

0:00 now we're learning on the device we're processing on the device and we're consuming at least 50 percent less power
0:08 than other architectures that exist today so all this functionality in a very
0:14 efficient manner is where brain chip's going to start really changing
0:20 the world in regards to what you can do with your devices [Music] welcome to the conversations on applied
0:27 ai podcast where justin grammons and the team at emerging technologies north talk with experts in the fields of artificial
0:34 intelligence and deep learning in each episode we cut through the hype and dive into how these technologies are
0:40 being applied to real world problems today we hope that you find this episode educational and applicable to your
0:47 industry and connect with us to learn more about our organization at applied.ai.mn
0:53 enjoy welcome everyone to the conversations on
0:58 applied ai podcast today we're talking with rob telson rob is an experienced sales leader with a demonstrated
1:03 successful history working in the software and semiconductor industry skilled in driving growth negotiation
1:09 sales management organizational leadership and technology he holds degrees from the university of arizona and harvard business
school and is the
1:15 vice president of worldwide sales and marketing at brain chip holdings limited a company which is focused on software
1:21 and hardware accelerated solutions for advanced artificial intelligence and machine learning applications so this is
1:27 perfect as we love to talk about applications of ai and ml here on the applied ai podcast thanks rob for being
1:33 on the show today justin thank you for having me i'm really looking forward to this conversation likewise yeah so i i
1:39 appreciate you taking me up on the offer to join us for a conversation here today and i i mentioned that you're a brain
1:44 chip but you know one of the things that i do like to ask people maybe is you know what was the path to get you to where to where
you are today that's a
1:51 great question and you know i've been really fortunate i started in the technology space by random circumstance
1:58 and i have been in sales my whole career and i started in the the eda side of the
2:04 world so working with software applications to support and build out semiconductors and the circuit boards
2:10 that go with that and i've been fortunate enough to work for very large companies and very small companies that
2:16 i've either gone public or have been acquired and so i've been able to experience a lot of structure and a lot of chaos
2:23 along the way but in in the last 15 to 20 years or so a majority of my time was spent through
2:29 two large organizations one being arm being able to join them through an acquisition and then get involved in
2:36 sales leadership there and drive a lot of success as arm grew dramatically during that
2:42 time and run sales organizations for the americas as well as in the the foundry
2:47 side of the world and the manufacturing side and supporting um all the partners in that space and then also through a
2:55 synopsis and working with them on building out their disruptive technology
3:00 business and supporting new incumbents coming to the new players into the semiconductor development space and as
3:07 i've evolved in my career one of the things i've really appreciated is working in structured environments but
3:13 also working in unstructured environments and building out organizations building out models and
3:19 and really seeing the success the fruits of the labor turn into something great and so i've been to brain chip now for a
3:26 little over a year and a half really there was no sales infrastructure when i joined the company and the marketing infrastructure
wasn't there at all and
3:33 been able to build that out work with the right people to do that and now we've gotten to a point where you know
3:39 we've got sales we've hired a very talented cmo who's joined us and is
3:44 working out building out our marketing organization and doing a lot of exciting things on that end which is allowing me
3:50 to to build out our sales organization and focus on that and as well and it's a lot of fun excellent cool well i mean
3:57 wow you were at arm for quite quite a period of time you probably have seen the sort of semiconductor industry really change
and evolve over the you
4:04 know 10 years or so i mean what what are some things and it doesn't even need to be technology related just from from the sales
side how how is this how is this
4:11 industry really changed you got to put the last two years in a box and label it
4:16 weird when you talk about sales the whole process of selling in the business that we're in when it comes to
4:22 developing semiconductors and all the ecosystem around that is really about
4:28 this is big investment these companies that are building chips and going down this path or actually building products
4:34 are spending hundreds of millions of dollars to do so so finding the right partners that you can trust and you can
4:40 depend upon and will make sure that you're successful is key and so
4:46 demonstrating that you're the right partner to do that demonstrating that you're going to be answering the phone
4:51 at two in the morning when something in asia didn't go right and the team in the region that you're in needs to support
4:58 that is where it really comes down to play and so the last two years have been weird
5:04 because having that ability to get in front of new customers companies trying to adopt technology and build that level
5:11 of trust through zoom or through teams or whatever it is it's
5:16 not the same as really sitting face to face and saying okay let's map out how we're going to do this but prior to that i'll go back to
the
5:22 word that i've used a couple times here it's trust it's really about being able to
5:27 articulate and quantify the value of trust and selling on that and
5:34 knowing that the person sitting across the table from you or the team sitting across the table from you knows that you
5:40 and your team not only are they technically capable of doing what you want them to do but you're going to have their back and
that's i think
5:46 differentiates very successful sales people and sales organizations and those
5:51 that struggle to get to that point yeah makes total sense yeah i mean that that is really about what a relationship
5:57 or partnership is is trusting that the other person is going to be there do you you see manufacturing change from asia
6:03 you know to the united states you know at all are you where do you see things or is there any advantage to bringing it
6:08 more onshore that's a tricky one my friend especially now the geopolitical dynamics are as heightened as they've

6:16 ever been in our lifetime but you have to go back 50 to 100 years to look at the industrial revolution and look at
6:22 how things have changed i really implanted themselves as an industrial
6:27 industrialized nation and a leader in that and how they took that away from other nations who had their own industry
6:34 and had their own manufacturing but then realized that they didn't need to do it so they depended on countries like the
6:41 u.s to do that and unfortunately as we've evolved in the united states we've seen the same
6:46 thing where we become dependent upon other regions globally to support
6:51 some of the manufacturing that we could do on shore in the u.s my gut feeling says based off of the
6:57 dynamics that are going on today there will be more requirements where manufacturing is done regionally so this
7:04 isn't just a us thing this could be a global dynamic for each country to be able to have their own manufacturing
7:11 skill sets and be able to sell be self-sufficient in the environments that they're in
7:16 totally makes sense yeah yeah for sure there's probably not a one size fits all yeah exactly now when it comes to brain
7:23 chip and maybe we can talk a little bit about like ai like i know you guys create basically advanced neural
7:29 networking processors yeah this is really cool stuff yeah sounds fascinating i want to know
7:34 more about it you just press the go button on rob and i'm going to sit and talk for a little bit now but yeah so
7:40 what we do which is really unique in the business you know when you look at ai as of today most ai is actually processed
7:48 not on a device it's processed in the cloud and then it goes back to the device and i like to use you know let's use home
7:55 personal assistance or your phone when you talk to your phone and ask it for directions and you've ever had that
8:01 experience where it tells you i'm busy right now or i can't answer that like i don't get it right basically what it's
8:07 telling you is i can't get this information to the cloud back to the device in milliseconds
8:13 so give me a second i'll figure it out and as technology evolves
8:19 more and more demand is going to be put on devices at what we call the edge
8:25 these could be battery operated devices such as a handheld device or even a vehicle it's battery operated in the
8:32 future it could be industrialized machinery in applications where there's
8:37 a lot going on and around it it can be medical devices either in a facility plugged into a wall
8:43 or out very remote in third world countries where they don't have the electricity to work with and so all of
8:50 this ability to drive intelligence into these devices is going to require the
8:56 ability to do all the processing of the information on the device without being dependent upon the cloud
9:02 so as i said earlier all of the information that's driven today is driven from device to the cloud back to
9:08 the device what makes brainchip very unique is that we have the ability to do all this on the device without depending
9:14 on the cloud so we're going to be processing on the device the other major addition or major differentiator that we
9:21 have is that the way we're architected we're using right off the bat at least 50 percent
9:27 less power consumption to do so which means we're not dependent upon a lot of
9:32 processing power in order to process the information which allows us to be in these edge-based devices puts us in a
9:40 very unique position the third thing that we do that others don't do and this is where it gets exciting
9:46 is that we do on-chip learning so now we're learning on the device
9:52 we're processing on the device and we're consuming at least 50 percent less power
9:58 than other architectures that exist today so all this functionality in a very
10:04 efficient manner is where brainchip's going to start really changing
10:10 the world in regards to what you can do with your devices and the most common talking point right
10:17 now is in electric vehicles and it's the common talking point because
10:22 basically it's a dramatic shift from the traditional vehicle as of today to the
10:28 amount of compute power that's going into that vehicle but the drive isn't
10:33 that the vehicle is becoming more like just a computer on wheels the drive is
10:39 i'm really scared to drive 300 plus miles or 500 plus kilometers because what if i lose my charge
10:44 what if my battery dies and i'm out in the middle of nowhere and that's where the differentiating technologies and the
10:50 architecture that we're based on which is neuromorphic architecture for ai is
10:55 really going to drive things in a very unique way because now you can extend your charge now you get a thousand
11:01 kilometers on a charge maybe you can get a thousand miles on a charge now we're
11:06 really getting excited when it comes to technology and brain chips leading the way with what we've developed which is
11:12 our our chip is called akita and as i just highlighted we're based off a neuromorphic architecture and that
11:18 neuromorphic architecture means that we're processing our information very similar to how a human brain works
11:25 and so you think about the human brain there's a lot of energy that could be consumed with the way we process
11:32 information but the brain is designed not to consume energy it's designed to process and focus on
11:39 certain aspects of information at a time whether that be vision smell taste touch
11:46 whatever it is it knows it's going to consume some energy over here and then consume some energy over there
11:52 while the traditional ai engine as of today has to process all this data and
11:58 information at the same time and because we're neuromorphic we're
12:03 processing where it needs to focus at the time it needs to process energy and that makes us extremely efficient still meeting the
12:10 performance requirements that some of these semiconductors are going to need to meet to accomplish what they want to
12:16 accomplish in the future fascinating yeah really really cool thanks for that rundown with regards to
12:21 sort of how you differentiate yourself you know it's funny that you mentioned about also you know having to go to the cloud so
i'll share a personal story
12:28 right so my i have two little kids and they have alexis in their room and you know we use them as alarms right so they
12:33 have to you know the alexa goes off and very often just based on where they are in the house they're a little bit
12:38 further away from the wi-fi hotspot and so the alarm will go off in the morning and they'll be yelling you know they're
12:44 eight and 10 years old they'll still say alexa you know stop alarm and it won't stop and the reason it won't stop is for
12:50 that exact reason what you're talking about is it actually is not connected to the internet they haven't actually built that switch in
there

12:56 you know yet or enough intelligence in the alexa to understand like you know you told me to stop but i need to talk
13:02 to the cloud even do something as basic as that yeah exactly you know that's where it gets really tricky see i have
13:08 the opposite i have fun with the alexa one of my teenagers has the alexa and you know when if he's sleeping in went a
13:15 little bit further on the weekend that i wanted to sleep in i can stand directly
13:21 i don't know how just down the hallway although his door is closed and i can say alexa
13:27 tell me a story about peter the rabbit and all of a sudden i'll hear alexa go let me tell you the story of peter the
13:33 rabbit and my son like dad what are you doing and i'll just walk away with a smile on my face yeah that's good that's
13:39 good i use it to my advantage so this these are the things that we're very excited about because technology has
13:46 gotten to a point where there's some really great things that we can do as i said before whether it be in the
13:51 consumer applications whether it be in transportation whether it be for beneficial ais what we focus on and
13:58 think of healthcare in a variety of different areas so it's actually a point where there is a shift going on and
14:04 brain chip's going to be a part of that yeah for sure you know you mentioned brains there is actually a book called a thousand
brains that i would suggest
14:11 reading if you haven't already and i'll we'll have liner notes and stuff like that in this podcast so i'll have links to your website
your profile but it does
14:18 talk a lot about sort of this idea of what they know today with regards to how the human brain works and you know a lot
14:25 of it is prediction models is is really what they're sort of coming down to as you reach out and grab this glass of coffee that i have
in front of me for
14:31 example you know your brain starts to anticipate okay i'm going to be touching this soon but you know efficiency is
14:37 always key to per your point so i think it's really cool how you guys have have really taken this idea of creating an
14:42 architecture that again i mean energy is going to be the key to success here probably going forward especially with remote
14:49 applications what are some particular applications are you guys in the agriculture space where you're you know
14:54 sensing crops and stuff like that or i don't know maybe fill me in a little bit more on some of these sort of like remote low power
usage uh cases that you
15:01 see your chips ending up in justin it's a great question i want to say we're everywhere
15:06 the amount of interest level in our technology and what we're doing it's extremely broad we've had some success
15:13 for example with with nasa and helping them in regards to getting to orbit and
15:19 being able to capture images and so on using extreme low power devices such as akita to other success like in the
15:27 vehicle and working with a german automotive manufacturer and having them utilize our technology to
15:34 prove out their electric vehicle goals and they you know announced that at ces and we see that there's a great path
15:41 there for the future between the two companies as long as we continue to deliver on what they're they're looking to what they're
expecting us to deliver
15:47 on and other vehicle manufacturers as well all the way to consumer electronics
15:53 and applications in the consumer space and medical devices from that end we've had a lot of interest in other areas as
15:59 you mentioned like agriculture and so on the difference is the unique thing is you know as with any business
16:06 you have to focus on the areas where you can generate revenue and so time to money is always a critical component to
16:14 when we're talking to companies what we're trying to accomplish as well as wow that's a really cool idea and so you
16:21 have to be able to balance what are really cool ideas that will actually come to fruition and applications that you can
16:28 successfully leverage your technology and be able to communicate to the world that your company's a success so you
16:34 have this balance and one of the unique things for brainchip is you know we funded our company we took it public and
16:41 we are publicly traded on the australian stock exchange and also in the us as
16:46 well as i believe on the exchange in germany so we have a very strong following and a lot of shareholders that
16:53 are extremely passionate about the success of this company and so we have a requirement to go out and achieve
17:00 success in the short term but we also have to strategically put the right engagements in place for the long term
17:06 as well yeah so you're so you're dealing with say i have a company i have an idea you know i want to build a smart coffee
17:12 cup for example let's say some widget or something and then i approach you guys and say hey like how can i buy your
17:18 hardware but you guys must have some software and a software application stack on top of it as well like how much
17:24 do you guys then are engaged so our main focus to be very straightforward i'm going to take this
17:30 sideways and bring it back it's all going to make sense in a second our main focus is on licensing intellectual
17:35 property so basically what we're trying to do is take our akita technology
17:42 license it as ip to be designed into an soc around a broader system
17:48 and we've had some success doing that we've engaged with renesas we've also engaged with a partner in japan called
17:54 megachips who is an asic design house and has had a lot of success with japanese customers in that space
18:01 and so we're building that business out in order to drive the software dynamic
18:06 of it companies develop their ai models and their networks and convolutional neural networks or cnns and those cnns
18:13 can be built off of tensorflow they can be built off of pi torch or or whatever and so what we do is we have
18:21 a software development flow that takes companies that develop their own cnns
18:26 and then we optimize it into what's called a spiking neural network environment so because we're functioning
18:32 like the brain the brain functions in spikes so these are called snns and so we have that whole software development
18:38 stack it's called meta tf post tensorflow and we launched it in april
18:44 of 2021 so just about a year ago and since then we've had over 5000 unique
18:49 users start working with medite but it's it allows companies to take what they've
18:55 already developed they don't have to do anything different it optimizes their networks in an snn environment gets them
19:02 the highest level of accuracy and if they're not getting the accuracy they want there are steps to go back we
19:08 process it re-optimize it and again that's all automated so we have that development flow in place now i bring
19:14 all this up because you asked two questions you you brought up the the idea of i want to do a smart coffee cup
19:20 i've come up with a great idea you guys look like you have a really cool technology how do i do that
19:26 we get a lot of that okay now as you know in the semiconductor space and building out

19:32 systems there's a lot of different components to build out a complete system and we're only a small piece of
19:38 that so that's why we partnered with companies like mega chips to enable them
19:43 to build out a complete soc to support a customer in their environment because
19:49 you have some companies on the low end that need that support you have other companies on the high end that have all
19:55 the infrastructure and all they're looking for is the ip and design it in so it's a very broad ecosystem and i
20:02 personally do a podcast on a monthly basis for brainchip but what we do is i try to
20:09 focus on the ecosystem and all the different components that are involved in the ecosystem
20:15 because i want people to understand it is kind of fragmented there's a lot of different players that need to be
20:22 involved in this and that you know he who ties out his ecosystem and has all
20:27 the partnerships and all the relationships is the one who's going to end up winning at the end of the day because it goes back to
trust and being
20:34 able to solve the customer's problems yeah for sure i mean when you talk about
20:40 things being fragmented i actually just interviewed a guy yesterday for the podcast and we were sort of lamenting how yeah i've
been in the in the iot
20:46 space for you know more than a decade here probably before was even called iot and you know you've got thousands of of
20:53 companies everything from you know low-level chip design you got fab houses all the way up to people that are working just on
pure applications and
21:00 apis and stuff like that so you know in some ways maybe the reason as to why the internet of things i believe has been
21:07 kind of like next year is going to take off next year is going to take off because you have this this fragmentation going on i feel
like and just hurting
21:13 everybody together it can be very difficult right everyone has their own wants and needs
21:18 yeah and in all fairness it is taking off it's not you know zero
21:23 to a thousand miles per hour in one day it's ramping up it's getting widely accepted work work we just talked about
21:30 alexa for example perfect example it's built out the really cool thing is
21:36 what's next and i think you know the next five years our
21:41 environments in our homes are going to have so much intelligence built into it for those that want that it's going to
21:48 be there's going to be some really cool applications yeah for sure i just don't know if it's on the scale of the 100
21:53 billion devices by 2024. they you know just a lot of these things they were they were predicting you know they were
21:58 predicting just some some pretty insane numbers and you're right alexa's been huge i mean if you if you package it up
22:04 and something as simple as that you know basically a smart speaker and give it to somebody in their home and they start using it
they will start finding uses
22:10 for it right i think what's been a little bit slow to come i feel like is you know you mentioned some of the industrial applications
and and and those you know
22:17 there are companies that have bought in and they're in it and they're really sort of pioneers and they're charging the way forward
and i talk to a lot of
22:24 companies that are really sort of dipping their toe in this and they don't really know why they're doing it or what is the
22:29 value but i think at the end of the day and then i'll bring it back to a positive note is is the more
22:34 intelligence you can put at the edge the more power you can do and so i i kind of believe that this whole sort of tiny ml
22:41 all the work that you guys are doing all the intelligence at the edge is going to start unlocking a lot of these
22:47 scenarios that maybe weren't able to be done even you know as recent as you know three to five years ago totally agree
22:53 and you know i'll give you as you're saying that i'll give you five examples if i can make it five as we go
23:00 through this let's take medical devices for example the ability to take an image
23:06 of let's say some type of lesion or something to that extent that didn't exist before
23:12 and being able to capture that lesion learn it on a portable device and then notice that there are now 100
23:19 people in a community a small community that are getting these lesions and recognize what that is and say okay i
23:25 understand what that is this technology that's being driven by companies like brain chip that will be
23:32 integrated into devices will help us get there quicker and the ability to detect
23:38 viruses such as covid through breathalyzers and other aspects our blood markers and so
23:45 on in a portable world where we don't have to get in lines at large arenas or
23:52 whatever or to get tested or something to that extent and then being able to use those same devices to detect the flu
24:00 or something to that extent i think is is massive and we're on the path to do that the ability to walk into your home
24:08 in your kitchen every morning and say good morning towards the kitchen and your coffee maker turns on and starts
24:14 making you a double espresso right that's more of a luxury than a need
24:20 but at the end of the day people will pay for that the ability for your refrigerator to
24:26 recognize that something is rotten by smell and when refrigerators more more
24:31 refrigerators are gonna have panels on those panels tell you your milk spoiled or your broccoli is rotten it's been in
24:38 there for three weeks whatever it is you know the ability for an industrial
24:44 environment to have vibration detect and so you know there's a defection with a
24:50 machine that costs a half a million dollars before it breaks down and stops the whole
24:56 production line all of these things can happen today and all of these things are in the process
25:02 of happening when they go to market when they go to volume that you know a lot of has to be
25:08 executed upon from that and i didn't even get into the good stuff we didn't talk about vehicles or drones or flying
25:14 taxis or all the stuff that's coming our way yeah for sure how do you think this is
25:19 more of a philosophical question but i do like to ask people this when they're on the show is is you know how do you think this
affects than the
25:26 future of work i think about drones for example you know you could have drones go out and do a lot of inspection a lot
25:31 of maintenance right they're actually um you know flying and taking a look at with like wind turbines and that was something
that a human would have to do

25:37 and climb up and take a look at this stuff they're flying drones up there now to do it and they're taking all sorts of imagery and they can on device probably

25:43 do a lot of the stuff that we're talking about so yeah how do you think do you guys think much about that i think do you think it's a net positive net

25:49 negative net neutral i think it's been neutral i don't think it's going to change the the amount of

25:55 people that are working it might change the role of what they do we're doing some stuff in our office with drone

26:01 technology right now and we're tinkering on some pretty cool stuff it's still going to take someone to operate the

26:06 drone to have the drone do what it wants to do for example so although like let's use wind turbines for example you're not

26:13 going to need to have a guy risk his life on a daily basis by climbing up a giant wind turbine to do

26:20 inspection and detection now he's going to be operating flying devices fly up there capture images of

26:27 the ball bearings or the main engine area and then be able to recognize

26:33 where they need to spend their time fixing turbines and again this is a complete

26:38 hypothetical right but for the purpose of well and the same thing can be go all the way down to an

26:45 automotive environment and being able to look at engines or components within an

26:51 automobile and be able to determine wear and tear and instead of having a mechanic

26:58 get beneath the chassis to do something there's going to be all the diagnostics

27:03 that they can do within then they're doing some of that today but all the diagnostics capture those images

27:10 apply it into a system where it can recognize image a looks very similar to this issue

27:16 over here so i do think that it's going to be a net neutral it's not going to replace

27:21 the amount of activity that we do in the workforce we will leverage these technologies from that end there will be

27:28 areas where you could apply ai and it can you know be 90 accurate

27:35 but we still find in a lot of the exercises that we do there's this human element to a lot of what we do that you

27:41 can't take away agreed well said for sure you mentioned some of the applications that you guys do i mean

27:46 tell me a little bit more about that i mean are you guys just sort of maybe when you talk to customers are you just you know you're coming up with some sort

27:52 of like a test bed or some sort of example applications be like have you thought about you know here's some neat ways in which you can use brain chip is

27:57 that you guys have a little lab or a little place where you test out some of these ideas you know we moved to a

28:02 larger facility at the beginning of the year and for the first time we've got a lab and a demo room it's separate from each

28:09 other so we're building a ton of stuff out the team comes to me with ideas you get for the listeners you can go to our

28:16 youtube channel at brain chip eek and uh we have a ton of our media we

28:22 have demos that are professionally done and we have demos that that aren't professionally done and you can see that

28:28 the evolution of the company and how we're going about doing things but we're doing some fun stuff right now i mean

28:33 one of the things that we talk about that really makes us unique is that we want to be as close to the sensor as

28:39 possible and the sensors are what gather that data that information and what our

28:45 ai engine does or what akita does is it takes all that sensor data and it breaks

28:51 it down and processes the necessary information in a very efficient manner

28:56 so one of the things that we focus on are the five senses and those five senses are vision and that's a lot of ai is

29:03 about vision today hearing very similar to what we talked about with alexa and a lot of ai is applied to hearing but the

29:10 future of ai is really comes down to smell taste and vibration

29:16 the technology that can manage all that and manage all that on a single working device and that's one of the things that

29:22 brain chip's doing right now is we're demonstrating that by going and looking at some of our media and content you can

29:29 see that we're doing vibration detection you can see that we're doing tactile analysis you can see that we've got a

29:35 smell or old factory and taste we're demonstrating wine tasting so you can taste the difference between two

29:41 different types of wine and we just came out with one where we were we're demonstrating uh beer tasting but you

29:47 know we use beer is for fun and it's pretty cool we all can relate to that

29:53 but the reality is we're not really chasing the difference between two beers we're analyzing compounds i should say

29:59 and when you think of compounds you think of glucose sodium ph alcohol and whatever the compounds are those

30:06 compounds could determine the well-being of a city based off of the water

30:12 or the gas in the air and so on so what we're trying to really focus on is with

30:17 akita in our technology what you can do is you can start applying rai to be as

30:24 close to the sensors as possible and process this information and so we have all that and we're continuing to as i

30:32 mentioned before do more demonstrations and test out technologies which will allow us to start showing a lot more in

30:38 the near future so from that end what i get really excited about is over the

30:44 past two years we really haven't had the opportunity to to be present and public in a lot of

30:49 environments like trade shows and where you can really weigh yourself measure yourself from

30:54 competitors and other new technologies that are being introduced and we go to these shows and we're the

31:00 only ones that can do on-chip learning we're the only ones that are showing gesture we're the only ones that are recognizing different facial

31:06 features and you know then we're demonstrating vibration analysis or high speed

31:11 detection of objects and images and that's where it gets really cool it's like we're doing all this now it's it's

31:18 proven in silicon and you know now it's just kind of building out the technology finding the

31:24 right engagements uh with the right partners and doing it in a very efficient and effective way

31:30 yeah absolutely that's great and you talk about sensing compounds i mean that is one of the ways that cities know if

31:36 there's a coveted outbreak happening right they're actually testing wastewater for these compounds which is

31:41 which is fascinating right so that's all i mean it's yeah it's awesome and i i you know the other thing i think is very

31:47 cool is that you guys are actually doing on-chip learning right that that's the big thing in tiny ml was always or has

31:52 been send the data up to the cloud retrain send it back down again yeah the one thing that companies

31:59 haven't been able to get their finger to the pulse on first of all finding machine learning guys
32:05 is really tough there's a lot of ai guys out there the second thing is
32:10 building out the networks for what you want to apply the intelligence to is even tougher and so it takes guys time
32:18 to either find a public network and then tweak it to what they want to do or develop their
32:24 own customized that could take months to years to do to get it right so the fact that we're saying all right take a
32:31 network whether it's your own or what it's one that we're you know like mobile.v1 and
32:37 now let's capture some smells or let's capture some vibrations or
32:43 let's capture some facial recognition and you don't have to do any retraining
32:48 you don't have to get any additional ml learning going on or get the aia you can allow them to work on other programs and
32:55 projects that's where it gets exciting and it's the companies that can leverage
33:00 that type of technology put it into their products and really build on that for scalability and flexibility purposes
33:08 so any sort of like a turnkey solution i guess is what people really they want to get get some sort of a rapid prototype
33:14 done they can utilize your stuff for that yes absolutely and that's what i think
33:19 something we get really excited about is is the way that we're architected the way that we've produced the product with
33:24 the software development flow that we have in place it's all there
33:30 yeah awesome one of the other things i kind of ask is is if people want to get into this field or like what what are
33:36 some of the shows that you're attending i guess what are you mentioning your podcast i'll be sure to put a put a link out to that
but what are some good
33:42 sources of information as people are are getting into this space yeah so anyone interested i mean there's
33:48 there's two points of this it's hey i'm interested in learning more about ai and then there's hey i'm interested in
33:53 learning more about brain chip as a company and then from an ai standpoint there's a there's a whole show circuit that can be
34:00 very broad and or very specific in nature and so for example you you and i were
34:06 just we spent some time here and we've referenced tiny ml and tiny ml is a show
34:11 that takes place not only in the us but also takes place in different geographies i know they have a big one in asia as well i think
that's in the
34:18 summer time and our goal is to be there as long as we're allowed to be there but what we're seeing is you know tiny ml is
34:25 really focused on tiny ml tiny machine learning small technology embedded into other devices and how do we build on
34:31 that as you mentioned iot from that end but there are computer vision there's embedded vision there is
34:38 the ai world there's a ton of different ai environments for those interested in
34:43 just learning about ai i know you mentioned that there's other meetup groups and so on like that and and we
34:49 would love to educate and be a part of that and learn as well in regards to brain chip i i do send
34:55 most people to our youtube at brainchip inc because that's really where our content is
35:01 but our our website at brainchip.com is also a really good place to go
35:06 and then if you want a specific conversation contact us at sales at brainchip.com and and our team will
35:14 take a look at the question and i can get involved if you reference me to say i want to talk to rob we'd love to have
35:20 a conversation with you and see what you had to say if you come up with great ideas and even if we can't support you
35:26 with your idea we can at least point you in the right direction of who can support you with an idea that you might
35:31 have because this this is a very greenfield environment it is really wide open and uh if i'm going to use the in
35:37 the u.s you know we'll talk about baseball for example if we're talking baseball we're in the first inning i
35:43 mean of the the whole ai revolution per se and that's what makes
35:48 it exciting there's there's a lot going on here and it's it might feel like it's moving fast to some of us but it's when
35:55 we look back five years from now we're going wow it's starting to move really fast yeah for sure for sure now i've always
36:02 been on sort of the cutting edge sort of like the next the next technology wave sometimes in a good way sometimes a
36:08 little bit too early but i do also you know realize that yeah i mean as i've been in this iot space kind of in this
36:14 ai ml space for a number of years here just the rest of the industry now is sort of like really starting to adopt
36:20 and come in as a big wave sort of behind me or behind us i guess in some ways and that you're right you're seeing a lot of
36:25 these applications now come to fruition and some of it is sort of this this idea that now we actually have the hardware
36:31 to be able to do the the inference at the edge and now we can train on chip and now we can run 50 of the power a lot
36:37 of these things just weren't able to be done so it's this great sort of convergence i think of sensors from from iot you know machine
learning from
36:44 tensorflow you know smarts that you guys are doing with regards to really low power consumption to really make these
36:49 devices now be able to sort of really act like a human in some ways right actually able to do intelligence smart
36:56 things and and be able to you know raise alerts you know turn motors on and off you know send messages you know whatever
37:02 it is but you know drive the car you know whatever it is so it's a fun time absolutely one of the
37:07 things i didn't bring up we started using this term a few months ago a lot more freely than we have in the past
37:14 and that is a iot right that's applying the intelligence to the iot devices and
37:20 so you're going to start seeing that pick up in the world that we live in you know the our whole objective is is
37:26 really make sensors really efficient really smart in very
37:32 tiny ml type of environments absolutely well cool rob yeah you
37:37 mentioned how people can reach out to you i guess you know sales at uh brainship.com right and like i say i'll
37:42 put links to your guys website and your linkedin page and stuff that's probably another good place to connect with you as well is
there any other topics or or
37:49 things that maybe that you would want to share that i missed today no i think we're good i just think that
37:54 you know for those that have a real distinct interest in ai and you know i wanted to just remind everyone that you
38:02 know it is moving at a very fast pace and there's a lot going on out there and uh hold on hold on for for the ride
38:10 because here we go and and for those that are new and they want to learn more like justin mentioned not only with with
38:16 his podcast or other podcasts that are out there keep learning be a sponge and it will all start to to make sense over
38:23 time i love it yup for sure for sure yeah the things that i tell people is learn teach lead so learn something new teach it to

38:30 somebody else and then you can become a leader within your organization you know whatever it is but everyone should have an open mind

38:36 well great rob i definitely appreciate the time today thanks so much for being on the show hey justin thank you very much for your

38:42 time and look forward to future conversations you've listened to another episode of

38:48 the conversations on applied ai podcast we hope you are eager to learn more about applying artificial intelligence

38:55 and deep learning within your organization you can visit us at appliedai.mn to keep

39:00 up to date on our events and connect with our amazing community please don't hesitate to reach out to

39:06 justin at [applied ai.mn](http://appliedai.mn) if you are interested in participating in a future episode

39:12 thank you for listening