

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

EDITION 2

Digitimes

A part of Digiflash!



Content

01

PAGE 04

Diff Prof

Do you know? Sending a message through a Skype drain three times more battery than WhatsApp? How to build your app with energy efficiency?

02

PAGE 06

Dueling

Artificial intelligence is getting the hang of distinguishing things: demonstrate to it a million pictures, and it

WRITERS Mohana Priya(II-CSE),Gnana Ganesh(II-CSE),Sanofar Rizwana(III-CSE),Amirtha(III-CSE)

03

PAGE 08

Insta 360 degree

Insta360 has launched the Insta360 Pro 2 featuring 8K 3D, Flow State Stabilization and a simplified VR workflow. The Insta360 Pro 2 uses a six-lens setup to shoot 8K-per-eye 3D 360 video.

05

PAGE 14

Spe

“The Hun
perfect in
Arvo Pär
one of th
contemp



White rectangular bar

04

PAGE 10

Virtual Reality

In this era of digitised world, technology spreads its wings in each & every field. One among those is, the Healthcare IT. Virtual reality technology creates a simulated environment & allows the user

Speech Reg..

man Voice is the most instrument of all", says t, e most acclaimed orary classical music...

Editorial

DigiFlash is the student association of Computer Science and Engineering department ,MCET, Pollachi. The objective of our association is to innovate, create and sharpen the minds of the students to compete globally. It is a platform to improve the students' knowledge with a fierce and also make opportunity to interact with leading industry persons.

Digiflash is organizing number of co-curricular activities including special lectures by experts, Workshops, technical seminars, coding events, paper & Poster Presentations and webinars.

Digitimes is a part of digiflash.A magazine that features about the latest technology in the field of computer science.

Hello, App

CI platforms- Integrates all source code into a shared repository.

developers



The reason is, Skype uses many more unnecessary animation to do simple actions that other messaging apps do not, For example

A loading icon on every send message.
Animated emoticons as opposed to still images. Sliding animation for each new message appearing in the chat history.

This may also be the reason for the growth of WhatsApp in a few years.

So it is clear that it is not efficient to build an attractive app but also to build it with energy efficiency. It all started in 2012 in Hu's lab, the first to develop a tool for developers to identify hot spots* in source code that are responsible for an app's battery drain. He said that before this point, it was a great step towards building energy efficient apps but it still isn't enough, because developers often wouldn't know what to do with information about the source of a battery drain.

There were several tests to check the amount of battery a particular app is draining. One among them is Eagle Tester which performs

Hotspot- Part of program where more time for execution takes place.



automated battery drain testing via seamless integration* with major CI platforms*. Purdue University researchers have created a new tool, called “DiffProf”, that uses artificial intelligence to automatically decide for the developer if a feature should be improved to drain less battery and how to make that improvement. This new tool would automatically identify and expose ways to make app features more energy-efficient, saving battery life. This tool is officially, announced on October 8, 2018 at the 13th USENIX Symposium on ‘Operating Systems Design and Implementation’. How code runs can dramatically differ between two apps, even if the developers are implementing the same task. DiffProf catches these differences in the ‘call trees’ of similar tasks, to show why the messaging feature of one messaging app consumes more energy than another messaging app. DiffProf then reveals how to rewrite the app to drain less battery. It is based on new energy profiling methodology called differential energy profiling that automatically uncovers more efficient implementations of common app tasks by leveraging existing implementations of similar apps which are abundant in the app marketplace. It allows developers to quickly understand the reasons and develop fixes for the energy difference with minor efforts. So far the DiffProf prototype has only been tested for the Android mobile operating system.

Seamless Integration- Changes in the system that doesn't cause error.

“ Do you know? Sending a message through a Skype drain three times more battery than WhatsApp? How to build your app with energy efficiency?”

Artificial intelligence is getting the hang of distinguishing things: demonstrate to it a million pictures, and it can let you know with uncanny exactness which ones portray a walker crossing a road. Be that as it may, AI is miserable at producing pictures of people on foot without anyone else's input. On the off chance that it could do that, it is ready to make gobs of sensible however engineered pictures delineating people on foot in different settings, which a self-driving car could use to

prepare itself while never going out and about. The problem is, creating something entirely new requires imagination—and until now that has perplexed AIs. The solution first occurred to Ian Goodfellow, then a PhD student at the University of Montreal, during an academic argument in a bar in 2014. The approach, known as a generative adversarial network, or GAN, takes two neural networks—the simplified mathematical models of the human brain that underpin most modern machine learning—and pits them against each other in

In the field of computer science, artificial intelligence (AI), sometimes called machine intelligence



Dueling Neural Networks

02

Computer science defines AI research as the study of “intelligent agents”

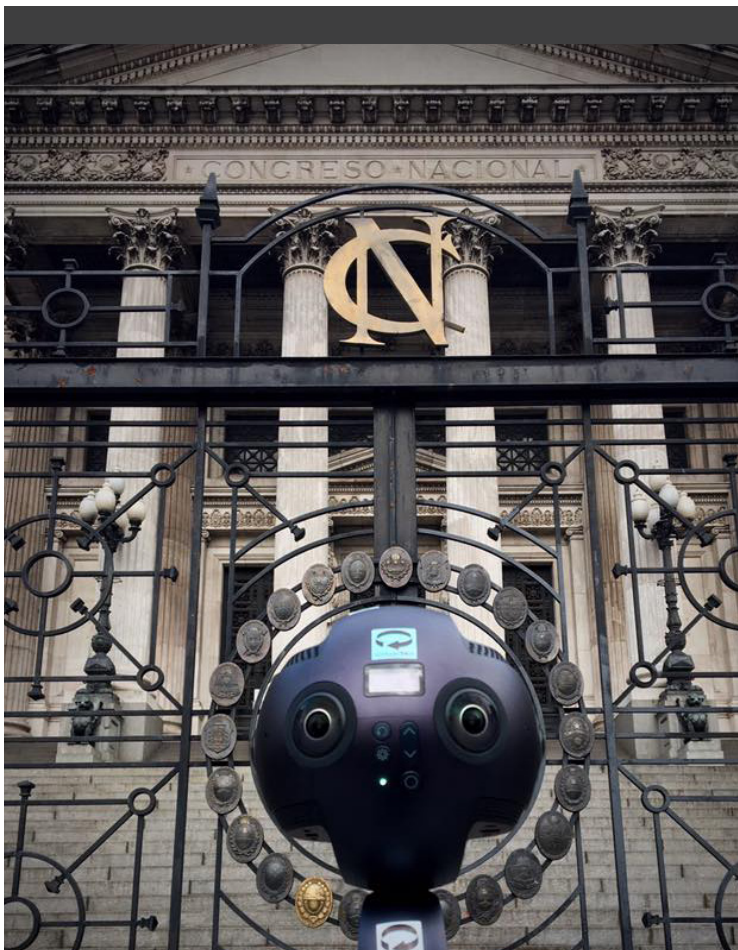


learning—and pits them against each other in a digital cat-and-mouse game. One, known as the generator, is tasked with creating variations on images it’s already seen perhaps a picture of a pedestrian with an extra arm. The second, known as the discriminator, is asked to identify whether the example it sees is like the images it has been trained on or a fake produced by the generator basically, is that three-armed person likely to be real?

After some time, the generator can turn out to be so great at delivering pictures that the discriminator can’t spot fakes. Basically, the generator has been educated to perceive, and after that make, sensible looking pictures of people on foot. The innovation has turned out to be a standout amongst the most encouraging advances in AI in the previous decade, ready to enable machines to deliver comes about that trick even people.

In one compelling example, researchers from chipmaker Nvidia primed a GAN with celebrity photographs to create hundreds of credible faces of people who don’t exist. Another research group made not-unconvincing fake paintings that look like the works of van Gogh. Pushed further, GANs can reimagine images in different ways—making a sunny road appear snowy, or turning horses

Insta 360



Insta360 Pro 2 to be converted into a format which can play back at full 8K quality on Samsung Gear VR, Oculus Go, and mainstream IOS and Android phones .

The Pro 2 was unique in being able to live stream while also recording a video .

Insta360 has launched the Insta360 Pro 2 featuring 8K 3D, Flow State Stabilization and a simplified VR workflow. The Insta360 Pro 2 uses a six-lens setup to shoot 8K-per-eye 3D 360 video. Back in April, Insta360 announced native integration into Premiere Pro which has continued with the development of the Insta360 Pro 2 offering a simple post-production workflow. The Pro 2 camera can shoot 8K 3D at 30 FPS, 8K monoscopic at 60FPS, 6K 3D at 60 FPS, 4K 3D at 120 FPS and more. There is also built-in HDR modes and a flat i-Log colour profile.

In order to provide consistent, realistic light, an in-camera HDR works to try and keep the lighting look natural, even when light varies in different directions. To keep the image steady, Insta360 have included its proprietary Flow State stabilisation algorithm, which brings an in-camera stabilisation system to VR. This uses a gyroscope that can track motion on nine axes, which combines with the custom software that lets creators stabilise the footage. The Pro 2 comes paired with Far sight technology, a 360-degree live monitoring system that offers a high-definition, low-latency video stream that's optimized for long-distance

Capture better from every angle and shoot Every
Detail in Every Direction



previewing. Also found near the top of the Pro 2 are two new antennas: One for GPS and the other for Wi-Fi. The later offers the same 30 fps frame rate for live monitoring while within a five-meter range, which still serves as a handy backup if your Far sight kit run out of battery or is out of service. With a transmitter and receiver, creators can direct and control their scene from a distance of roughly 300 meters. Transmitting at 5.18 Ghz, the Far sight uses smart channel switching to ensure it always cuts through the noise. The Pro 2 is lightweight, at only 3 pounds it would be possible to mount it onto a drone. A hot-swap battery dock enables continuous power and four built-in mics capture immersive 360-surround audio. USB and 3.5mm audio inputs are found on the top and bottom, allowing for custom audio setups and other add-ons. The Pro 2 features seven memory card slots.

Orders for the Insta360 Pro 2 are open now via
Insta360 Store and selected retailers worldwide.



04

VIRTUAL REALITY

Virtual reality (VR) is an interactive computer-generated experience taking place within a simulated environment

THE SECTION

REALITY TECH



One among those is, the Healthcare IT. Virtual reality technology creates a simulated environment & allows the user to interact with the 3D world. As we know reality comes by way of our senses, simply this technology is considered as a combination of sensory information & our brain's sense-making mechanisms for that information. Nowadays, medical professionals & scientists have been implementing & developing virtual reality in many ways that can help them diagnose, train & treat in critical situations.

This technology really helps in changing the way of delivering care to patients. Well as we know not only in the gaming field, virtual reality play a crucial role in helping physicians & patients to learn more & come out of their traumas or phobias. It can be used for developing an imaginary environment for an interactive story or a game. Virtual reality leads to a new, creative, exciting discoveries in the field of healthcare industry & really impacts our day to day lives. Let's see few of its splendid uses..

(i) Treating Post Traumatic Stress Disorder:

This type of trauma mostly occurs in soldiers or military veterans who returns from war zones like Afghanistan and Iraq etc. Sometimes, some soldiers undergo such critical situations which left adverse effects on their mind and stops them from coming out of that situation. To overcome this trauma, doctor or physicians use VR technology & place the patient in realistic & immersive scenes. The patient then is guided through the scene & help them to cope the situation within which they are placed. University of Southern California Institute for creative technologies has represented a paper which shows the virtual reality's use in PTSD treatment.

(ii) Google Cardboard Baby Saver:

Google is a great player of every technology either in gaming or in the healthcare field. One of the virtual reality platforms of google is the Google Cardboard Viewer, use with a head mount for a smartphone. By placing the phone in the back of the viewer, user can easily run the VR cardboard compatible applications on their phone & view content through the lenses. To save the life of a baby, Teegan lexcen who born with one lung & half heart, doctors use this Google VR Cardboard. With the help of this doctors can map Teegan's heart in virtual reality & effectively plan a surgery technique. Within virtual reality, physicians not only able to look at the heart but effectively move around & view the heart from every angle to diagnose the problem efficiently. This will improve doctor experience & reduces the risk exponentially. mo que laam, i

In this era of digitised world, technology spreads its wings in each & every field.

“Virtual Reality is set to revolutionize the Healthcare industry.”

(iii) Limb Pain Treatment:

Whenever people lose one of their limbs, at instance they are not able to tolerate or handle that pain or go through trauma. Phantom limb pain makes it harder for them to use prosthetic limbs & worsens the mental state of a patient. Past treatment included the mirror therapy in which physicians will create illusions of the unaffected limb in the mirror & shows that the amputated limb is moving. But this therapy does not relieve pain in all cases & cannot be used if both limbs have been lost. As we know, neurons in the brain relating to lost limb remain active, can trigger the sensations of the pain because the brain does not adapt the limb loss. Few studies conclude that, virtual reality games have been designed for amputees to experience the movement of the missing limbs. While playing virtual games patient use a virtual limb & complete all tasks. It may also help in boosting patient confidence & help them in gaining some control & learn, for eg, how to relax or get rid of the pain.

Radiotherapy, Telemedicine, Education (Training, teaching), Phobias, Dentistry and Computer Assisted Surgery.



evolutionise the

From developing new life-saving techniques to training the doctors, virtual reality technology does a tremendous job in the field of medicine



SPEECH RECOGNITION

“The Human Voice is the most perfect instrument of all”, says

Arvo Pärt

one of the most acclaimed contemporary classical music composers of Estonia. With this quote, Pärt reminds us that no instrument in the world can beat human voice’s perfection. We can speak 150 words per minute, whereas, can just type an average of 40 words in the same 60 seconds. Since, the time complexity is extremely efficient, which makes Speech Recognition, as an indispensable technology of the future. Voice recognition systems are actually related to the speech recognition technology, but the former can only identify the speaker whereas the latter can understand and evaluate what has been said.

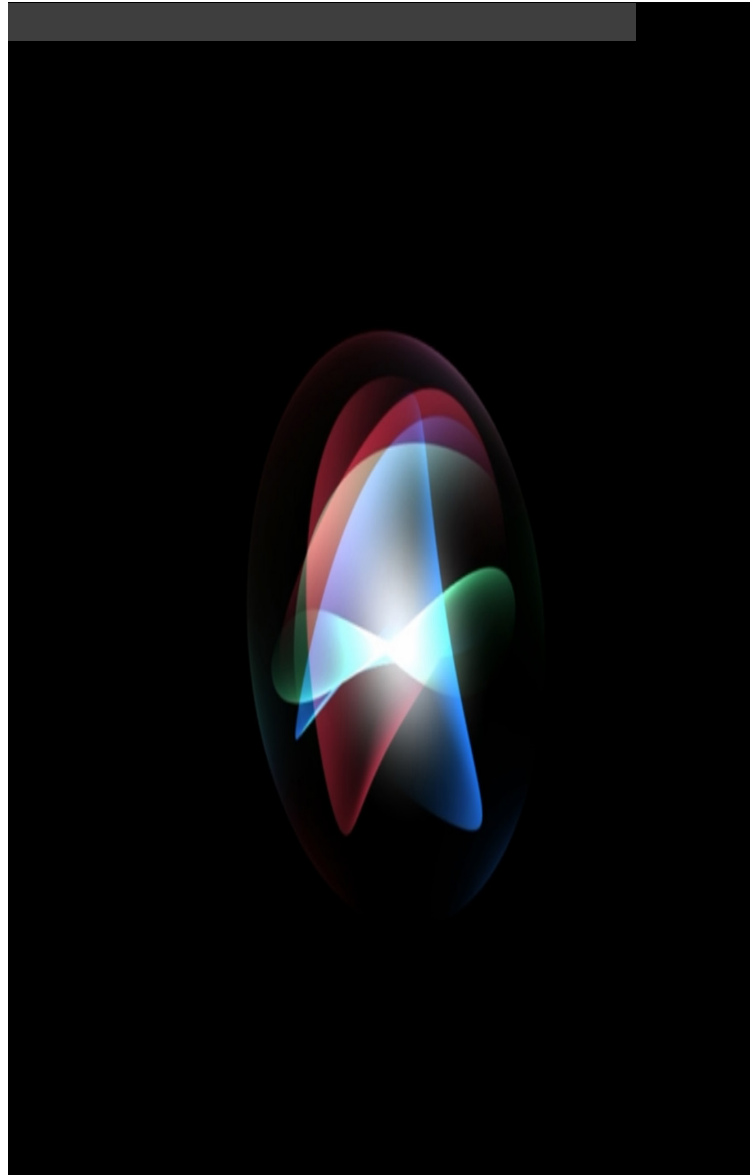
This technology can benefit us undoubtedly, as the world’s technology giants are clamouring for vital market share, with ComScore projecting that “50% of all searches will be voice searches by 2020”. Speech recognition works on the algorithms with the help of acoustic and language modeling. The acoustic modeling defines the relationship between the linguistic units of speech and audio signals whereas the language modeling matches the sounds along with word sequences for helping the words to distinguish the difference between the words which are similar. Very often, Hidden Markov model is used to recognize the temporal patterns in speech for improving the accuracy within the system. To make it perfect with this speech recognition system, it takes a lot of time and lots more field data, as there are thousands of languages, accent, and dialects available. In fact, communicating with technological devices via voice has become so popular and natural that we may be

Dragon NaturallySpeaking, Braina, Sonix,
SpeechTexter, Go Transcribe

justified in wondering why the world's richest companies are only bringing these services to us now. The 18th century have provided the platform for the digital assistants that we all know today. Driven by huge volumes of training data, the Voice Search app showed remarkable improvements on the accuracy levels of previous speech recognition technologies. Google built on this to introduce elements of personalization into its voice search results, and used this data to develop its Hummingbird algorithm, arriving at a much more nuanced understanding of language in use. These strands have been tied together in the Google Assistant, which is now resident on almost 50% of all smartphones.

Siri, the Apple's entry into the voice recognition market, that first captured the public's imagination, however. As the result of decades of research, this AI-powered digital assistant brought a touch of humanity to the sterile world of speech recognition. The world is surrounded by smartphones, smart cars, and smart appliances, but we do not always consider the role of voice recognition that is played in these appliances all the time.

Let's imagine how a child learns a language. From the day the child is born, the various sounds surround the child. Although, the child is very young and does not even understand the voice, but can absorb all the cues and pronunciations and their brains can also form a pattern and connection based on how their parents are communicating. Similarly, the voice recognition works, the user speaks some



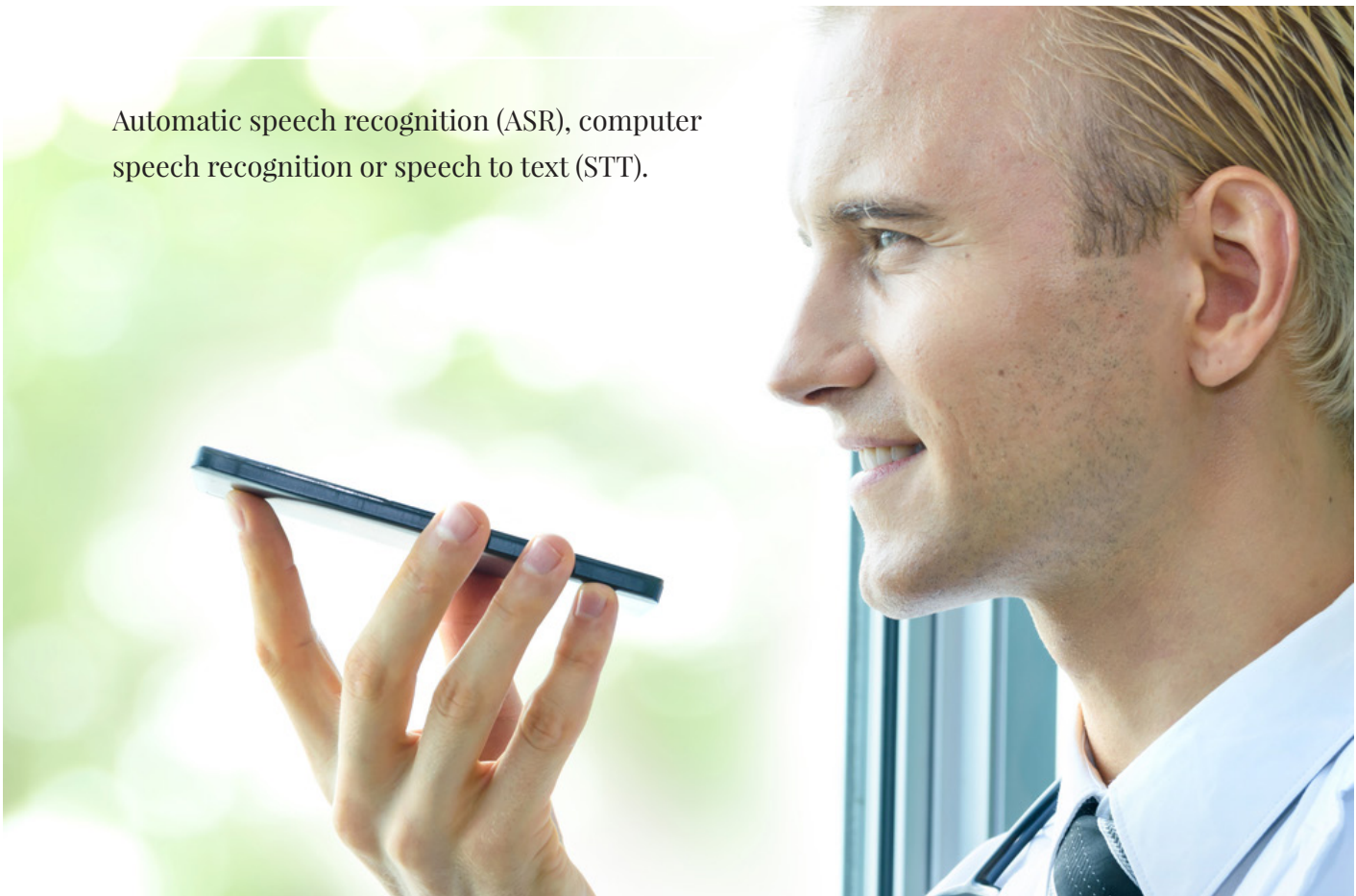
The key areas of growth were: vocabulary size, speaker independence and processing speed.



words on a mobile application, and then the spoken words are processed by the software to convert into the text.

The converted text is then provided as the input to the search mechanism and that comes as the output. Automatic speech recognition (ASR) is the advanced technology that converts spoken words into text like Amazon's Alexa to respond when we ask, "Alexa, what's it like outside?" Students who are blind (see Blindness and education) or have very low vision can benefit from using the technology to convey words and then hear the computer recite them, as well as use a computer by commanding with their voice, instead of having to look at the screen and keyboard. By introducing Natural Language Speech Recognition (NLSR), a general insurance company Suncorp replaced its original push button IVR, enabling the customer to simply say what they want

Automatic speech recognition (ASR), computer speech recognition or speech to text (STT).



CONTRIBUTORS

<https://googleweblight.com/i?u=https://data-flair.training/blogs/iot-applications-in-agriculture/&hl=en-n>

<https://techcrunch.com>

<https://nofilmschool.com/2018/10/review-all-around-look-insta360sflagship-pro-2-360-camera>

www.gartner.com

www.link.springer.com

www.sciencedirect.com

A part of Digiflash!

Digitimes

Magazine

**Diff
Prof**

So it is clear that it is not efficient to build an attractive app but...

**Dueling
Neural**

Artificial intelligence is getting the hang of distinguishing...

**Insta
360**

Insta360 has launched the Insta360 Pro 2 featuring 8K 3D...