CASE STUDY | JUSTVISUAL

ACCELERATED SEARCH CAPABILITIES

JUST VISUAL'S SEARCH BECOMES 20x FASTER AND SMARTER USING NVIDIA TECHNOLOGY.

NVIDIA

JUSTVISUAL'S VISUAL SEARCH BECOMES 20X FASTER AND SMARTER WITH NVIDIA TECHNOLOGY

"We tackled the problem of image search by developing sophisticated deep learning algorithms," explained JustVisual Co-founder Adi Pinhas. "This approach is particularly well suited to solving extremely complex problems. Rather than give the computer specific instructions on how to recognise every single image it might ever encounter, which would be impossible, we use deep learning to teach it how to recognise images for itself."

"Using CPUs, development cycles were taking days when they needed to be taking hours," said Pinhas. "Quite simply, technology was slowing down the development process."

Adi Pinhas
JustVisual Co-founder

CHALLENGE

The number of internet users now tops 3 billion. Camera-equipped smartphones make it easier than ever for people to be content creators as well as consumers. Users of services such as Snapchat, Instagram, Facebook and WhatsApp post over 2 billion new images on the internet each day.

With this vast library of images already online — and more added every second — using traditional technology to search for visual information can be a frustrating, even impossible task. How do you search for a specific flower, breed of dog or piece of furniture whose name you don't know? And what are the chances that the correct result will be returned from the tens of billions of images out there?

To tackle this problem, Palo Alto, Calif.-based startup JustVisual is using deep learning technology that lets people conduct a visual search on anything from an image. The software can recognise a picture and search for similar images without requiring a single text label. Unlocking the 'internet of images,' this visual search lets people discover the indescribable and find the unfindable just by snapping a quick picture with their phone.

As JustVisual began to build its user base, more and more partners and developers were also turning deep learning to their own purposes. This led to a massive increase in algorithm development, which strained the JustVisual's existing CPU-based architecture.

"GPU accelerated computing is a perfect fit for deep learning. At a very basic level, deep learning is mathematics, and crunching numbers very fast is what GPU accelerators do best. The results of moving to NVIDIA's platform were dramatic," said Pinhas.

Adi Pinhas
JustVisual Co-founder

SOLUTION

To relieve this bottleneck, JustVisual turned to a the NVIDIA® Tesla® Accelerated Computing Platform's flagship Tesla K80 GPU accelerators.

The Tesla platform allowed JustVisual to not only achieve the desired speed-up in its development cycles, but also gave them the computational horsepower to run larger simulations faster than ever. Being able to crunch through petabytes of data with Tesla accelerators up to 20x faster than CPUs, JustVisual began to get better results from their patented deep learning algorithm.

"JustVisual's search technology has become much faster on GPUs than it was on CPUs, but it has also become smarter," said Pinhas. "Our algorithms can now seamlessly scale with the number of developers or number of target images in the visual search engine."

Adi Pinhas
JustVisual Co-founder

IMPACT

The nature of deep learning means that JustVisual's technology becomes more accurate with every image retrieval undertaken. The more searches conducted, the more training data the system receives, and the better the technology becomes. Better performance means JustVisual can cater to an ever growing number of users, creating a virtuous circle of increasing users, data and performance.

Powered by deep learning and NVIDIA technology, JustVisual can provide a visual search capability for the internet of images that just keeps getting better.

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