initial review. The verbal documentation is transcribed into text.

Further verbal notation during the crime scene investigation.

Use of the video function for contact / conversation with the lead detective, investigation team, subject specialists (blood spatter analysts, projectile trajectories specialists, forensic anthropologists, forensic medical examiners and so forth) etc.

In the laboratory

Verbal description of objects / evidence. The verbal description is then transcribed.

Benefits

The benefits of using technology to improve workflow are measurable to varying degrees. Some of the potential gains to the needs mentioned in the previous paragraph are as follows:

A video of the crime scene taken before trace protection will describe the crime scene visually and be a digital confirmation of „how it was". In the same way that the crime scene is documented with photos, 360° photos, possibly 3D laser scanning, the video will supplement all other investigations. Documentation of the crime scene with video, as well as a forensic technician's description, will be positive for legal certainty and the quality of the final investigation. Recently, there has been a focus on reopening older cases. In such cases, video can be of great use.

Transcribing verbal documentation of a crime scene will save time and ensure that objective facts are included in the final product. The time saved will naturally depend on the size and nature of the crime scene. This must be tested during exercises. Time saving is financial saving. Furthermore, a future „Temporary crime scene report", which is currently reviewed at the Norwegian National police directorate, will be significantly quicker to implement.

It is difficult to quantify the contact with others in the investigation track. By being able to consult with subject specialists who could see the crime scene directly, you will perhaps be able to save one or even more days of crime scene work. In that case, this will be a direct financial gain. In districts or cases where contact with other professional personnel will be at a national level, this can perhaps prevent several days of extra crime scene work. It will also be beneficial and allow the investigator(s) to have the opportunity to see the crime scene when forensic technicians are on site. This can mean that the tactical investigator does not have to go out to the crime scene and can mean that he/she can initiate investigative measures that are of a time-consuming nature more immediately.

Transcribing verbal documentation of objects has the same benefit as mentioned under „Benefits".

Specs:

Hardware: Realwear HMT-1.

- Qualcomm Snapdragon 662, 8 core
- 64GB internal memory, with microSD slot for up to 512GB, 4GB ram.
- 3250mAh li-ion. Interchangeable.
- 6-8 hours of battery life. Hot swop (battery can be replaced without interrupting the recording/streaming)
- 272g weight.
- IP66.

- Screen: 1280x720 px resolution, WVGA.
- 4 microphones with active noise cancellation.
- Loudspeaker with 94dB output.
- Camera:
  - 48 mpx, optically stabilized.
  - Video 1080p @ 30fps.

Used software:
Jodapro

Testing

We have done a lot of tests regarding both the streaming function and logging and transcription.

During the streaming exercises, we have contacted experts both in Norway and in several other countries, including Cyprus and Australia. The feedback is good both in terms of the quality of the streaming and usefulness for the experts.

The camera has also been used for logging both in exercises and in real cases. The results are very good. The transcription afterwards makes it possible to search for the mentioned evidence, for example „knife" or „evidence K-2" etc.

After our presentation in Budapest, a lot of people were able to try the camera. The feedback was very good, and several people want more information and testing. We hope and believe that this is a good project that will be able to help us forensic technicians in the future. Thank you for letting us showcase our project.

ENFSI-meeting in Budapest

The „Jodapro project" (Realwear/USA headset „Navigator 520", with the installed software from Jodatech/Norway) has been presented for fellow

colleagues in European police forces and parts of the forensic scientific institutes across Europe during the ENFSI work group meeting (Scene of Crime work group, with Blood Spatter analysis work group and the European meeting of forensic archaeology) in Budapest, Hungary. On Tuesday October 1st, the police superintendents Oddvar Moldestad and Kjeld H. Helland-Hansen presented the project for the whole assembly. During the rest of the meeting, the headset was tested by many participants. The response has been overwhelmingly positive. A representative from the Spanish police even called us „the sensation of the conference". Positive feedback given on the app „LinkedIn" supports this statement. Police in Switzerland, the Netherlands, Germany, and France have already asked us if we could be able to demonstrate it more extensively.

Just a few days prior to the ENFSI-meeting in Budapest, we acquired a new lens for the camera. The lens is easy to install („click on/off") and is combined with a standard lens as well, so there is no need to change back to the single lens. The lens is a thermo lens which can measure temperature with a +/- 5% accuracy up to 30 meters, according to the producers. We have not had time to test it properly yet but have done some minor testing. We will need to test it regarding temperature accuracy. We hope to use it to measure the body temperature of the deceased (as a preliminary measurement), search for hidden laptops/electronic devices with a heat signature, residual heat of used vehicles etc. The thermal cam has several modes and color chart settings.

The pictures:

Picture 1
Picture of the RealWear Navigator 520 by Kjeld H. Helland-Hansen

Picture 2
Picture of the examination of the „body" by Kjeld H. Helland-Hansen

Picture 3
Picture of crime scene investigator communicating with DNA experts by Kjeld H. Helland-Hansen. The video screen is in front of Kjeld H. Helland-Hansen's right eye.