TECH@CSE
2K19

2019

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A WORD FROM THE HOD'S DESK

Dear Reader,

Greetings.

I feel privileged in presenting our department tech magazine "TECH@CSE-2K19" , it is designed to showcase trending technologies and events and the tech talents of our students and faculty members.

With a sense of pride and satisfaction, I would like to say with the active support of management, Director, Principal faculty members and students, the department tech magazine has come alive .

I extend my thanks to my students and colleagues for being a part of the editorial board. With all the efforts and contributions put in by the faculty members and students; This would definitely create an impact in the minds of readers, by way of providing larger visibility and dimension to department.

DR J V GORABAL
PROFESSOR AND HOD,CSE

VISION

To be a globally recognized center for imparting quality technical education through innovative research and incubation with moral values in the field of computer science and engineering.

MISSION

M1: Inculcating quality teaching learning process by creating in-house industry-institute interactions to meet the societal needs.

M2: Developing research and entrepreneurship culture in students and faculty to cultivate lifelong learning.

M3: Empowering professionals with strong ethical values and leadership abilities.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

- Engage in solving real life problems by applying the gained technical knowledge and lifelong learning.
- To Encourage students for higher studies and indulge in research activities.
- To Excel as a team leader, entrepreneur and a member in multidisciplinary environment.
- Ability to apply modern tools, skills and techniques to develop software and hardware systems to meet the need of the modern society.
- Practice moral and ethical values to solve environmental and societal issues in the field of computer science and engineering.
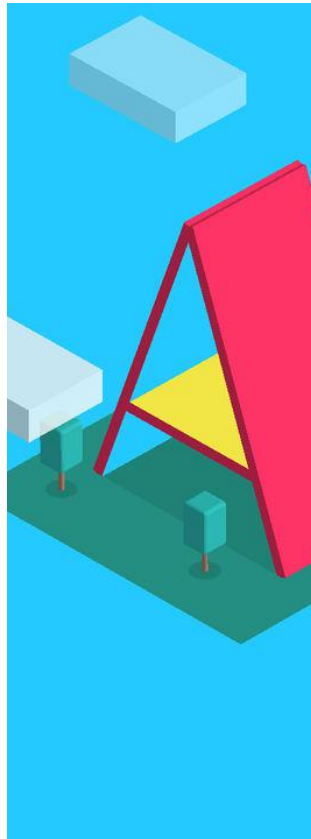
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Enabling users to interact with technology using just their voices

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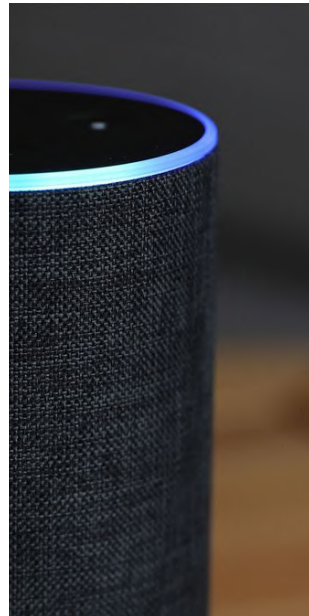
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NUTRISCAN: MERGING AI WITH HEALTH

Scan. Process. Track.
It's that easy.

TRE
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NG;

DAWN OF THE MIXED REALITY

submitted by
Srujan Naik, CS, 3rd Year

Since when Microsoft announced HoloLens, we wondered what the possible applications were.In fact, Microsoft understands that if you do not offer compelling applications, the system is going to fail.

Currently, HoloLens apps cover various areas like videogames, teaching, communications, design, entertainment, and video.

Communication

Skype: You can connect with your friends, family, and colleagues and they can see what you see and interact with your holograms. Collaborate with others and make decisions more effectively using Skype to draw and embed images in the space around you. Get instructions without distracting you. Keep your hands free to work on real-world projects while being helped by a friend or colleague.I do not think that the usual Skype user can benefit from HoloLens. I see more advantages when you have to give remote instructions. In this case, the interlocutor can draw holograms of lines, arrows, and various indications to provide his remote help

Travel

HoloTour: the application that lets you travel unlimitedly with a personal guide. For example, you can find yourself in Rome, immersed in Piazza Navona as if you were there. You can visit the Coliseum as it is today or go back in time and attend gladiator fights. The application provides the traveler with views and animations that no tourist can ever see in the real world. This is almost an application of pure virtual reality because it is able to make the experience very immersive. For now, you can only visit Rome and the Machu Picchu (and that's not a small thing!) but the future potential is enormous. This is the future of archaeology because it provides otherwise impossible experiences.

Education

Galaxy Explorer Object: The study of the solar system. You can magnify the planets, sun or see the entire galaxy as a whole.Star and planet enthusiasts can see nearby planets in 3D and gather information. For now, it seems a bit limited. Microsoft has made source code available for anyone who wants to study it or extend it!

HoloAnatomy: the study of the human body by analyzing the holograms of the various layers. It can be seen from the epidermis to the internal organs. There is no interaction but it is only on an educational level.A great application for the study of the human body.

Games

Fragments: An investigative game to live in person. You are the detective and your home is the crime scene. Your role is to help a team solve the case.

VOICE USER INTERACTION DESIGN

WHAT IS VUI DESIGN?

Voice User Interface (VUI) Design is rapidly emerging as a new discipline in the world of user experience due to the rapid adoption of smart speakers and voice assistants. While a lot has been written about key principles of VUI Design, or how designing for voice differs from designing for a screen, not much has been written on the actual concepts that VUI designers can manipulate or should think about when crafting a conversational experience.

But what can VUI designers play with? What does their toolbox look like?

Concepts like invocation phrase, intents, entities or slots that define the interaction model of a voice application are well defined and understood, but they apply to only a very small part of the conversation design: recognizing what the user means.

How to act on that meaning, how to organize the conversational flow from that point has not been codified from a design point of view.

submitted by
Melwin Lobo, CS, 4th Year

WHAT CAN USERS DO WITH VOICE COMMANDS?

Alexa is the AI assistant for voice-enabled Amazon devices like the Echo smart speaker and Kindle Fire tablet — Amazon is currently leading the way with voice technology (in terms of sales).On the Alexa store, some of the trendiest apps (called "skills") are focused on entertainment, translation, and news, although users can also perform actions like request a ride via the Uber skill, play some music via the Spotify skill, or even order a pizza via the Domino's skill.Another interesting example comes from commercial bank Capital One, which introduced an Alexa skill in 2016 and was the first bank to do so.

By adding the Capital One skill via Alexa, customers can check their balance and due dates and even settle their credit card bill.

PayPal took the concept a step further by allowing users to make payments via Siri on either iOS or the Apple HomePod, and there's also an Alexa skill for PayPal that can accomplish this.But what VUIs can do, and what users are actually using them for, are two different things.

ComScore stated that over half of the users that own a smart speaker use their device for asking general questions, checking the weather, and streaming music, closely followed by managing their alarm, to-do list, and calendar (note that these tasks are fairly basic by nature).As you can see, a lot of these tasks involve asking a question (i.e., voice search).
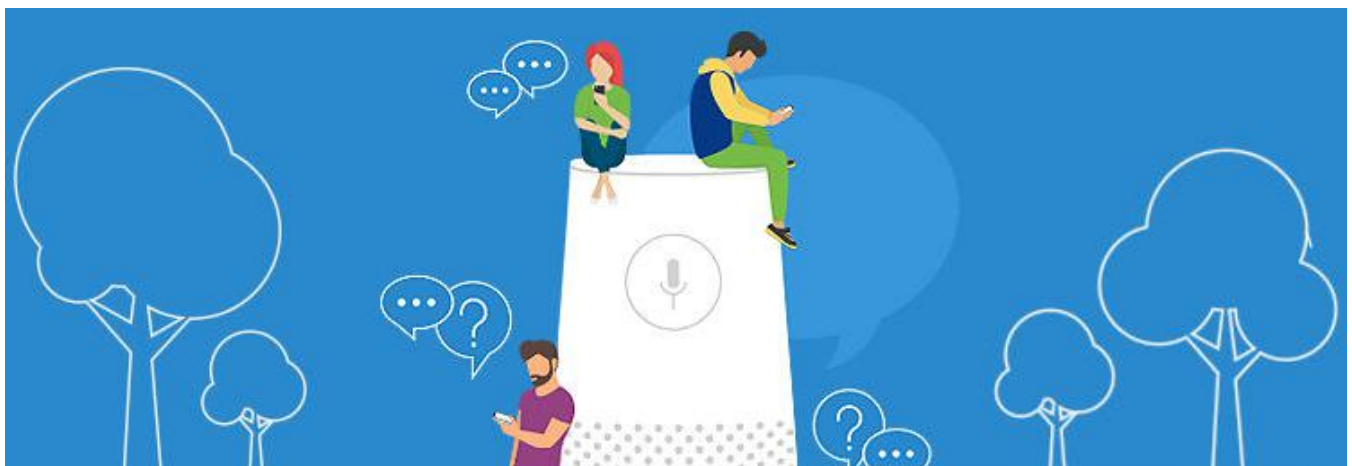
GENE-HACKED SUPER SMART HUMAN MONKEY HYBRIDS?

China + Gene Hacking + Monkeys = Planet Of The Apes : Nightmare

For the first time, scientists have used gene-editing techniques to make monkey brains more human like.The monkeys, rhesus macaques, got smarter — they had superior memories to unaltered monkeys, according to recently-published research that's kicked off a fiery debate among ethicists about how far scientists should be able to take genetic experimentation.

The team of Chinese scientists edited the human version of a gene called MCPH1 into the macaques. The new gene made the monkeys' brains develop along a more human-like timeline. The gene-hacked monkeys had better reaction times and enhanced short-term memories compared to their unaltered peers, according to China Daily

submitted by
Adithya Suvarna, CS, 4th Year

"The use of transgenic monkeys to study human genes linked to brain evolution is a very risky road to take," University of Colorado geneticist James Sikela told the MIT Technology Review. "It is a classic slippery slope issue and one that we can expect to recur as this type of research is pursued."

Pinpointing the gene's role in intelligence could help scientists understand how humans evolved to be so smart, MIT Tech reports.

To justify the work, Su and his co-authors suggested that it could provide insights into neurodegenerative and social disorders — but they don't describe what those applications might be. "I don't really see anything in the paper that would make me think that [the experiment] was necessarily a good idea," says Walker.

Su declined Discover's request for comment, but said in an article for China Daily, "Scientists agree that monkey models are at times irreplaceable for basic research, especially in studying human physiology, cognition and disease."

And in the research paper, the authors contend that the "relatively large phylogenetic distance (about 25 million years of divergence from humans) ... alleviates ethical concerns." This greater evolutionary distance suggests it would be harder to wind up with a macaque that acts like a human.

"While monkeys and humans have similar genomes," Su said in the China Daily article, "there are still tens of millions of genetic differences. Changing one gene carefully designed for research will not result in drastic change."Sikela agrees that such a change may be minor. Still, he wonders about the possibility of finding a gene with a large effect on cognition.

"It does feel worrisome to be doing this research in primates," Walker says. "And then potentially thinking about how that could be used in humans."
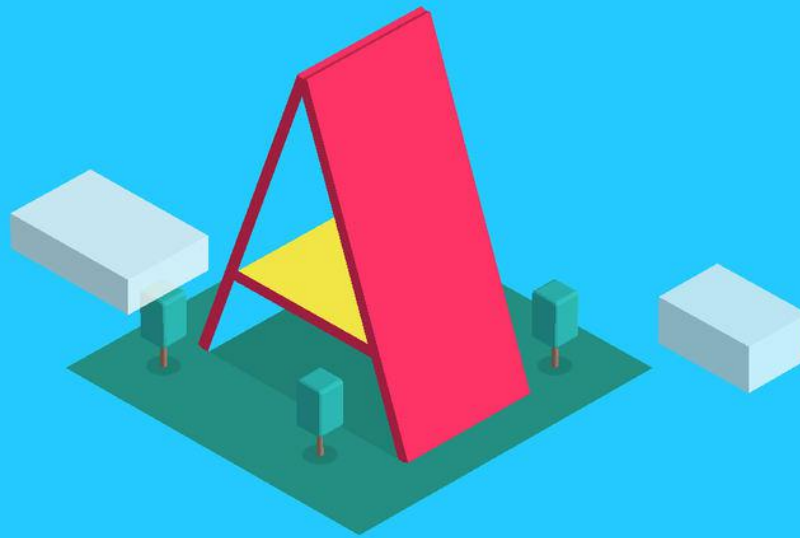
While altering one gene to enhance memory in some macaques won't throw Darwinism off-kilter — there's no risk of a "Planet of the Apes"-style uprising, yet — it could teach us how humanity became so intelligent and gives us hints as to why.

ARTICLES;

A

45 • r.p.m.

VIRTUAL REALITY IN WEB?

Aframe is a web framework for building virtual reality experiences. Apps can be developed from a plain HTML file without having to install anything.

There was once a time we saw websites delivering content, then we saw websites delivering services and now we see a rise in using trending tech with web.May it be Machine Learning, IOT or even Virtual Reality , we now see more and more frameworks, libraries built around the web which make the web way more powerful than what it once was!

submitted by
Jehad Mohamed, CS, 4th Year

A year ago, I was probably not even considering to take up Web as something to learn professionally as I didn't really get a kick out of it at the time. But all that changed with a session by an amazing Mozilla Rep - Prathamesh Chavan, who currently works with Red Hat as an engineer.

It here I learnt about A-frame and how easily we could build cool VR apps to go, which was crazy as anyone with an internet connection could use your VR app through their browser.

It was probably here where I learnt how powerful the Web really is and what impact can someone have through it.I 'll be frank , We weren't sure about the turnout for the event initially. I expected a max count of probably 50 or so. But as it so happens we somehow filled the seminar hall to the brink, an amazing feat indeed which was all thanks to the Prathamesh Sir's awesome way of explaining and entertaining the crowd with A-Frame.

It was an all round session , with an interactive audience, an amazing tech speaker, hands on coding and lots of swags from our sponsors at Mozilla!I have got to admit, I really like the way he turned my perspective on the web, after which I really got interested in Web and using libraries like Tensorflowjs, Opencvjs etc.

You can get started on
https://aframe.io/
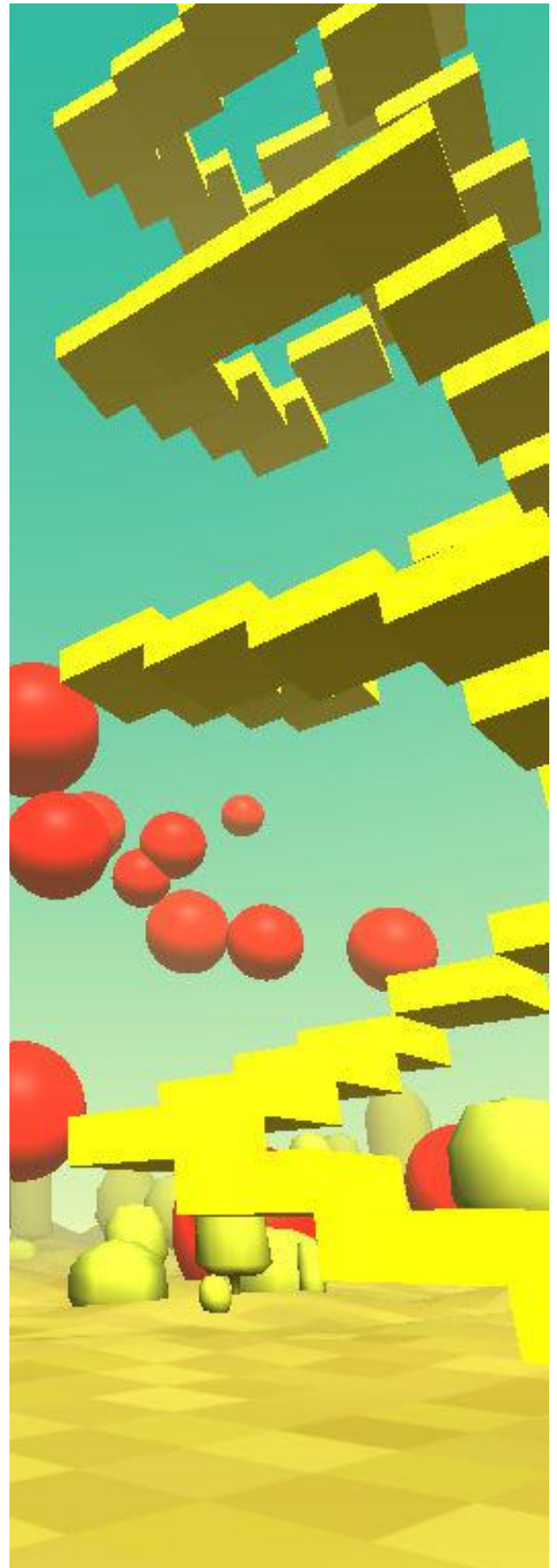
AI MUSIC VS HUMAN MUSIC

AI is capable of making music, but does that make AI an artist? As AI begins to reshape how music is made, our legal systems are going to be confronted with some messy questions regarding authorship. Do AI algorithms create their own work, or is it the humans behind them? What happens if AI software trained solely on Beyoncé creates a track that sounds just like her? "I won't mince words," says Jonathan Bailey, CTO of iZotope.

"This is a total legal clusterfuck."The word "human" does not appear at all in US copyright law, and there's not much existing litigation around the word's absence. This has created a giant gray area and left AI's place in copyright unclear.

It also means the law doesn't account for AI's unique abilities, like its potential to work endlessly and mimic the sound of a specific artist. Depending on how legal decisions shake out, AI systems could become a valuable tool to assist creativity, a nuisance ripping off hard-working human musicians, or both.

Say an AI system is trained exclusively on Beyoncé's music. "A Botyoncé, if you will, or BeyoncAI," says Meredith Rose, policy counsel at Public Knowledge. If that system then makes music that sounds like Beyoncé, is Beyoncé owed anything? Several legal experts believe the answer is "no."

Law is generally reluctant to protect things "in the style of," as musicians are influenced by other musicians all the time, says Chris Mammen, partner at Womble Bond Dickinson.

"Should the original artist whose style is being used to train an AI be allowed to have any [intellectual property] rights in the resulting recording?The traditional answer may well be 'no,'" Mammen says, "because the resulting work is not an original work of authorship by that artist."

submitted by
Shreyas Baliga, CS, 4th Year

"A BOTYONCÉ, IF YOU WILL, OR BEYONCAI."
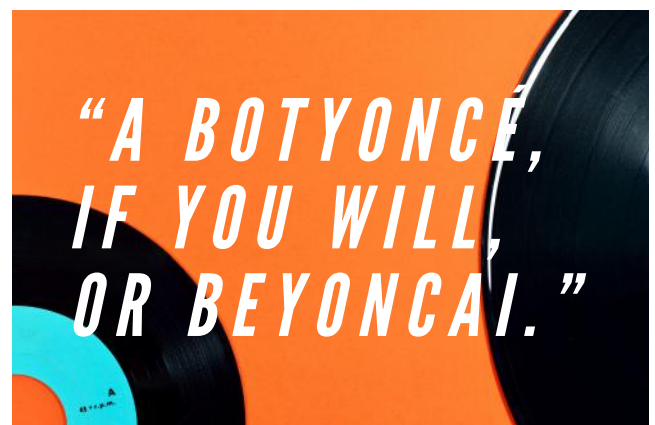
WHAT IS FLUTTER?

Flutter is a free and open-source mobile UI framework created by Google and released in May 2017. In a few words, it allows you to create a native mobile application with only one codebase. This means that you can use one programming language and one codebase to create two different apps (for iOS and Android).

Flutter consists of two important parts: An SDK (Software Development Kit): A collection of tools that are going to help you develop your applications. This includes tools to compile your code into native machine code (code for iOS and Android).

A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs.To develop with Flutter, you will use a programming language called Dart. The language was created by Google in October 2011, but it has improved a lot over these past years.Dart focuses on front-end development, and you can use it to create mobile and web applications.

submitted by
Riya Batra, CS, 4th Year

"Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web, and desktop from a single codebase." - Google

To develop with Flutter, you will use a programming language called Dart. The language was created by Google in October 2011, but it has improved a lot over these past years.Dart focuses on front-end development, and you can use it to create mobile and web applications.

If you know a bit of programming, Dart is a typed object programming language.You can compare Dart's syntax to JavaScript.
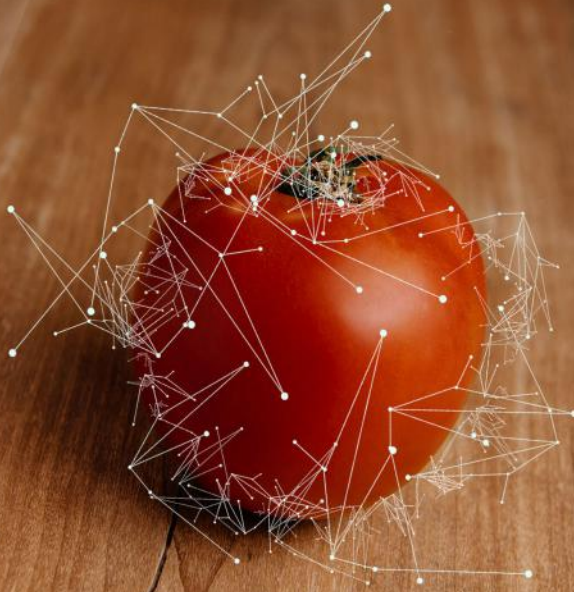
PROJECTS;

BUILDING AN AR APP WITH NO CODE

Tech Stack
Unity - Vuforia

submitted by
Adithya Suvarna, CS, 4th Year

Vuforia is an advanced AR building engine that provides an intuitive platform for creating augmented reality apps for Android and iOS platforms. Since many AR apps include the appearance of virtual 3D objects over the real world, building such applications requires a 3D design tool where such objects called 3D models can be created.The top of the rating of such tools is occupied by Unity3D, a powerful game engine allowing building 2D and 3D scenes, games and simulations.In this case, Vuforia provides the printable image targets that will trigger the appearance of 3D objects created in Unity3D. Or, you can specify the object that the application should recognize to produce AR content.

For such a project, you need a Vuforia account and a Unity ID.Besides, Vuforia requires each application to have a unique license key. You can create the license key by logging in to the Vuforia Developer Portal.
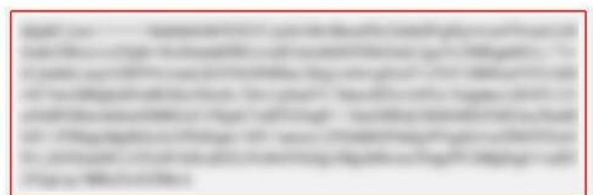
License Manager > AR_App_Test

AR_App_Test   Edit Name   Delete License Key

License Key   Usage

Please copy the license key below into your app

Type: Develop
**Status:** Active
Created: Oct 27, 2017 15:24

To start your first project with Vuforia and Unity3D, download the Unity3D version that supports Vuforia.During the package installation, mark Vuforia Augmented Reality Support together with the support of iOS or Android, or both.After the successful download and installation, create your project in Unity3D.

For AR apps, mark it as a 3D project in the dialog window.To activate Vuforia, navigate to the Project Settings in Unity3D, select Player and choose the mobile device for which you are creating the application.Under XR Settings, choose Vuforia from the Virtual Reality SDKs list and mark the Vuforia Augmented Reality Supported checkbox.Now Vuforia support is activated in your Unity3D.To build augmented reality applications, you need to activate the AR camera.Under the GameObject menu, select Vuforia -> AR Camera. After that, the Main Camera in the Hierarchy tab will be replaced with AR Camera.

At this stage, you may be prompted to download Vuforia Assets if this is your first project using Vuforia. Import the assets, and Unity3D will download all asset files that are available.

To complete the Vuforia setup, you need to enter the application license key that you generated in the Vuforia Developer Portal.Now You can add your target images here and get the features extracted . Then Download the target database for Unity.
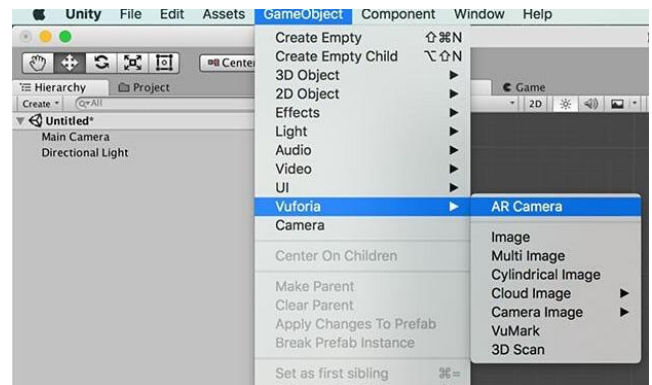
Select AR Camera in the Hierarchy tab and in the Inspector window that follows, click Open Vuforia Configuration.Copy the license key and paste it in the App License Key field. Click Add License to finish Vuforia setup. Return to Unity 3D and open the GameObject menu. Select Vuforia -> Image. That opens the Inspector dialog window where you can choose the database you created and the image you added to it.

The image target appears on your Hierarchy screen and can be used to connect to the 3D object. Click it and select the type of object you would like to appear in your AR application.Click Play to see your augmented reality working. As soon as your target gets within the range of your camera, a virtual cube appears.

NUTRISCAN

submitted by
Praveen, CS, 3rd Year

The Problem

We all want to become fit. Whether we are working on it or not, many a times the diet plans we do come up with tend to go astray.

It could be lunch with a client, or even dinner at your Mom's place.

It is in fact nearly impossible for maintaining that checklist.

Our Solution: NutriScan

ABOUT OUR APP

- Its Simple, Reliable and Easy to Use!
- Its Intelligent
- It Cares about you

CORE FEATURES

What NutriScan Can Do

Track and monitor health.

Keeps track of daily calorie intake

Helps you to keep better diet.

Tech Stack
Unity - Vuforia

Health Analysis

Nutri cares about you.
She wants to build the perfect diet plan for you!

Allergies, Weight Height, any info pertaining your health will help NutriScan in making a better diet plan for you!

Please, Enter your Information

This will be used in planning your exercises and helping y...

Name
Age
Height
Weight (Current)

Are you Diabetic?
Any Allergies?
Peanuts, Milk

You are...
HEALTHY!

Congrats!
You've been keep maintaining you

Do continue in n

You've been allo

1450 calories/c

You are...
OBESE!

Oh No!
You've been keeping busy, but maintaining your body is very important.

Lets begin to make it better!
You've been allocated

1000 calories/day

Scan your Food

Take a pic of your food or what your gonna eat

Allergies, Weight Height, any info pertaining your health will help NutriScan in making a better diet plan for you!

Name: Apple
Portion/Size: Med:
Calories: 71.76
Added Sugars: 0
Saturated Fats: 0.

1200/1450 calories lef

Name: Pizza
Portion/Size: Slice
Calories: 164.8
Added Sugars: 0.90112
Saturated Fats: 2.8035

100/1450 calories left!

submitted by
Gavin D'souza, CS, 4th Year

CREATE AN ALEXA SKILL

Choose a Skill
When creating your own Alexa Skill, you must choose a skill category. In this example we're building a Quiz skill, so we chose the Trivia category.Upon selecting the Trivia category, you will be directed to a page where you'll see a sample recording of the Alexa Skill that you chose, along with the transcript underneath. This demo gives you an idea of how the skill will work.

Add Content to Your Skill
Once you have chosen your skill category, it is now time to add your content. On the Trivia category page, that we have chosen, you'll see a button that says "Make Your Own". Select this button and you'll be directed to a page with a pre-populated template.Now, you can add a custom intro to your skill, accompanied by a pre-set sound effect. Plus, we can change the pre-populated questions and answers and make a quiz about absolutely anything.

Psst.. Alexa India is giving away FREE Tshirts for Developers who publish Skills.
Pick up yours Today!

Customize Your Experience

Once you've added your questions, answers and optional fun-facts, it's time to customize. Click on "Next: Experience" on the top right-hand corner of the screen and you will be directed to the next page where you can customize the greeting message, sounds your skill makes, and how your Alexa Skill responds to both correct and incorrect answers.

< STEP 1: CONTENT → STEP 2: EXPERIENCE → STEP 3: NAME   Next: Name

Customize the experience

Want to edit how Alexa hosts the game?
Customize game messages, sounds, and responses - or keep the default options below.

Game intro

Customize the game introduction. When you open the skill, Alexa says this message:

> Welcome to your Trivia Game!

With the message, Alexa plays this sound:

> Airplane take-off 1   ▾ ▶

Player greetings

Customize how Alexa welcomes players. After the intro, Alexa picks one random message:

> Welcome aboard, Good luck!   ✕

Name Your Skill

Once you're happy with your content and skill experience, then you just need to name your Alexa Skill. Since Alexa is still learning how to compute first and last names, it is best to use general terms to enable your Echo device to open your quiz without experiencing any troubleshooting problems

Create and Use Your Skill

Once you have named your skill, click on the "Create Skill" button located at the top right-hand corner of the interface, and Alexa Blueprints will create your skill. You may be prompted to sign back into your Amazon account where it will take you to the "Skills You've Made" page.

SPOLIGHT;

SAP BOYS

The journey behind of the students placed at SAP Labs India with a package of 10 LPA

submitted by
Melwin Lobo, CS, 4th Year

Brief Intro About SAP Labs

It is a product company that is the forerunner in making Enterprise Solutions. SAP has been awarded as the best place to work multiple times. Scholar@SAP is a globally recognized work integrated and learning program in partnership with BITS Pilani. As a Scholar, you will be receiving on-the-job structured development and coaching from leaders in technology.

Hiring Process

SAP Labs had four rounds in their hiring process. Let me walk you through each of them.

First round was the online test which was conducted in Hackerrank. The test had MCQs on time complexity, data structures, algorithms and database. In addition to that, there were two coding questions. One was to sort the dates in ascending order and the other one was to print a given pattern.

10 students were selected from our college and it gives me great privilege to say that three of them are part of SOSC.We had to go to Alva's Institute of Engineering and Technology, Moodbidri for the further process. We had to assemble in the campus at 9am. There was a pre-placement talk which was followed by three rounds of interview. The process comprised of two technical interviews and an HR round, all of which were meant to eliminate the candidates. In the first round of the interview, I was asked to name my favourite subject. I mentioned that it was OOP wherein the panel asked me to explain the four pillars of OOP by citing an example for each. Once I was done explaining, she asked me the various elements I had mentioned in my resume. By the end of the process she asked me whether I have any questions for her and I asked her for the introduction. With that I was done with first round of my interview.After a while they announced the results of first round and I was shortlisted for the next round.In the second round of the interview which went on for about 30-40 minutes I was asked to explain each and every point I had mentioned in my resume. It began with me explaining about all the projects I had done with the utmost details. Followed by that, I was asked to write a pseudocode to check whether the number of brackets in a given string is balanced or not. He asked me a question on database wherein a table was given to me and I had to write an SQL query to access specific tuples.

After this I was asked basic questions on networking like how to share files over FTP and how to detect a PC over the network. At the end he asked me a puzzle, which I failed to answer.As a whole, the entire interview process went pretty smooth and I was able to answer most of the questions. So the interviewer told me that I can proceed to the HR round.

In the final round of the interview, I was asked to give a brief introduction about myself. There were two HR's in the panel who vividly explained me about the Scholar@SAP program. They also asked me as to why I want to pursue higher studies and told me that there would be lot of pressure since I will have to manage both academics and work.

Their question basically dealt with my strategies to tackle this problem. Once the HR round was completed, I was told to wait for the results.When we were on our way back home, at around 8:30 the results were announced and 5 of them managed to clear from our college out of which 2 were from SOSC.