

BUILT FOR CHANGE

EPISODE 12

AUDIO TRANSCRIPT

0:00

EDY: This is actually quite an interesting story.

MUSIC

Elise: This is Edy Liongosari.

EDY: In March 2019, an executive at an energy firm in the UK gets an urgent call from his boss asking him to quickly transfer 220,000 euros... So he transferred the money to the bank account, as specified by his boss who turns out in fact not to be his boss.

BEAT

EDY: The voice he heard was a sophisticated fake of his real boss's voice complete with the slight German accent. The money is yet to be recovered.

Elise: That's right. A company was conned out of a quarter million dollars using... a deepfake.

MUSIC OUT

Josh: We've all seen those videos – of presidents, monarchs, or famous celebrities saying things that they never really said, or doing things they never really did...

Elise: And technically speaking, that's not an

1:00

entirely new phenomenon. We watch movies made with CGI all the time. But Edy says, this is different. Because now, it's easier than ever to make deepfakes using an AI technique called Generative Adversarial Networks, or GANs.

MUSIC

EDY: What's new is really the underlying technology and the AI techniques such as what we call GANs, that allows us to create such synthetic media at scale and speed, with such a convincing quality that fools many people into thinking that the generated media itself is authentic.

Josh: Here's how it works:

EDY: So, one way to describe GAN is a two-player game.

Elise: These two "players" are two separate neural networks, and in this "game," they're pitted against each other. First, the "generator" network looks at a data set. Say, a bunch of recordings of a podcast host like me speaking.

EDY: For example, the pace of your speech, the overall tone, if you will.

Elise: Then, the generator network takes what it learned and tries to create a



2:00

convincing fake - a fake of me saying something I never said.

EDY: And then you have a discriminator, almost like a police, if you will. And then you know it'll actually be able to determine is this actually your voice versus other people's voice.

Josh: And then, the generator tries again...

Elise: Hopefully, sounding a little more like me...

Josh: ...and the discriminator says again, "Nah, that isn't convincing. That's not Elise!"

EDY: After you run thousands, sometimes millions of cycles. The generator becomes really, really good to generate the data that you actually want to create. And the discriminator has a really hard time discriminating, whether this is fake or what is actually real.

Elise: And eventually, the discriminator won't be able to tell the fake voice from my real one.

MUSIC OUT

Elise: [Clears throat] I, Elise Hu, love key lime pie. What do you think, Josh? Real or fake?

Josh: Well it... it sounds just like you.

Elise: Well Josh, I'm here to inform you that wasn't actually me. That was a GAN talking.
3:00

Josh: Oh my goodness. Seriously?

Elise: Actually I hate key lime pie.

Josh: [Laughs] Wow. It works!

Josh: So now, with GANs, just about anybody can make a pretty convincing deepfake. So – it's really easy to see why deepfakes have attracted a lot of negative attention. Our society already has a really hard time delineating what's real and what's fake in the age of social media. So the idea that any average Joe can make a recording of a CEO requesting a major wire transfer, or even a video of a world leader declaring war? That's freaky stuff.

Elise: Yeah, even the US Department of Defense has said that it considers deepfakes a national security problem. But Edy says, fake videos and recordings are NOT the whole GANs story.

THEME

Elise: Because this dueling neural network technology used to power deepfakes? It can also be used for good. To create art, to make autonomous vehicles safer, to develop new medicines, and solve really challenging business problems.

EDY: From what I can tell

4:00

is that very few people think about the actual technology itself, what it can do and not necessarily everything has to be malicious, right? I think at some point the concept of GAN will be actually quite pervasive even at the business level.

Elise: I'm Elise Hu.

Josh: And I'm Josh Klein.

Elise: And this is Built for Change, a podcast from Accenture



Josh: Elise, where have you seen deepfakes before?

Elise: I have seen so much coverage of deepfakes over the past few years.

Josh: Yup, yup.

Elise: I haven't been faked out by one yet. But those are deepfakes and GANs are different...

Josh: They're separate, but it seems like GANs have a PR problem as a result of being thrown in the same bucket.

Elise: [Laughs] Yeah. But if you do decouple GANs from deepfakes, you can realize that GANs are a super powerful technology that could help us innovate.

Josh: Yeah. There's significant business implications for the use of this technology, just like any other.

Elise: So in this episode we'll dive deep into GANs, and find out exactly

5:00

how businesses can harness their power for good. We'll talk to a company that's on the cutting edge of bringing GANs to the masses, and even talk to an expert in AI and ethics to understand how businesses can use this technology securely and ethically.

THEME OUT

EDY: One of the issues with test data is that it's very hard to come by.

MUSIC

EDY: So take for example, you want to be able to build a system that can predict if a piece of machine [is] going to fail.

Elise: That's Edy Liongosari again. Edy says, to create machine-learning-powered predictive maintenance, an AI would need to train on data. So that it can learn what it looks like when things are about to break.

EDY: And it is very hard. You have to [be] just at the right time at the right circumstances to be able to capture the data.

Elise: Trying to capture all that data, on all the thousands of ways that a machine can break, to help AI learn to spot a problem-- especially in situations that only come up once in a while, that's hard.

EDY: And with GAN, you can

6:00

actually take a small set of data and actually sort of amplify it.

Elise: This is the crux of what GANs do: they generate realistic, synthetic data.

MUSIC OUT

Elise: If you think about it, that's what those deepfakes are. The GANs train on a data set, then generate "fake" data. Like a video of the president dancing to a funny song. But Edy says the ability to create synthetic data has endless business applications. Because sometimes, gathering realistic and diverse data is hard or prohibitive. Think about training autonomous vehicles.

MUSIC

EDY: There are a lot of companies out there testing autonomous cars and what actually they have been doing is actually running the cars, you know, for hundreds, if not thousands of hours.



Elise: But in most cases, these cars are training on pretty normal circumstances: The sky is bright and blue, the road is smooth. But, what happens when they run into abnormal situations?

EDY: The road is slippery. Perhaps actually the sun is shining directly to the cameras.

Elise: With GANs, you can create the data to cover those abnormal circumstances.

7:00

The generator and discriminator networks can work together to dream up all sorts of circumstances that they never saw during the test drives.

MUSIC OUT

Elise: So where else can synthetic data be valuable? Edy says GANs are already showing a lot of promise in product design.

EDY: It is a great way to remove orthodoxies and human biases.

Elise: Edy says, our human brains can be a bit biased when we look at a problem. Say, we want to design a product, like a chair.

MUSIC

EDY: Maybe three legs or four legs. Flat at the bottom. Maybe actually have, arm support and so forth, immediately pop up in our mind, but actually with the GAN, you can actually sort of feed all the information about "chair" and ask it to generate still "chair" but a very different form.

Elise: GANs can help open up all kinds of new possibilities for what a chair can be that humans may have never thought of.

EDY: You may not even realize that it is still a chair of this form. It comes up with a very interesting

8:00

shape, colors, function.

Elise: It's hard to imagine, because we're so used to thinking of a chair in its traditional form. But GANs might come up with a chair that's... completely round, or convex, that has no legs at all, or is made out of flexible material that conforms to body shape.

EDY: That actually allows you to think very broadly and open up your mind in terms of, what we can do with it. It's a great brainstorming tool if you will.

MUSIC OUT

Elise: Think about food R&D. Product formulations are super complex. So, what happens when an ingredient needs to be replaced? Maybe customers are asking for something new, or a natural disaster disrupts a supply chain...

Normally, endless new formulas would need to be concocted, and physically tested to see if they function the right way. GANs can generate that data synthetically but realistically. They can create surprising new ingredient combinations that work using that same generator vs discriminator process we described earlier. Maybe combinations that people

9:00

could have overlooked.

EDY: That's actually sort of a bottom up product design rather than say, this is a product that I want to create. To actually figure out based on the materials that we have, what kind of products can be developed?



BEAT

Elise: GANs can also help in cases where there's an issue of data privacy (rather than scarcity). Like, in healthcare.

MUSIC

Obviously, HIPAA laws make it problematic to use private patient data for public research. But GANs can help solve that problem.

EDY: So imagine you have private data that's already out there. You have to learn from the data itself,

but you never share the data. What actually you share is the model and also the data that is generated from the model.

Elise: The tricky task here is balancing privacy and utility. The synthetic data needs to be similar enough to be accurate, but not so close that patients can actually be re-identified in the synthetic data. So Accenture Labs developed a tool to help.

EDY: You use APAT to actually check the resulting, generated output

10:00

to make sure that there is no private information there.

Elise: APAT stands for Automated Privacy Assessment Tool. Using APAT in a healthcare case like this one, could help protect a patient's privacy, while still letting them benefiting from machine-learning drug discovery research. But organizations can also use APAT to balance privacy and utility with all kinds of synthetic and anonymized data, not just from health records.

MUSIC OUT

Elise: This is just one way that GANs are helping data become more secure, and thereby helping people feel more secure in the ethical use of this technology.

MUSIC

EDY: I will say, don't equate GANs with deep fake, I think GANs have a lot more possibility than deepfake. GAN is a really, really really, powerful technology to allow you to open up, the way you think about your product, your services, the market that you have. So when you are actually, for example, faced with some business problems, what are possible solutions

11:00

you actually should consider. What are the alternatives? You can actually use GANs to think about that. It can be a business tool, not just a technology tool in defining the overall business strategy.

MUSIC OUT

Josh: Yeah, clearly GANs are so much more than deepfakes. I mean, just the way they can essentially create healthcare data sets while still protecting patient privacy, that's huge.

Elise: I love all of the examples that Edy shares. I think it's really cool that GANs can help us get around our human biases and come up with designs that we might never come up with on our own.

Josh: Yeah, it's intelligence augmentation. It's helping human beings do that uniquely human creative act even better.



Elise: Yeah. Yeah. And there's a company that is making what Edy described a reality on that creative front. Their software is providing artists, educators, and businesses with the ability to use the power of GANs to unlock creativity.

MUSIC

CRIS: A lot of transformational technologies do have a larger social impact, right?

12:00

Elise: This is Cris Valenzuela. He's the co-founder and CEO of a company called Runway.

CRIS: We at Runway develop software that allows people to tell stories, using machine learning techniques.

Elise: You can think of it kind of like the next generation of photo and video editing software. But instead of simply editing a video, Runway allows its users to work with machine learning tools, AI-- and specifically GANs-- to unlock their creativity.

BEAT

Elise: The idea for Runway all started when Cris was a researcher in computational creativity at NYU.

CRIS: Inside NYU, we were researching this idea of computational creativity. How do we take algorithms and put them inside creative workflows? Now most of the use cases around machine learning at the time were either in self-driving cars or financial products. But we kept seeing interesting ideas and applications inside filmmaking, for instance. How do we help filmmakers work faster by automating the parts of a process that they don't really kind of like

13:00

want to do or they're perhaps too expensive?

MUSIC OUT

Elise: So Cris set out to bring this software to the creative masses.

MUSIC

CRIS: A lot of time creatives spend on their day to day work focuses on these tedious, repetitive tasks. For instance, fashion designers spend a lot of time just finding reference shots or reference images so they can create a mood board. And a mood board is a fundamental piece in the design process. You're basically creating the style and the color palette of your work.

Elise: But you can use GANs to analyze thousands of inspirational photos all at once. It sorts between millions of possible image combinations and generates new designs based on your personal mood board aesthetic.

Elise: GANs can basically act as the artist's assistant. Generating new designs and ideas based on large datasets. And you can apply GANs to all kinds of rote creative tasks-- like, searching for the perfect stock photo for a marketing campaign. Or, if you're a podcast producer, listening to endless mp3s in a music library to find just the right song.

14:00

MUSIC OUT

Elise: So whether you're using Runway to edit a video, create a podcast, draw a comic, or even write a poem-- you can use different categories of algorithms to help you with your creative process.



CRIS: Think about going into a supermarket and you have thousands of products and every product does something different, right? You can buy shampoo, you can buy fruit, you can buy cereal, right? And the way we built Runway is built around something, a very similar metaphor where you can go into a supermarket and you can have different products, and different algorithms in this case for different types of tasks.

Elise: And Cris's goal isn't for GANs to replace the creative process.

CRIS: So think about a pencil, a paintbrush. Those are fundamental tools in your artist stack, right? In your toolbox of tools that you can use to express something, to tell a story.

Elise: And the artistic iterations of Runway are endless.

MUSIC

Elise: Remember when we talked about using GANs to design a chair earlier in the episode? Well, Runway is actually doing that. They're

15:00

using the process we described to help a fashion company design the next generation of shoe.

CRIS: And so as a designer, you can take that as input in your design process and you can combine it. You can ask the algorithm to propose 10 variations of the same pattern, but in different colors automatically. And there's no waiting time. They will design it automatically.

CRIS: And it will look exactly as if you have designed it.

Elise: And the better quality the data set put into the GANs, the better the designs. So, for companies that have accumulated mountains of data about what customers like, or what they've

bought historically, they could use Runway to create the next big "hit."

CRIS: They're feeding their models with a lot of data, historic data of things that have worked better than others. And every single exercise of coming up with a new design involves a lot of time. Now, if you can iterate on that a thousand times faster, you're going to get a thousand times different outcomes and you can test those way quicker. And so from a business perspective, it's a really interesting advantage to be able

16:00

to process and generate and experiment with designs and new products with this data that you already have at hand.

MUSIC OUT

Elise: But Runway isn't just bringing the power of GANs to product designers and artists.

CRIS: We have like, students from the social sciences, we have like historians and art students using [Runway] to understand how algorithms work.

Elise: These students are using Runway to learn about how GANs work behind the scenes. So they can be prepared to use this technology in creative ways in the future.

CRIS: It's about giving access to these AI and ML systems to a broader set of creatives without technical experience and without any technical background.

Elise: So, for example, an English student could use Runway to experiment with predictive text in essay-writing. Or an art history student could use Runway to help them efficiently research and analyze images by a specific artist from a giant database of paintings.

CRIS: The big part of understanding this technology is that it's going to be so transformative to all sorts of different



17:00

industries inside the creative world. And for us as a company making sure that everyone gets a good understanding of how it works. Being able to seat everyone at the table and having everyone's opinions with regards to how to use GANs and how to use synthetic media. It's fundamental.

Elise: Cris says It's important for people, especially in non-tech disciplines, to have basic technical literacy. To get familiar with the technologies, like GANs and basic algorithms, that are shaping our world. So they can meaningfully take part in the conversation around GANs and how they'll be used in the future.

MUSIC

Elise: That's why Runway is built to be accessible. Runway's design is approachable, because Cris understands that bringing new technologies into the world can be intimidating for the public.

CRIS: We've seen this a couple of times with, for example, the film industry, when film was first created in the early 1900s there's this story around how someone projected one of the first films to ever be shot on a screen and the scene contained a

18:00

train coming to the station.

Elise: You may have heard the story. The people actually thought the train was going to break through the screen and run into the theater.

CRIS: If you think about people running off the cinema because they thought that the train projected was real. But at that time, it was like they never thought of that technology being possible.

CRIS: But over time you get used to it, you understand the potential and you understand the potential beyond just the bad use cases or the specific use cases. You think about it in a more positive way.

CRIS: And that involves making sure that people get the chance to see it live, to understand how it works. And so for us, a big part of it is very similar to that story for the train coming to a station, is making sure that the narrative around synthetic media and GANs goes beyond deep fakes. That's just like the tip of the iceberg.

MUSIC OUT

Josh: I love the story of Runway. It just so nicely encapsulates the potential for this kind of technology.

Elise: Mhm

Josh: When you take something so powerful and then you really democratize it, you make it available

19:00

for everybody.

Elise: Yeah. So you can use it in filmmaking. You can use it in art. You can use it in writing and podcasting, which are things that we do, Josh.

Josh: Mhm.

Elise: That means anybody can use it. But of course, there's a flip side to that. I also worry about the danger of it, because it is so easy and accessible to use by both individuals and corporations. And that means we have to rely on a collective good will as we move forward in working with GANs.

Josh: That's the story of technology since, you know, human beings first invented fire, right? You can use it for good and you can still get burnt.

Elise: Exactly. But we absolutely need to be thoughtful about how to proceed with powerful technology like this. So next we'll talk to a



philosopher, an expert on ethics and tech, to really think this through, right? To help understand how the amazing technologies we've learned about today can be used in a secure and ethical way.

DAVID: I started to really worry about... what are the ethical implications of these new technologies and how should we act

20:00

in this new environment?

MUSIC

Elise: This is David Danks. He's a professor of Data Science and Philosophy at the University of California, San Diego.

DAVID: What is it to do the right thing, either as somebody who produces content, as somebody who consumes content? What does it even mean to do this well? By which I mean ethically and responsibly.

Elise: David spends his days untangling these sticky questions of ethics around new AI technologies - for example when AI goes awry and harms people - like perpetuating gender and racial discrimination. And so, he spends a lot of time thinking about the ethical implications of things like deepfakes and GANs.

DAVID: Ethics for me is very much about the values that we have and then how we realize those values in the world.

MUSIC OUT

Elise: Technologies like GANs and deepfakes are constantly evolving, and becoming more prevalent in our everyday lives. So, in order to prepare for the future, businesses need to educate

21:00

themselves-- about their ethics and their implications. We asked David to zoom in, and tell us what it might look like for businesses to use these technologies in an ethical way.

DAVID: When you think about deepfakes and the potential impact on trust, we need to think about how deepfakes might promote or undermine somebody's values. Namely the users', the customers' values.

Elise: David says that in order for companies to use deepfakes and GANs ethically, they need to do so in a way that positively bolsters the company's values and the values of their customers.

DAVID: So as a company, if I'm using deepfakes to have a more impactful message, to enable my product to be understood and used properly by more people, then that's a case where deepfakes are going to be not just consistent with trust. It'll probably increase customer's trust in my company because they're going to see that my company

22:00

is even better at supporting their values, even better at protecting their vulnerabilities.

MUSIC

Elise: Companies could do that by using GANs to efficiently develop products based on customer feedback. They could even translate their website copy into rare or overlooked languages, in order to reach an audience that may never have encountered their product before.

DAVID: They can provide businesses, especially, with the ability to get their message



out in better ways, in more inclusive ways. And to show what they're capable of in ways that might lead to both of course, better business, more business, but also, more satisfied customers

DAVID: I think that that's an important tool that should be in many businesses' toolboxes.

Elise: But by the same token, businesses should be careful to avoid using deepfakes in a way that erodes customer trust. That could look like... a makeup company using a synthetic spokesperson to model their foundation. If the synthetic

23:00

person models the foundation and it looks totally flawless on their skin, but when YOU try the makeup on it looks thick and cakey, you might feel like you were sort of tricked into buying it. And you probably wouldn't buy it again.

DAVID: If I'm using deep fakes in a way that makes the customer think, wait a second, does the company actually care about me or are they just doing things to try to get my business?

MUSIC OUT

Then it's quite likely that what's going to happen is that's going to undermine trust.

Elise: If the intent of a malicious deepfake is to deceive – to play a fake video off as a real one, that's ethically compromising.

So David says, companies should be clear and transparent about their use of GANs.

MUSIC

DAVID: My own recommendation to companies would be to signal.

Elise: That could mean adding a watermark to your video, or a disclaimer telling your customers that you're using deepfake technology.

Elise: Now, let's pause for a minute and acknowledge that there are still a lot of questions to grapple with here. And in a lot of cases, there won't be

24:00

straightforward answers. If a business creates a totally synthetic spokesperson for their company in a way that's convincingly real, should they disclose that it's not a real person, or is it only valuable if people think it's real? What do synthetic spokespeople look like? If synthetic people are based on real data that's biased, will they recreate gender and racial biases? Is it ever acceptable to produce a deepfake of somebody real, living or dead? David draws a bright ethical line on that last question.

MUSIC OUT

DAVID: You should not ever produce a deepfake about another living person without their consent and agreement. David: We need to be careful about the fact that humans are really good at self-deception. We're really good at convincing ourselves that this is one of those special cases. This is one of those exceptions, even when it's not.

Elise: So creating a deepfake of a celebrity giving a PSA, which they obviously consented to participate in? That's okay.

25:00

Creating a deepfake of your neighbor saying something horrible without their knowledge? Not okay.

BEAT



Elise: But of course, just because some will use GANs responsibly and ethically doesn't mean that everyone will.

MUSIC

Elise: Like David said, humans are very good at imagining that our particular situation is the exception to the ethical rule. So we should be prepared for that reality.

DAVID: I think that one thing we should do is recognize that there are already a number of regulatory levers that are available to deal with some of the bad uses of deep fakes in GANs. If people in relevant positions of power are willing to use those levers.

Elise: Levers like defamation laws. Like, if someone created a deepfake of you doing something horrible, you could actually sue them for damaging your reputation. Granted, these laws do reflect a pre-deepfake world, so they will need to be updated.

DAVID: So for example, we could require that satires be in some sense appropriately labeled. We could, for example,

26:00

require that deep fake videos be watermarked, that there be, essentially, a digital code that's inserted into the video that enables law enforcement to figure out the source.

MUSIC OUT

Elise: But David says we shouldn't get so caught up in getting regulations perfectly in place – that a wider awareness of this technology will help people better understand it when they encounter it out in the world.

And the bottom line is: deepfakes exist. So it's important to learn how they're made, how they're used, and to have a better understanding of the technology in general.

MUSIC

DAVID: By nature. I'm an optimist. So I really want to be optimistic here. I think if we approach things along many different fronts. We have a chance of ending up in a better place. And I think we're going to get to that better place through a combination of changes in technology, changes in regulation. Changes in technical literacy, in public discourse. And so in that sense, I'm optimistic. We can get there, but to be

27:00

blunt, a lot of people are going to be hurt along the way. And I wish that that weren't the case. I really wish that we could get there faster, but the reality is a lot of people already have been hurt by this technology and it's not going to change in the next two weeks. This is going to be a slow process.

MUSIC OUT

Elise: There's a lot of potential for businesses to do a lot of good here, for their companies and their customers. But like David said, deepfakes have ALREADY had undeniable-- and often devastating-- consequences for REAL people out in the world. And that can't be overlooked.

It's important to remember that this technology is new, complex, and can lead to serious consequences. So we should proceed with it carefully.

THEME



DAVID: This technology is no different than the old joke about the internet, which is that everything you can say about the internet in a happy voice, you can also say in a sad voice. [Happy] The internet will bring people together. [Sad] The internet will bring people together. [Happy]

28:00

The internet will let everybody have a voice. [Sad] The internet will let everybody have a voice. And it's the exact same thing with deep fake technologies and GANs.

Josh: Listening to David talk about this, I'm struck with how important it is to approach these kinds of new technologies cautiously. We're sorta used to a fast and loose approach. Like yeah, we talked about all the cool stuff GANs can do, but that doesn't make that scary stuff any less scary.

Elise: We should be thinking about it now, rather than trying to put the toothpaste back in the tube later.

Josh: [Laughs] Yeah. And it's important because GANs can do so much. And as we've learned in this episode, the first wave of change is already happening as businesses begin to use this technology. It's how people use it responsibly that's gonna be key.

Elise: To learn more about the trends in today's episode, check out the Deep Fake: Real Value report at Accenture dot com slash Built For Change. It talks about more innovative strategies to generate value for your business by embracing GANs.

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It proposes more ways to use GANs responsibly and deal with bad actors as this technology becomes more prominent.

Josh: Thanks to Accenture's Edy Liongosari.

Elise: And to Cris Valenzuela and David Danks for talking to us.

Josh: Built For Change is a podcast from Accenture.

Elise: More episodes are coming soon. Follow, subscribe, and if you like what you hear, leave us a review.

MUSIC OUT

THEME STING

29:23

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