

# Case Study



REVIERWELT

## Company Profile

REVIERWELT is a portal from hunters for hunters: REVIERWELT simplifies every-day hunting through social and innovative functions: Maintain route lists, create evaluations, reserve hides, market game, locate dogs via GPS, monitor traps online or connect game cameras online.

## Technology

 Microsoft Azure

## IoT and Machine Learning for deer, badger & co.

### Challenge

- Millions of unsorted photos from thousands of wildlife cameras
- Qualitative use of the images currently only possible with great effort
- Categorization/tagging of images manually via user
- Tests with image recognition software so far not with the desired result

### Solution

- Use of the Custom Vision AI software from the Microsoft Cognitive Services Stack
- Machine learning approach and training of the algorithm
- Continuous refinement of results through regular training and control of automatic allocation

### Benefit

- Successful identification of wildlife species with the image recognition software
- Simple usability of the image recognition software for the portal operators
- Use of image data for analysis and information
- Chargeable services for different target groups possible

More than 25 million pictures are stored on the servers of REVIERWELT. Every day, thousands of photos from wildlife cameras that are located in Germany's forests and monitor the hustle and bustle at hunting grounds and feeding stations land here. REVIERWELT is an online world for hunters; here they can network and find services that are helpful in the exercise of their profession or hobbies. For example, hunters are obliged to report every animal they shoot – in a so-called route list. As a REVIERWELT customer, hunters simply reach for their smartphone after a successful hunt and enter the necessary data. This data is collected in the portal and forwarded to the hunting authorities.

## Digitalisation of the hunting world

Alexander Vinnai, Managing Director of REVIERWELT and responsible for the strategic orientation and development of innovative software solutions for hunting and forestry, reports: "We at REVIERWELT use the digital possibilities: Whether GPS dog tracking, networked wildlife cameras or digital trap detectors, all are useful IoT features for our customers. So it only stands to reason to also take a closer look at automatic image recognition.



“ novaCapta supported us very well in choosing the right software and gave us a great introduction to Machine Learning. ”

Alexander Vinnai – Executive Director REVIERWELT

The many photos are disordered, only a few ambitious members have manually tagged or categorized photos to obtain advanced evaluations of wildlife movements in the past. Exactly this tagging should now be done by an AI-based image recognition software. Specifically, the aim is to correctly identify the different animal species based on the image patterns. After an initial test run with standard image recognition software from Microsoft's Cognitive Service Stack, the recognition rates are modest. The software, which specializes in the animals of the North American continent, can only insufficiently assign the animal species native to this region. What is missing here, is a model that is designed for the specifics of our fauna. Eric Chall, Managing Director of novaCapta, suggests training and developing this model himself with the support of the Machine Learning experts of novaCapta: "We do this ourselves – with the visual

image recognition software Custom Vision AI from Microsoft, which we train with Machine Learning".

## Convincing results with machine learning approach

The preparations for the first test are under way. In a first step, managing director Alexander Vinnai and his staff are tagging four animal species in a random selection of almost 1000 photos for the basic training model: roe deer in semi-darkness from the side, roe deer frontally very close in the morning sun, wild boar lying down at night. These assignments form the learning model for the software. Et voilà: In the subsequent test with unprocessed images, the hit rate of correct assignments is over 80 percent. That is a remarkable result. Through regular training, the hit rate becomes more and more perfect, and the software identifies roe deer, red deer, wild boar and badger better and better. Further game species will follow.

Alexander Vinnai is enthusiastic: "The image recognition software we trained delivers convincing results, which we can use for our customers and completely new target groups. Wildlife monitoring with valid figures can be

interesting as an information service for authorities as well as for nature conservation associations and individuals. The hunter learns about the automatic tagging of his pictures, when which animal was seen where, visually clearly presented in an app or in the internet portal of REVIERWELT. Environmental and nature conservation associations, authorities and research institutions could set up their project rooms, and link monitoring devices, such as wildlife cameras, to the REVIERWELT portal in order to monitor the populations of rare animal species in research projects, for example wolf monitoring. Even if the applications are not yet released for all users of REVIERWELT, they are certainly not dreams of the future. Just as Alexander Vinnai has already established IoT as an added value for the hunter's world, they will do the same for artificial intelligence.

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