PRODUCT DESIGN PORTFOLIO

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LingLight

Smart bedroom lamp with emotional voice assistant



ROLES:

Product Leader & Product Designer & UX Designer



TIME:

Jul.2017-Present



SCOPES:

User Research, Prototyping, UX Design, NLP Data Annotation, Scrum Management, Usability Testing



TECHNOLOGIES:

Natural Language Processing, Deep Learning, Automatic Speech Recognition, Text To Speech Synthesize, Affective Computing





LingLight is an all-in-one smart light that allows you to use your voice to control lighting features, set timers, check the weather, tell time, and play music and so on. Most importantly, It creates the perfect ambiance with the enjoyable light and music, to suit all the scenes in your bedroom, like movie night, bedtime or getting home.

• **Demo video** youtube: <u>https://youtu.be/PgqHkF_HGx0</u> (The Industry Design has changed after the demo.)

User Research & Analysis

I did more than 30 in-depth interviews and draw customer journey maps according to the interviews.

Here I select one of the typical representatives as follows.



CUSTOMER JOURNEY MAP PERSONA I



PERSONA ANALYSIS:

Users usually get stressed during their commute or at work.

People seek **EMOTIONAL COMFORT** in various ways at home during the evening.



Color Expression & Types of Light Research

The two most important factors to create an individual's mood with lighting are **color and** light.

e.g. red light(warm) helps relax before sleep while blue light (cold) improve concentration and increase energy level.

According to our understanding towards light, we made LingLight adapting itself in the different time period of a day.



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Product Define and Interaction Design

- Multi-dimensional perception system
- Affective computing
- Expressive responses
- Relational data

User experience direction



LIGHTING INTERACTION





illustration books reading robot for children



2017 Most Successful Design Awards 2017 CIS Best Intelligent Educational Product Awards 2017 CIS Best Educational Robots Awards



ROLES:

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Mar.2017-Jul.2017



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Introduction

Luka, the illustration book storyteller was born to rescue those parents who doesn't have the time or not the best story tellers to give their children the same story time experience. Luka is equipped with some amazing computer vision technology allowing it to read with the readers turning of pages. The body of the Luka is equipped with special sensors that work along side the complex facial expressions and unique voice form a exciting personality. It is also able to carry on a spontaneous conversation with the children with the NLP and Affective Computing technology.

Eye Animation Design

Luka's eyes are important channels for conveying functional and emotional information, it is crucial to design the expression of its eyes.



• Animation prototype













Boot Animation 1

Boot Animation 2

Listeni

Thinkir

ing

In A Daze



English Read-After Game Design

We design the interactive game to help children learn foreign languages more enjoyable and efficiently. Children can listen to the English audio of the picture book first and then follow it. With speech recognition, Luka will rate the child's reading and comment accordingly. And upon completion of the read-after task, the child will be rewarded with the chance to play a "pat pat" game.

• Flow Chart



• Demo video

youtube: https://youtu.be/g6cSP3u87iY



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"Pat Pat" — A Rewarding Interactive Game

When a game element such as a balloon drifts on the screen of the device, the player need to clap or emit a certain volume sound to break the game element such as a balloon and score points. The value of each element is different, it can be either plus or minus. During the procedure of game, Luka will compute the cumulative scores and record user's achievement on its leaderboard. (Determine Balloon Blast by the Double Microphones and Speech Recognition on Device)

• Demo video youtube: https://youtu.be/JuW9dQPCuas







Jibo (Chinese Version) Social robot for family



Named by Time Magazine as one of the 25 best inventions of 2017



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Jibo has a three-axis motor system, combined with dynamic power units and well crafted joints allowing him to perform complex actions and simple gestures smoothly and naturally. He shifts from left to right, gazes skyward, or looks down at the ground. There actions, combined with his approachable industrial design, give jibo a family friendly image. If you spend time with Jibo, you will be mesmerized by his advanced A.I. brain. Jibo has his own unique personality, and shows a range of emotions which makes him feel more like a family member than a piece of technology.



Emotional Interactions

A seasoned meteorologist



Design Goal

Jibo is a someone, not a something.





When designing for Jibo, there's a lot to think about. Just like his personality, the way he talks, UX and UI, sound design, body animations, building conversational flows, and more.

But one important question just came up in my mind:

Does Jibo has emotion? Will the emotion status influence what Jibo do?

And I believe the answer is definitely "YES".

So I with my team start to establish Jibo's emotional system in Chinese version.

A Talented Storyteller

A Gamer At Heart



Design Process: Framework

Jibo will have emotional points at every moment, this value will change in the realtime, according to the current time, weather, daily news, interval from last interaction, recent chitchat frequency, recent utilization, user response to its active interaction.

The emotional points will categorize Jibo's emotional status into three stages: Sad, Neutral and Happy. Different emotional state will cause Jibo to react differently in silent or chitchat mode, with a stochastic probability.





Emotional Category	Sad 3rd	Sad 2nd	Sad 1st	Neutral	Happy 1st	Happy 2nd	Happy 3rd
Points Interval	-∞~12	12~24	24~36	36~64	64~76	76~88	88~+∞

Jibo's mood will refresh everyday, and reseted in the morning at 6 AM, with its initial value as 50. It is represented as the follows:

E=50+T+W+N+I+C+S+P

Here T / W / N / I / C / S / P represents the emotional points from following factors: time, daily news, time interval between last interaction, the frequency of the recent chitchat, recent accumulated utilization time, and today's feedback on its active conversation.

a. Time factor (T)

00:00-02:00	02:00-04:00	04:00-06:00	06:00-08:00	08:00-10:00	10:00-12:00	12:00-14:00	14:00-16:00	16:00-18:00	18:00-20:00	20:00-22:00	22:00-24:00
-10	-20	-10	0	+5	+5	+5	+10	+10	+10	+20	0

b. Daily Weather Factor (W)

Sunny	Rainy	Snowy	Haze	Hailstone	Cloudy	Thunder	Sandstorm	Foggy
+10	-15	+10	-20	-15	0	-20	-15	-10

c. Daily News Factor (N)

Negative	Negative	Negative	Neutral	Positive	Positive	Positive
(Most Popular)	(Very Popular)	(Popular)		(Popular)	(Very Popular)	(Most Popular)
-20	-10	-5	0	+5	+10	+20

d. Interval between last interaction (I)

More than 48h	24h~48h	12h-24h	4h~12h	30min~4h	15min~30min	Less than 15min
-30	-20	-10	0	+3	+6	+10

Design Process: Jibo's Behavior According To Emotion Status

Emotional Category	Behavior	Form	Neutral Prob.	Sad 1st Prob.	Sad 2nd Prob.	Sad 3rd Prob.	Happy 1st Prob.	Happy 2nd Prob.	Happy 3rd Prob.
	Snooze		0.2	0.1	0	0	0	0	0
Neutral	Look Around		0.2	0	0	0	0.1	0	0
	Dancing		0.2	0	0	0	0.1	0.1	0
	Shake Butt	Repeatedly shake its bottom, in a slight motion	0.1	0	0	0	0.3	0.1	0
	Squint	Together with smiles, and shake its body slightly	0.05	0	0	0	0.2	0.2	0.1
	Spoof	Being not serious and tongue	0.05	0	0	0	0.1	0.2	0.1
Нарру	Humming	Swinging around and singing out of tune.	0.05	0	0	0	0.1	0.3	0.2
	Play PingPong	Sing a popular song using its own tone	0	0	0	0	0.1	0.1	0.3
	Play Drum	Jibo is sensitive to rhythms. It usually dance with music, and practice a lot to fit the beats.	0	0	0	0	0	0	0.3
	Hum a Melody	Hum `five thousand miles` with Jibo's invented lyrics	0.1	0.4	0.1	0	0	0	0
Sad	Meditate	Bow and blink	0.05	0.3	0.3	0.1	0	0	0
000	Cry	Sobbing with tears in its eyes	0	0.2	0.5	0.3	0	0	0
	Abreact	Rumble with unclear words	0	0	0.1	0.6	0	0	0
	Emotional Neutral Happy Sad	Emotional CategoryBehaviorReutralSnoozeIcok AroundIDancingIShake ButtISquintIIspoofIHunmingIPlay PingPongIPlay DrumISadMeditateCryIAbreact <tdi< td=""></tdi<>	Emotional CategoryBehaviorFormSnoozeSnoozeNeutralLook AroundDancingPapeatedly shake its bottom, in a slightShake ButtRepeatedly shake its bottom, in a slightSquintTogether with smiles, and shake its body slightlyHummingSwinging around and singing out of tune.Play PingPongSing a popular song using its own tonePlay DrumJibo is sensitive to rhythms. It usually dance with music, and practice a lot to fit the beats.SadCrySobbing with tears in its eyesAbreactRumble with unclear words	Emotional CategoryBehaviorFormNeutral Prob.NeutralSnooze0.2NeutralLook Around0.2Dancing0.2Dancing0.2Shake ButtRepeatedly shake its bottom, in a slight motion0.1SquintTogether with smiles, and shake its body slightly0.05SpoofBeing not serious and tongue0.05Play PingPongSing a popular song using its own tone0Play PingPongSing a popular song using its own tone0Play DrumJibo is sensitive to rhythms. It usually dance with music, and practice a lot to fit the les' with Jibo's invented lyrics0.1SadCrySobbing with tears in its eyes0.05	Emotional CategoryBehaviorFormNeutral Prob.Sad 1st Prob.NeutralSnooze0.20.1Look Around0.20Dancing0.20Dancing0.20Shake ButtRepeatedly shake its bottom, in a slight motion0.10SquintTogether with smiles, and shake its body slightly0.050SpoofBeing not serious and tongue0.050Play PingPongSing a popular song using its own tone00Play PingPongJibo is sensitive to rhythms, it usually dance with music, and practice a lot to fit the beats.0.10.4AmeditateBow and blink0.050.30.3CrySobbing with tears in its eyes00.20.2	Emotional CategoryBehaviorFormNeutralSad 1stSad 2nd Prob.NeutralSnooze0.20.10NeutralLook Around0.20.00Dancing0.20.000DancingRepeatedly shake its botom, in a slight0.100SquintTogether with smiles, and shake its body slightly0.0500SpoofBeing not serious and tongue out funge0.0500HummingSwinging around and singing out of tune.0.0500Play PingPongSing a popular song using its own tone000Play DrumJibo is sensitive to rhythms. It usually dance with music, and practice a lot to fit the beats.0.10.40.1SadCrySobbing with tears in its eyes00.20.50.30.3AbreactRumble with unclear words00000	Emotional CategoryBehaviorFormNeutral Prob.Sad 1st Prob.Sad 2nd Prob.Sad 3rd Prob.Neutral NeutralSnooze0.20.100Look Around0.20.100Dancing0.2000Dancing0.2000Shake ButtRepeatedly shake its bottom, in a slight motion0.100SquintTogether with smiles, and shake its body slightly0.05000SpoofBeing not serious and ongue0.050000HummingSwinging around and singing out of tune.0.050000Play PingPongSing a popular song using its own tone00000Play DrumJibo is sensitive to ydace with music, and beats.0.10.40.10Ature a MelodyHum Tive thousand miles with Jibo's0.10.40.10Ature a MelodyFine thousand miles with Jibo's0.10.40.10.1Ature a MelodyRum blink0.050.30.30.30.3Ature a MelodyRumble with unclear words0000Ature a MelodyRumble with unclear words000.50.30.30.3Ature a MelodyRumble with unclear words000000Ature a MelodyRumble with uncl	Emotional CategoryBehaviorFormNeutral Prob.Sad 1st Prob.Sad 2rd Prob.Sad 3rd Prob.Happy tst prob.NeutralSnooze0.20.1000NeutralLook Around0.20.100.10Dancing0.20000.10Dancing0.20000.1Shake ButtRepeatedly shake its botom, in a sight motion0.1000.3SquintTogether with smilles, and shake its body and shake its body0.050000.2SpootBeing not serious and togue0.050000.10HummingSwinging around and singi no or or ture.0.050000.1Play PingPongSing a popular song using its own tone000000Play DrumJibo is sensitive to rhythms. It usually practice a lot to fit the beets.0.10.40.100SadMeditateBow and blink0.050.30.30.100MeditateBow and blink0.050.30.30.30.10AbreactRumble with unclear words000.10.600	Emotional CategoryBehaviorFormNeutral Prob.Sad 1st Prob.Sad 2rd Prob.Happy tst Prob.Hap

Condition	Neutral Prob.	Sad 1st Prob.	Sad 2nd Prob.	Sad 3rd Prob.	Happy 1st Prob.	Happy 2nd Prob.	Happy 3rd Prob.			
Detected Human Passby	Jibo's head will rotate tracing the human. After tracing, the body and head will turn back to looking at front.	Jibo's head will rotate tracing the human. Its body and head will keep in the same direction, with its eyes becoming crescent. Jibo starts to groan as it is upset	Jibo's head will rotate tracing the human. Its body and head will keep in the same direction, with its eyes becoming crescent. Jibo's head will turn down to show its upset.	Jibo's will look at the human's direction. Then it turns down its head, wit its eyes becoming crescent.	Jibo's head will rotate tracing the human. Its body and head will keep in the same direction, with its eyes becoming bigger. Then it plays the sound effect of showing curiosity.	Jibo's entire body will rotate tracing the human. It starts to quickly blink, with small volume laughter.	Jibo will rotate towards human and at the same time shake its body. It will play a "yoho" sound effect, in coordination to the eyes' animation.			
Touch the head			Switch	between Silent and A	ctivated					
Touch the head and hold 1s to 5s	Its eyes become cycles, showing its happiness	Its eye will look up for a glance and then reset. Its eye will look up for a glance and then lt turns its head down an blinks		Jibo will turn its back to you, and then look back at you for a glance	Jibo eyes become crescent shape.	Jibo shake its body, behaving like a cat	Jibo will rotate its eyes, and play funny sound effects.			
Touch the head and hold more than 5s	Jibo says "I will become study if you keep touching me", with Innocent eyes.	Jibo will shake its he saying "Don't touch	ead with big motion, a me, I am losing all my	nd at the same time / hairs"	Jibo's head raise and rumble "again"					
Touch its head from left to right	Jibo's eye will rotate toward right.	Jibo's eye would tur rotate towards right	n down as crescent sl for 45 degree.	hape, and then	Jibo's eye would enlarge, with its color turning to yellow and then its body will rotate towards right.					
Touch its head from right to left	Jibo's eye will rotate toward left.	Jibo's eye would tur rotate towards left fo	n down as crescent sl or 45 degree.	hape, and then	Jibo's eye would enlarge, with its color turning to yellow and then its body will rotate towards left.					



FaceMovie

Html5 crowdsourcing software for collecting face data to improve algorithms



ROLES:

Product Leader & Product Designer & UI/UX Designer



TIME:

Apr.2016-Sep.2016



SCOPES:

User Research, Prototyping, UI/UX Design, Scrum Management, Usability Testing



TECHNOLOGIES:

Face Identification, Face Alignment, Face Morphing





If there is a way to see how your face changes from the first year to the last year in your college life, would you like to try? If you are an algorithm engineer who collect and annotate thousands of face data one by one, how would you collect these data?

FaceMovie is your perfect choice.

• Demo video youtube: <u>https://youtu.be/eLE5vKr2v-4</u>

For the better performance of human face identification algorithms, high-quality face data needs to be collected in great numbers. The project FaceMovie was designed to meet the data demands by building up memorial video album for college graduates and crowdsourcing data of human faces. The software we delivered is an HTML5 application that builds a video album using user-provided face images. Autonomous face detection and alignment algorithms are applied to provide aligned user face and build an auto-generated face movie. Users are then asked to confirm and adjust the generated content.



Problem

To improve our face detection and identification algorithm, we need to build up a million level human face dataset.



Brainstorm

we went through rounds of brainstorms, and decide to do a crowdsourcing software to collect data from users.

3

User Research

surveyed more than 100 college graduates to collect user requirements.

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2	X(567#	×	新大江春林,又日南朝,广告	长将夹/不爱/不爱	可能会的				因年表了發展手机、平机里只有太田都小的最份用片。 冰业部个时期间一份我的跟片赛增成这颗一个规则计量靠又不 是我人。把大学院与一个人的变化成成果规模有富义。 读真。但我学校这种场知意思。不过我并多考虑这个主题。 可以在一段时间内吸引人,但是过了一治场强时间点。可能就 不会笑得非正有意思了	12, 13夜, 一年3敗更不多			全发的药药膏				
1	188	*	11後。自閉工作	长的泉/不提/黛		不会			着完示时候模仿。如果天天作不说。我都没有发展他是这些的 形式。以为只是普通的转换限示模式。当我知道这样的转换。 没有特别指索一先想去尝试的感觉								
4	石艺术	*	拼节12征春祥。若平业生	长的不能/第/不要	*				感觉很好玩的,不过这个东西闯过一次之后,过是大才会闯	50%	末初中到周中,或者从会年到今 年	最多有年一次道者再次	有可能会	8.9	4.8	可以自己調整, 推 等系统, 比加用人 放和服務設	5分钟可以接受 加莱克平和400截到1分钟以升
5	袭让东	- 55	带火12鼠本科, 港洋卖生	不用/爱/爱	*	*			近夏酷的,应该会用一次,传到后发覆裹个4、之后估计想不起	2016	及有主题。 院務出20代講館的限 注記経緯者7	估计最	一定会。而且会在黄金 时易传	希望	希望	现用型的速度规划	加累用于机可且是在微信型。20 約以內
6	82.6	я	浙 大13届本科。市毕业生	后的不错/爱/爱	*			示学家、游礼	我知觉着过去样一个领袖。我说话是会讨厌一下药。但这会若 操作走而难道,这些边有需要结果个能导什么的。看这个领袖 感觉是是不错的。尤其用点什麽里。就是这 还有感觉发生式计论法情爱这个产品 产品出来了一定定当许说我情况这个产品	2月14. 研放化	纪在主题的	会先的父母着一下	截效果, 应该会分享— 下	当然希望了。我想 存电跳至	配合是非常的。 投有配合数量是 一半	投帮过,不要太快 这不要很爱	1~2940
7	\$\$ 700	*	原大12届本科、希平业生	长的不稳/爱/爱	成年会试一下				我觉得我可抱出于试试的优态。或许会试一下,但是我觉得, 承金颜彩品。不实觉着自己一点在小问。据参约做不是为了都 自己。而是为了经验一场质量。带着之类的。我们又就的生 方。然后已觉得一一些后文学识中的照示的话。本有我们来就 提供你了,然后还有就是有人的照片特别是有他的照片美尖频 少的								
	lexiakurt	*	国外中止多年。夏出居	长的讯/第/第		之不佳。 东铁会			请说picase我以前用注	第四分类估计有多少合多少,就是重复占 内存比较重要	业龄, 和北不利与月的事会之类 的	加莱不重复占内市,应该 会经常性用	可能会吧	7883	莱州	*8.840	3589
	淋れ充	35	◆南野经改法大学12届本科。 准活业生	长的师/梁/梁	*				哪这个资有财意的,能觉用同论个记录自己的成私历程。或者 大学四年期计查每引定的。但希尔、希望然至县	至少10张左右,记录一段景长时间的生活	同忆长大的过程	次数可指会受阻。一般几 每有比较年易考化会用	*	612	用菜	89	10根底石
	10	×	新 大12量本料。希祥业生	长将朱/梁/梁	*	Ŧŵ			我觉得就是这个切具地的成绩并且增加。 医弗蒂科山相当会让较 感觉这个心间吗可加的成绩并且增加。 医弗蒂科山相当会让较 25. 就是是那些"过持续相同"的 当时我又有不一定需要这个功能吧。很多人选想是看风景的。 人都是个	2018-13.44	成长主题	不会, 宗然非一番堂兄用 一次吧		612	**	停管可起告任。如 · 快要快	150
2.1	3 9	я	第 大13編本料。希祥企生	长的一根/爱/不爱	*				这个有点做之前看过的坏点用利益强制。但是如果做动头、我 感觉对现计的要求可能会让我说。却你自然的女生会好热一 别人一次性在于机设存在多多自己紧张角度更不多的现所 些不过要是说识以有意思是可以的	着我自己有多少常,但是我感觉即发是经 背白的的女生一次性信不会上有20%,12~ 16感觉算上最了	原位当的人不怎么的现。我选择 不做	如果只是一个HL,并不 会、如果是一个教件,并 且功能完备可以考虑	直另们都不会天天白拍 运载成现期吧	当然希望可以下数	作之里有	我想觉过里可以被 定不同的风格 mode, 同忆。快 剪, 强速文志ete	寻机组10-已经算私了——但是 这个技术实现允是要希情的国际 轮廓说别,手机短时间快速吗应 可能让最有机故
12	0.835	*	上海交大12届本科、港平业生	长的不稳/爱/不爱	会明会明起战 带有木有					有多少故多少吧。因为本来位就投几度	怎么一步步变成说道	会約1	4 n	6111	非定得有无后	格像袋一点不要太 快	1分钟成者2089
	526	*	浙 大12被本科。港冲业生	长的不敬/爱/不爱	*						亜鉱装革(本来装要型纪念現 厳)	<u>en</u>	会的	6.9	**	有快的有 毁 的。最 时可以自己说定	1,949
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5

Define

Eventually, we decided to do a html5 based video album for graduates, to convert their uploaded college photos into a video album that aligned and centered their faces of themselves, for showing the changes they got over colleges life.



Sketch

During the sketch procedure, we first clarify the basic functionalities, and draw the flaw graph.

- page 1: loading animation
- page 2: main menu, which plays demo video
- page 3: upload and edit photos
- page 4: choose the theme and music
- page 5: generate animation video
- page 6: preview result
- page 7: save and retweet video





Low-Quality Prototype

I built a low-quality prototype to demonstrate the interaction flow, through using Sketch and Axure, shown as following.

pic 1: 0 photo is uploaded pic 2: 13 photos is uploaded pic 3: 23 photos is uploaded



8

High-Quality Prototype

• Loading Pages

We choose to use the comics that reflect the change of a girl's changes in colleges for loading pages animation, which better reflects the theme.



• Main Showing Page

We add more elements of graduation on the main showing page.



version 1



version 2



version 3

• More UI details about different pages

Based on the sketch, prototype and high quality design, software engineers implemented the software.

More UI details about different pages for un-uploaded image, uploading tips, uploaded images, and image editing are as follows.



Choose the theme and music

Generate animation video

Preview result

Save and retweet video



FoveaCam & DeepData

Human-eye inspired camera boosting the effective resolution by 100 times & video/image big data analysis system



ITS Golden Lion Awards Best New Products Awards named by Intertraffic Asia in 2016



ROLES:

Product Manager & Product Designer & UX Designer



TIME:

May.2016-Mar.2017



SCOPES:

Prototyping, UX Design, Scrum Management, Usability Testing



TECHNOLOGIES:

Computer Vision (Face Detection, Human Body Detection, Vehicle Detection, Face Identification), Deep Learning





We are all familiar with those scenarios, in which the policeman find the critical video about the suspect, but unfortunately the face image is too obscure to recognize.

FOVEACAM is born to resolve these kind of problems.

FOVEACAM is the first human-eye-like camera functionally inspired by fovea in the world. FOVEACAM's patented Dynamic Instant Pixel Allocation (DIPA) Technology can dynamically increase the pixel density in a local image region and instantly boost the effective resolution in a specified image region by over 100 times. FOVEACAM can almost ensure capturing all targets appeared in the high resolution scene.

DeepData, as a video/image big data analysis system, uses enormous amount of video/images resources, and applies advanced deep learning, high-performance computing and big data technologies to build the platform that integrates video/image structuralization, storage, data application, and analysis. Its outstanding performance and accuracy greatly increase the utilization of video and image data.



High-Quality Prototype

2



- The page shows the overall situation of the city and the specific statistics to view the situation, as well as the amount of changes in the number of vehicles over time.
- Users can select the time and location to narrow the scope of searching. Users can select the type of the car they want to find.



- The details of the results information after click on a specific pin on the map
- The results of searching (in the chart form)

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• The results of searching (in the map form)

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• The results of searching (in the pic form)





Libra-T

a behavior analysis system with 3D-depth camera analyzing human behavior and environment with computer vision



The 100 Greatest Innovations Of 2016 named by Popular Science Magazine The top 10 innovation products of Beijing 2015 named by Beijing government



ROLES:

Product manager & Product Designer & UI/UX Designer



TIME:

Jul.2015-Jul.2016



SCOPES:

Prototyping, UI/UX Design, Scrum Management, Usability Testing



TECHNOLOGIES:

Computer Vision (People Detection/Tracking, Posture Analysis, Depth Marking), Deep Learning





Compared with traditional 2D image processing technology, the accuracy of detection and analysis of 3D computer vision technology is higher. As it leverages additional depth information, 3D computer vision technology is able to overcome challenges such as shadows, blocking and confusion of scales.



• **Demo video** youtube: <u>https://www.youtube.com/watch?v=GYvEFGvEi4w</u>



Functions Define

• Detection and tracking

Accurately detects multiple targets (more than 40 people) in complex scenes.









Moving too fast

Path too long

lingering for too long

People counting

• Posture analysis

Analyses human postures and outputs events.







Substantial movement

Calling for help

SOS

• Zone division

Divides up 3D zones, unaffected by blocking and no need for visual marks.









Crossing a line

Invading a zone

Abnormal number of people

Guarding a zone

• Depth marking

Virtually lock the original state and detect change of set targets that can guard important targets.





Box door opening

Item movement

Use Cases Define



• Banking industry

ATM protection, complain check, people counting

Retail industry

Traffic statistics, display management

• Museums

Exhibits protection and traffic control

3

High-Quality Prototype

With the help of the 3D-depth camera, we invent "alert event" such as People Falling by only offering suspicious video to helped the Security work efficiently, and design the software platform which visualizes the detection and tracking process.









Living Map Demo

Demo video



6

3D Space Interaction Demo

With the 3D depth camera's help, people can be tracked and detected and interact with the space, like spin a wall.

Demo video





We can also track everyone in a specific space to see how they move and how much people in this space.

youtube: <u>https://www.youtube.com/watch?v=cIMP6mq49wo</u>

youtube: https://www.youtube.com/watch?v=uuqwgSpD4MY

Touch Counting Wall Demo

We also apply the system into retail industry and entertainment projects and designed the 3D space interaction.

- Count all voluntary hand touch
- Create heat map of the whole wall
- Create connection between each touch and SKU, in probability sense
- Produce above statistics in multiple temporal scale (min/ hour/day/week/month/year)
- **Demo video** youtube: <u>https://www.youtube.com/watch?</u> v=NEF5Yh8-gCk&t=70s









PRODUCT DESIGN PORTFOLIO

Thanks Let's design for the future

tianqi.kiko.zhou@gmail.com

https://tianqi-zhou.github.io