Applying Artificial Intelligence to identify targets of interest as early as possible to save lives and protect resources.

OVERVIEW

Today's world is consumed with digital images. By leveraging deep learning and long-short-term memory networks to analyze sensor data to automatically assess images, the digital world is able to interact with the physical world using computer vision. Applied to everything from factories to semi-autonomous cars and drones, computer vision allows things to run more efficiently and even more safely. Arcarithm's proprietary AI computer vision technology extends the benefits of AI to safety and security applications, with the ability to autonomously detect targets of interest to protect lives and property.

TECHNICAL

Exigent® assesses and extracts high-dimensional data from digital images, thereby emulating tasks of the human visual system to transform visual images (the input of the retina) into information and data to aid in making decisions. Once trained on a target of interest, Exigent provides the user the ability to automatically identify targets in the real world.

Computer Vision is about pattern recognition. To train a computer how to understand visual data you feed it images, lots of images – thousands, millions if possible – that have been labeled. Then, you subject those images to algorithms that allow the computer to look for patterns in all the elements that relate to those labels. When it's finished, the computer will be able to use its experience if fed other unlabeled images to find the ones that are of interest to the user. Once the target of interest is identified, Exigent can send commands to a camera to track the target and continue to provide updates to the user. *(continued on reverse)*

Exigent enables the user to:

DETECT
Autonomously detect targets of interest against any background, day or night.

IDENTIFY
Instantly analyze imagery using AI algorithms to identify the target of interest.

ALERT
Automatically notify the user via text message or email showing location of target.

TRACK
Follow the target's location in real time.

TECHNICAL (CONTINUED)

Arcarithm's Exigent® Artificial Intelligence Computer Vision Solution is built around a deep convolutional neural network architecture that exploits spatially-local correlation of features by enforcing a connectivity pattern in the synapses between neurons of adjacent layers. The network is trained using Arcarithm's state-of-the-art training algorithms and regularization techniques. The training techniques include Stochastic Gradient Descent, Variable Mini-batch Size, Variable Learning Rate, Dropout and Batch Normalization.

SECURITY / OPERATION

Exigent security features include role-based login, application authentication and message encryption. Further, Exigent operates inside a docker container isolating the API from the rest of the system as an extra layer of security, while ensuring the software does not conflict with other required system dependencies.

Arcarithm provides required training on how to operate Exigent, and how to understand the output, with onsite training available. A training manual is provided with each Exigent license. Call center support is provided through Arcarithm.

SYSTEM REQUIREMENTS

CPU	Intel Core i3 or AMD Athlon 6 (or better)
Memory (RAM)	16 GB CPU RAM
Operating Systems	Debian Linux Operating System
GPU	11GB Memory at 1400 MHz CUDA compute capability 6.1 or higher

Exigent requires an electro optical/infrared sensor providing a minimum of 50 pixels on target.

PRODUCT DETAILS

Manufacturer	Arcarithm
Product Name	Exigent®
Version	2019
Manufacturer Part Number	A2019E
Product Type	Single License
Platform	Linux
Shipping Method	Digital delivery (or DVDs)

ABOUT ARCARITHM

Deep Learning and Artificial Intelligence (AI) are buzz words commonly used throughout defense and commercial markets, often without true understanding of those terms. At Arcarithm, we are defining those terms and more, with proven solutions on par with multinational tech leaders. From the big picture distinction between strong and weak (or narrow) AI, to the fine-grained focus of deep versus shallow neural networks, Arcarithm delivers a depth of understanding and operational maturity beyond the capability of most companies. Our experience with every aspect of algorithm design, training, deployment and evaluation allows Arcarithm to produce quality products quickly and effectively, with the highest levels of reliability and accessibility.

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