

Transcript

Bringing AI to All feat. Allison Knight '10

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[00:00] **Brian Jackson:** Welcome to Owl Have You Know, a podcast from Rice Business. This episode is part of our Flight Path series, where guests share their career journeys and stories of the Rice connections that got them where they are.

Today, we're joined by Allison Knight, an entrepreneur, AI innovator, and Rice Business alum whose career spans deep tech and multiple startup ventures. At just 24, Allison co-founded Rebellion Photonics, the imaging startup behind the world's first real-time gas cloud detection system, technology that reshaped safety standards in the energy industry, and was later acquired by Honeywell.

Today, she's the founder and CEO of Alaris AI, bringing practical AI tools to blue-collar trades. In this conversation, we get into what it was like to be a young founder in a high-risk industry, her drive to expand access to technology, and the mindset that's helped her take bold risk, build teams, and redefine the playing field at every stage of her career.

Hey! Good morning, Allison. I'm so happy that you're joining me on Owl Have You Know.

[01:05] **Allison Knight:** Hello. Yes. Good morning to you.

[01:08] **Brian Jackson:** Good morning. Allison, you were the youngest founder in your cohort, at 24, with Rebellion Photonics. You know, what was the mission? And ultimately, what happened to the company?

[01:18] **Allison Knight:** Sure. So, Rebellion Photonics, what we specialized in is the ability to identify and quantify gas leaks on oil rigs, refineries, and pipelines before they caused explosions or unnecessary emissions. So, before Rebellion Photonics, believe it or not, oil and gas companies, upstream and downstream, used detectors pretty similar to, like, the fire smoke detectors in your house. We call them point detectors. Like, the smoke has to come to the detector, kind of, linger there. And they would put fancier versions, but they would put those out around refineries and such, like, on the fence in there, as if a methane emissions

cloud hung out at six-feet tall on a clinic fence. But I think, to be fair, that was the best they had. And they put them everywhere.

But the gas clouds, in the real world, don't behave in the wind. And at some point, detectors are not ideal. So, really, the way, you know... we were specialists, like, you could see in our videos, oh, for the first time, you could see the gas leaks and not just see them. You could see the quantity. Like, we would do a false color image show. It was, like, bright red and a deep red there were most stents. And then you'd see videos of, like, your workers, like, standing near a gas cloud. And that's, you know, that's a cortisol spike right there.

And, you know, when we first started, they maybe had three of these point detectors go off every month. And they'd send somebody out there with another point detector, but handheld, and be like, "I don't know. I don't see anything." And then they start using our cameras, and we'd get about 500 alarms a day, in the actual video, like, to start, you know, then you can tighten up the ship, so to speak. But a really, really profound step forward in gas leak detection.

And we were able to do this just with a really great tech team, just inventing, really, a new type of way to do hyperspectral imaging. So, hyperspectral imaging had existed before, most famously with, like, Hubble Telescope images. So, you have these. Those different colors are different gases, and then they're false colored. And so, that's a hyperspectral image. And we were able to do not just images, but video.

Where we struggled in the beginning is we just weren't getting the signals we needed. And we were lucky in some ways because that's when AI — we called it machine learning back then — machine learning was just getting started, especially with machine vision and imagery.

So, AI and imagery was actually more advanced than LLMs, like, language. So, we were able to use early AI to improve our data and that we were able to do these really quite spectacular and exciting videos of gas leak. We were purchased by Honeywell. And now, the technology's used all over the world, which, as an engineer, makes you happy.

[04:22] **Brian Jackson:** Yeah.

[04:22] **Allison Knight:** Just lovely to see.

[04:24] **Brian Jackson:** Being a founder at 24, is that your own act of rebellion against, kind of, what's expected of us worker bees in the world?

[04:33] **Allison Knight:** Yeah, actually. So, I was 24. I was the youngest student in the Rice MBA program. And I'd gotten, like, a prestigious... semi-prestigious investment banking job that I'd accepted. But I am a physicist, more than I am an MBA. Like, science and tech still makes me the happiest. So, I ended up, even at Rice, just hanging out with, like, Rice techies, like, other applied physicists.

Yeah. And it was just too tempting to, like, I knew I should do the investment banking job, but I just couldn't do it. I had to go for this crazy methane emissions monitoring company. And I loved it. It was extremely difficult, but what a great way to spend your youth — your misspent youth — telling oil and gas companies, “Hey, get your shit together. I can quantify your gas leaks now. And I need you to buy it from me.”

Like, I look back and just, like, the extreme boldness of it was just something you only do at 24. And now, at, like, 40, I don't think I would do it, not because obviously it was successful, but just like I was mentoring someone, I would've been like, “Why would they buy that from you? No, this won't... Good luck.” So, I think there's something beautiful about naivety.

[06:01] **Brian Jackson:** Yeah. So, being naive gave you the confidence. Is that what you're saying?

[06:05] **Allison Knight:** I prefer the word, like, “innocence.” Like, this product should exist. And it should. I still, in my core, believe that. And no one is building it. What we were doing was so, so advanced in tech. Like, “You cannot analyze hyperspectral video in real time. You can't do it.” It's like, “Yes, we can.”

So, it was just so exciting on the tech side and just, like, to just really, really believe in what you're doing is so special. And I'm so lucky that I got to do that for basically a decade.

[06:43] **Brian Jackson:** So, the tech itself was a bit of a rebellion.

[06:46] **Allison Knight:** You have to remember, like, this is 16 — going on 17 — years ago where AI... or for one thing, we didn't call it AI, but AI was just very, very nascent. Like, you couldn't put out a job description for, like, an AI engineer. Even finding a good data scientist was difficult.

The only one doing this in machine vision — so, like, imaging, not language LLMs — the only people doing this, not in video, but static, were astrophysicists. So, like, a little set bucket of applied physics. Because you see all those, like, Hubble Telescope images with the beautiful Eagle Nebula. The Eagle Nebula is not actually yellow, pink, and white. Those are different gases and different chemicals and they false color those chemicals still look like different colors. So, that's a hyperspectral image.

And the signal, as you can imagine, on those telescopes is, like, so low that you better do fun stuff to up your signal-to-noise ratio. And so, that's where you see some very early machine learning.

So, astrophysicists were some of the earliest AI explorers when it came to images, some of the first users. And we would hire them. I'm thinking of one astrophysicist in particular named Ryan who was really with us from the beginning. And it was just awesome.

I think everyone will experience this. And I just happened to experience this 15, 16 years ago, is your, like, AI moment, that first time where you run some code with AI. And we've been trying to do real-time video detecting and imaging gas leaks in real time and, kind of, making do with it, and they're ugly. But then we brought in AI and started doing very, very, very, very basic machine learning. And it was just, like, magic, Brian. It was magic. Suddenly, you could see the crisp outline of the methane emission cloud with the workers standing in it. I mean, you could just see the detail, the density. It was just, like, someone had turned the lights on. But, like, I was just like, "Ah!" Like, really take your breath away, like, "Oh, it's different." The world's our oyster.

I still find great joy in tech and just, like, I consider myself more an engineer than a scientist. Like, scientists, you get your Nobel Prizes and, like, you write your books and it's very individualistic, especially in my field, which is physics. But an engineer, you don't know our names, you don't know the name of, like, the engineer who learned, back in Roman times, put volcanic ash into the concrete so that you could do the bioduct so that you could have the city, so that you could have the Roman Empire. We are more just, like, a long process of passing the baton. And it just feels so good to have been part of that relay team. It's just one of the great pleasures of my life. And so, to continue to do that, it's just very enjoyable.

[09:56] **Brian Jackson:** You speak of the relay team, you had a co-founder with Rebellion Photonics, Robert Kester. How did you get connected with Robert? And could you talk about that relationship and specifically how it worked with Rebellion?

[10:09] **Allison Knight:** Yeah. He was working in a lab in Rice. He was writing a grant for his research. He was just working in the biological research center, which I believe still exists at Rice, and using his powers of physics in the cancer field, because that's where all the funding is. And he needed help writing a grant. There's a commercialization project. Someone was like, "Oh, there's a physicist actually right now in the MBA school who could probably help you write this." Because I'd been, kind of, getting the word out that I wanted to start a tech company with, like, the local tech community. And I'd been volunteering for free at the tech incubator. I had been, like, actively networking for a good year, so that when the time came of someone... And I often had inventors, kind of, come to me, or were introduced to me. But he was the one. And that was like, "Oh, this! 50 people a year may buy this for cancer research for, like, very niche applications, but we could also look at all these other applications." So, the second time we met, we shook hands and agreed to start a company.

[11:21] **Brian Jackson:** Wow!

[11:22] **Allison Knight:** And I think any co-founder relationship, like, it's two people. It is very similar to a marriage, but without all the fun stuff. It's just the hard part. But, you know, I can look back now and be, like, very, very happy with what we built.

We were so young. Like, he was 27, I was 24. I am so impressed. We weren't perfect by any means at all. But I look back, kind of, almost like a different person, and I'm like, "You did great," because I have a tendency to be so hard on myself. I'm aging. I think I'm, like, calming down a lot and just thinking back and being like, "No, you were great, kid."

[11:57] **Brian Jackson:** You have to give your younger self a bit of grace.

[11:59] **Allison Knight:** It's true.

[12:00] **Brian Jackson:** We didn't know.

[12:00] **Allison Knight:** It's really true. We didn't know,

[12:04] **Brian Jackson:** So, the period of wasted youth and the decade of going full throttle, what did that teach you about the cost of startup life?

[12:12] **Allison Knight:** Well, I'm doing another startup now and I'm realizing, like, how different it can be if you are secure in yourself and your abilities. So, I think so much of, like, the overworking was just, like, insecurity on my behalf. I'm not, like, truly believing in myself and, like, all the imposter syndrome that like so many female founders have.

And when we sold to Honeywell in 2019, we sold December 9th, 2019. And then COVID hit, right, in January, February. And at the time, I thought it was physically painful to stop and do nothing. And I had three very painfully... I mean physically painful to do nothing. And it was the best thing that ever happened to me — to just pause.

[13:03] **Brian Jackson:** Yeah.

[13:03] **Allison Knight:** And I'm so glad I did. So, now, this second time founding a company, you know, it's harder, in a way, because there's no innocence, there's no naivete, I know exactly what I'm getting into, but on the other hand, it's just everything's easier as a second time founder, especially if you had a good old pause and, you know, went to therapy. And so, it's just nice to, like, have a chance to do it again and without putting myself last. Like, I think a lot of female founders do this. It's, like, they will put themselves last on the list. Or just overextending yourself, not setting boundaries, not feeling like you can set a boundary.

I had an all-male board. We raised over \$14 million for the company, plus a few million in government grants. And on my board, like, they were a \$3 billion fund and they never invested in a female CEO.

And I did eventually have my first child at the end of Rebellion. And the first thing, when I announced it to the board on our board call... And I left it so late. I was, like, five-and-a-half months. Like, I left it as late as possible because I just knew, “My god, it wasn't going to go well.” And the first thing out of their mouth was a heavy sigh. Like, “Ugh, you'll be distracted now.” And that was really the tone. That was really the tone from then on out. Like, it's interesting, I mentor a great deal of female founders and it has changed dramatically. Like, I tell stories like that and it would just be unheard of it. That wouldn't happen now.

So, a great deal of joy was taken away from me, because then every board meeting was stressful and then you're really having to, like, prove yourself. And I took a 10-day maternity leave even though I had a C-section, emergency C-section, after 37 hours of labor and I was back in 10 days.

I think that is part of the reason I'm doing it again. I would like to have more agency, not having that be the end of my story.

[15:11] **Brian Jackson:** Yeah. So, tell me a bit about Alaris. That's what you're working on now, right, with Alaris AI, is AI for blue collar. Like, specifically, what do you mean? Like, would it be AI that helps a plumber diagnose a leak in a house, or is it, kind of, beyond that?

[15:27] **Allison Knight:** Sure. You could. We don't focus on SMBs too much — small businesses — so, like, mom and pops. I'm looking for, like, blue collar work technicians who work for, like, big enterprises, which is a good majority of the American workforce, just so you know.

People think, you know, almost everything right now in AI is being built for white collar work, which, in America, is less than 20% of the workforce, just so you know. The other 80% are deskless, you know, in some form of a trade or technician. So, pretty much across the board, AI really sucks for blue collar.

With white-collar work, we can just, kind of, like, boop, boop, boop, take the generic ChatGPT and it works beautifully. And that's because we, white-collar workers, have been, like, typing for a long time, you know. We've got all the new documents and different folders. And so, it's all been trained on that, for the most part. So, it's really trade on white-collar documentation and meant for it blue-collar documentation. Basically, manuals and SOPs have inherently always been stinky. But more importantly, none of the documentation has been done on, like, what's in their head. What's in the foreman's head, the supervisor's head or the individual's head?

And so, when you don't have that data documented, structured, codified, then the AI will be useless. Your AI is as useful as your data. That really is true. And in blue-collar work, because that hasn't been codified... And to codify it, like, you're not going to get senior linemen at Idaho Power to sit down for a year and, like, think. Like, that's not going to happen, either. You could do that with white-collar work.

So, you know, our special sauce is how do you stay in their workflow? How do you do it without a change of behaviors? How can you capture that knowledge and then use that in a secure and safe manner to help them have the productivity gains that white-collars work... because you're not seeing, like, almost any productivity gains in blue-collar, where white-collar is astonishing.

So, for this, like, just backing up, like, when I decided to do another company, I wanted to stay, like, with the users I like. Like, I want job roles and blue-collar work, but I also wanted to do something bigger. Like, I think Rebellion had an inherent issue of market size, like, our market size was never big enough to be, like, a unicorn. Still really successful and I'm proud of it. But, like, if it's your second time at that, I've always been curious of, like, "Oh, could I do a unicorn?"

But one thing is market size. And you hear investors talking about this a lot. It's just not something I thought about at 24 that I really think about at 40 when I'm starting a company, is, what is the market for this product? What is the market size? Like, how much money could you really make from this product? And so, I did want to go for a much larger market.

And when I look at some of the core roadblocks for universal AI, AI for all, which is my goal, AI for all, it is codifying blue-collar genius. Physicists really like to break problems down to their basics. And, like, when I look at the problem of AI for all, it's like, oh, this is the fun, yummy equation we have to solve for.

And then we have to deliver to them in a way they actually want and, you know, without changing behaviors because that's really hard for this.

[18:58] **Brian Jackson:** Like, building the trust from them?

[19:00] **Allison Knight:** Yeah. How do you build trust? I think a lot of tech companies who are doing these enterprise sales, they sell to the CEOs. And I sell to CEOs, too. And I look at them as the customer. A year or two later, the product gets cut and the company goes under because adoption rates were so low.

And I think a general rule of thumb is two things. One, did you truly respect the end user? Did you respect what they felt, how it made them feel? Did you raise their cortisol levels or did they enjoy it? Like, really down into their body. And the other one is, like, did you take their agency away? Or did you give them more agency?

And there's some products that are just, like, automation and you're taking their agency away. And that's okay. I mean, I would sleep poorly at night, but that's okay because you've kicked them out entirely. So, you don't need them to use it. But if you need a person to actually use it

and be involved, you better not be taking their agency away. You better be giving them more agency. And really back to literally how does this make them feel in their body?

So, I absolutely love that part of it. Maybe I should just quit and be, like, a product manager, make my life simpler and just do that, because I really enjoy it.

[20:15] **Brian Jackson:** So, when I adjuncted, I found it really sharpened how I explain complex topics. You've taught as an adjunct at Rice Business. Did the classroom help you, kind of, in that same way? And what was it like shifting from running a business back into that teaching role?

[20:32] **Allison Knight:** I think that was really, yes, exactly, like, I have been living in an AI bubble for so long and I'm, like, too close to it. So, it was really good to get me in front of 250 students in the Shell Auditorium, double-layer, and, kind of, learning how to talk about AI to intelligent people who have no idea what you're talking about.

And so, that was probably the best thing I could have done before launching the second startup, where, still, like, very, very few of us truly understand AI. And that will change, but I think it's going to change over 10 years.

[21:09] **Brian Jackson:** So, your course, your adjunct course was specific to AI?

[21:13] **Allison Knight:** AI for Fortune 500 Companies was the title, I think. And we were the largest class of the year. We were the most attendance. It was way more work than I expected. So, I only did it for the year, but it happened.

[21:32] **Brian Jackson:** Yeah. What were the questions like? I mean, I'm trying to think of the timing, too. This was 2022?

[21:37] **Allison Knight:** I think it was the spring of 2023. So, it would've been that 2022 year, you know, where they go, '22-'23 year.

[21:46] **Brian Jackson:** This is right as AI is hitting all the headlines.

[21:50] **Allison Knight:** Yes. And so, I think that's why I was the biggest class. But that was really useful for me because I have been in AI so long and the changes for me have been

incremental, like, cool. But, like, I've watched it evolve. And then I'd mostly hang out with, like, Silicon Valley people who've also been watching it grow.

And so, I just didn't understand what a bubble I was in and how I was so excited and I just didn't fully understand why everyone else wasn't, like, losing their mind excited, especially with some of the new frontier models, because this is right when some of the frontier models were getting hot. And it's, kind of, you wake up and you look around and you're like, "Oh, my god, the world has changed." And then everybody's going about their business and you're like, "No, no. Everything you're doing, everything you're learning, every way you are learning has changed."

Most interesting of all was talking to the other professors at Rice. And I think they were probably more forward-thinking than most. And they would reach out to me to do coffee. And some of them were professors I had. So, it was incredibly flattering, by the way. And we would just chat about marketing or accounting or organizational behavior. And what is AI at its core? It's cognitive labor. So, you know, we have the Industrial Revolution with steam engines where to do mechanical labor, the cost to do mechanical labor plummeted to almost zero with steam. And then, you know, electromagnetism, continue on. So, here we have the cost to do cognitive labor has plummeted. And what does that mean? And we will find out that answer over our lifetime. But we are limited by our own creativity. We live in a world now for tinkerers, which is great for me.

But it was really interesting to be, like, the bearer of that and trying to explain, like, "No really, let's break out your workflow. Here, type the 500 things that you do. Okay. And for each one, let's see how AI affects that."

Just back in '22, there's basic things because a lot of people thought of AI as automation, which is not accurate. AI, at its core, is prediction. Whether it's machine vision or LLM, it is a prediction machine. You can add coding at the end to take that prediction into a judgment. And there, you have done full automation. But at its core, it's prediction.

And I love the non-deterministic manner of it. So, you know, some people who struggled the most with AI, this can be fascinating to you, it's, like, coders because they lived in such a binary, hardcore, black-and-white, deterministic world, and now we've gone non-deterministic. We've gone from Newtonian mechanics to quantum mechanics. And I always prefer quantum. So, this is so fun for me. Trying to explain...

[24:58] **Brian Jackson:** Well, it's rocking my world and I sit here and I think... This cost of cognitive going down, you know, my long-term value in a career, am I really just going to be the manager of an AI that's going to make a determination and then I help it make the judgment? Am I the key?

[25:19] **Allison Knight:** I think it's more than that. You are now... Yes, every employee is now a manager. Like, when you look at new org charts, it'll be, like, some people put, like, several AIs below one person. I think that's, kind of, silly. Technically, yes, different agent workflows. It'll basically be you working with, like, an AI.

But even now, like, especially for white-collar work, if it's white-collar work, I mean, the only thing holding back you and your company are yourselves. And the thing I try to make come across in the class, and I honestly don't know if I did a good job of it, but I attempted to make clear of, like, this is a muscle. How you have learned up until this point is no longer helpful. You have had to memorize things and do the work and, like, all by yourself and, like, by scratch. And now, you are multiplied.

Now, you can do the math that Einstein did. Now, it's just, like, what do you care about? Like, what do you, like, want to do with that?

It was interesting. Some people in the class get quite emotional because they're like, at its core, they were like, "But I like doing the busy work." They didn't say it like that, but it was what they said.

And I would just say, you know, learn to crochet or there are other busy work that is very enjoyable. And I understand, but don't let that be your career. And also, just not giving yourself enough credit. So, I do really encourage people to, like, start building that muscle. I interact with AI every time I do cognitive work, so it's open all the time. I usually have multiple workflows working at the same time. So, like, agents were doing long things for me over the course of, like, an hour, let's say, deep research. I don't do a lot with automation, because with what I do right now, there's not a lot of, like, consistency with that kind of thing. But I know people do — and that's great — with Xavier and things like that.

But basically, you should have ChatGPT or Gemini or whoever you prefer open all the time. And you should be building that muscle. You should be using the different modes that you can use. And you should just be pushing yourself to change behavior.

And on average, it takes about three months. So, you might want to say, “Okay, first quarter or fourth quarter, this is my quarter. I will now change behavior,” and have it open. And every time you are writing or reading, you should be thinking, “Okay, I’ll just put it in.”

And I really like the whisper function, the voice. We use voice, mostly in blue-collar work. But also, for white collar work, I think it's underutilized. So, you should be... like, when I was walking the dog, I would have the whisper function on my AirPods in and I would just chat with it. I really encourage that. And it's fun. Just use it for your private life, if you can't work out how to use it for your public life. But start building that muscle and build it immediately.

I think this is the highest priority that anyone in white-collar work should have. And blue-collar work, well, it still doesn't really work for you because it's not trained on what you know. But for white-collar work, there's really no excuses. It should be open all the time. You should be using it consistently. And it's going to take about three months of it being painful and then you will do it without thinking, because that's how long it takes to change behavior. But you do need to change behavior now.

[28:53] **Brian Jackson:** Well, I've got one final question. You've got such an interesting story. And I was once in an interview and was asked this question about myself, but if there was a billboard and it was selling you, Allison Knight, what would it be selling?

[29:06] **Allison Knight:** Oh, I wouldn't want that. I just want to quietly go to my corner and do my thing. I just wouldn't want a billboard.

[29:13] **Brian Jackson:** No, but if there's a product and if it's, you know...

[29:16] **Allison Knight:** Oh, my product.

[29:18] **Brian Jackson:** What are you?

[29:19] **Allison Knight:** I could do one for the product. I wouldn't feel comfortable with myself. I'm trying to think, like, how would I want my kids to remember me? I do like the EE Cumming quote of, like, “The hardest thing in the world to be is yourself.” And that feels very true to me, down to my core. The hardest thing in the world is to be yourself. And I'm just trying so desperately hard just to do that. And I feel like, every year, it gets a little easier. And that has to be good enough.

[29:53] **Brian Jackson:** Yeah. That's excellent. That's perfect. My answer was, like, I've been knocked down and beaten around, but I'll still get back up.

[30:00] **Allison Knight:** Oh, I think they're the same. That's the same thing.

[30:04] **Brian Jackson:** Well, thank you so much, Allison, for joining me on Owl Have You Know. You've been a fantastic guest.

[30:08] **Allison Knight:** Thanks, Brian. Had a great time!

[30:14] **Brian Jackson:** Thanks for listening! This has been Owl Have You Know, a production from Rice Business. You can find more information about our guests, hosts, and announcements on our website, business.rice.edu.

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