

TAS Conversations: AI and Climate Change



UKRI
**Trustworthy
Autonomous
Systems Hub**

Event transcript

16 December 2021

12:00 – 13:00

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Apologies for that slight delay. We had a small technical hitch with our livestream. Welcome

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to this live TAS conversation where we'll be discussing eyes potential role in relation to

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climate change. The TAS hub exists as a platform to define and set up best practice for regulation,

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design and operation of autonomous Systems. Now Healthcare and Transportation tend to be the

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most popular sectors thought, autonomous systems tech or a. I But we believe that climate change

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presents much greater risk to society in the short and medium term, and we'd like to encourage

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the research community to focus on solutions to net zero in climate change mitigation measures.

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Now, by working with the climate change a I community. We hope to drive this agenda further.

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The last time we discussed the use AI act and you can find previous episodes on our website. More

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details of that in a moment. And our topic today, as I just mentioned is a I and the climate crisis

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crisis now a few years ago saw the founding of climate change, I'll CC AI, an organization

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composed of volunteers from academia and industry, who believe that tackling climate change requires

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concerted societal action. In which machine learning can play an important role. So shortly

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we'll hear from one of the founding members,
but just a little bit of housekeeping First,

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if you want to ask a question any point just,
uh, look on the right hand side of the screen

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and you can Type in a question and send it to us,
and they're going to be sifted through by prayer

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who you'll meet in a sec. And, um, just you can
do that Anonymous safe, like, um, I suggest you

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ask the question whenever you want, but we'll put
the questions to the experts convenient point,

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so we don't interrupt any flow. They'd like any
more information about the TAS hub or living with

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my podcast on website is tas.ac.uk So that's
tas.ac.uk UK and feel free to discuss anything

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that we're doing today or anything to do with
these topics using the hashtag TAS Convo, TCS CEO

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and video And that is in the Twitter and that
was in the Twitter handle is to some disco up

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so time for a few introductions. My name's Sean,
I'm Sean Riley. If you've heard my voice before,

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it's because I make the videos on the computer
file YouTube channel and I hosted TAS Hub's

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podcast Living with AI I I'm a layperson in these
matters, So, yeah, I won't be giving you any

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technical details. But I am extremely concerned
about climate change, and I can't find wait to

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find out more about how AI can play its part. So
our panel today consists of Professor Lynn Kaack.

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David Dao, Priya Donti, Buffy Print Buffy Price,
Peter Clutton-Brock and Stewart Dodd I'm having a

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shock with your names. Apologies have been thrown
off my stride by the late start this, so I'll get

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the Panelists who introduce themselves.
So Lynn if we can start with you, please.

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Hi, everyone. I'm Lynn Kaack. I'm an assistant
Professor Hertie School, and I'm also

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one of the co founders and shares of
climate change A. I Okay and David

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Hello. I'm David Dao I'm the founder of
GainForest and an AI researcher at ETH Zurich

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where we work at the intersection of artificial
intelligence and forests. And Priya is joining us.

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Everyone. I'm Priya Danti I'm, a PhD
candidate at Carnegie Mellon University

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and one of the other co founders
and Chairs of climate change AI.

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And Peter. Hi everyone, I'm Peter Clutton-Brock and one of the co-founders of the center for a

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I and Climate which works at the section of a I in climate change.

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Fantastic and Stewart. Hi, everyone. I'm Stewart Dodd I'm co-founder and co-CEO of Business

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called Empati. Empati is all about crow-barring enormous solutions into this enormous problem.

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Fantastic. Well, welcome to all of you. And thank you for giving your time. I think we might

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have missed healthy. We missed someone. Buffy, How did I jump over you? Sorry, Buffy, go ahead,

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hi everyone I'm Buffy Price co-founder and chief operations officer of Carbon Re Where a one year

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old startup focused on developing an AI powered platform to reducing carbon emissions in energy

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intensive industries, starting with cement.

Fantastic, well apologies Buffy for that

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delayed introduction. Welcome to all of you. And thanks for giving your time for discussion of the

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next hour. We're going to discuss some of the key issues with climate change, but to give us some

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context I'm going to hand over to Priya, who will give us an overview of climate change A. I prayer.

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All right. Thanks, Sean. So, yes. So I don't I probably don't need to motivate

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red climate change. One of the most pressing issues of our time affects everybody, Um,

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disproportionately affects the world's most disadvantaged populations. And when we talk

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about addressing climate change their two usually
two major aspects to this, so this is mitigation,

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reducing greenhouse gas emissions in order to
reduce the amount of climate change that we

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actually experienced. And when you hear terms like
net zero by 2050. This is referring to mitigation

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um and many of the decisions policy decisions
technology developments, etcetera that we need

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to reach Net zero by 2050. We'll need to occur
within the next decade. So really, there's a huge

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amount of urgency and making substantial progress
both from a technology perspective and a policy

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perspective. On climate change mitigation. The
other aspect of this is climate change adaptation,

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so given that we have already locked in
some amount of climate change, for example,

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how do we actually build our society in
a way that is resilient to those effects,

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and it'll take us strong combination of
both mitigation and adaptation measures

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in order to sort of stave off some of
the worst impacts of climate change.

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And this will take, you know lots of different
kinds of tools and approaches from across society.

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So policy tools, technology tools, tools from the
social and behavioral sciences and so forth. And

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a I can play a role in there so I can basically
help help accelerate or supplement many different

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kinds of strategies across. For example, the
electric power sector buildings, transportation,

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industry, agriculture and land use many many different sectors. Climate change touches

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basically, every sector across society and in some ways a lot actually can help supplement strategies

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and those in those sectors. So some examples here include, for example, um, using satellite imagery

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to detect the sources of greenhouse gas emissions across the world. So this is, for example,

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being done by a coalition of organizations called Climate Trace, which is using a combination of

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satellite imagery and sensor data. In order to, you know, order to actually detect these

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Emissions and provides sort of independent greenhouse gas emissions inventories in

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order to drive policy conversations around how we actually then reduce these emissions. Um,

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Similarly, there is, um, a category of, um Publications that tries to basically take

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large amounts of text data like policy texts, for example, and extract insights from those in

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order to then say, Okay, how can we make evidence based policy that is as effective as possible?

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In order to again reduce greenhouse gas emissions. So an example of an organization working in this

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area is, um, climate policy radar, which is a nonprofit that is basically trying to

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extract insights from text documents. Um, machine learning. And AI also are used for forecasting

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applications in the context of climate change to things like forecasting solar power on power grids

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or forecasting the amount of demand
that we will have for transportation

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or forecasting extreme events to flag. Another
organization in this area. Um Open climate fix,

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also based in the UK is working on renewable
energy forecasting in order to help manage the

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UK power grid more efficiently to maintain this
balance between electricity supply and demand

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that actually has to be maintained at every
single moment on the electric power grid.

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So they're helping provide better renewable
energy forecasts in order to, um, in order

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to facilitate that Machine. Learning also is used
in a lot of ways to optimize systems and improve

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the efficiency of those systems. So optimize heating and cooling systems or freight systems.

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And we'll actually hear about that, presumably from some of the Panelists today,

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so I won't dive into that too much further.

Um, to detect natural gas leaks in, um

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natural gas pipelines. As as natural gas is transported from where it's extracted. Two words

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used. It's used to accelerate the accelerated the discovery of next generation batteries are clean

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technologies by learning from previous experiments in order to recommend what can be done next,

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and it's also been used to kind of speed up time.

Intensive simulations, like climate models are

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energy optimization models. The need to be run much more quickly or at higher resolution in

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order to foster barrel relevant decision making,
But where these models are very expensive to run,

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so I give this sort of wide swath of examples
to say they're really a lot of different ways

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in which machine learning can help contribute here
across a wide variety of sectors and also using a

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wide variety of capabilities, whether it is sort
of Extracting, you know insight from large amounts

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of data or whether it's about dynamic optimization
of real time systems or whether it's about, um

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kind of accelerating scientific and engineering.
Workflows. They're really a lot of ways that this

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can come into play. And while there are many AI
techniques that today can already be implemented

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that already can be used within these workflows.

There's also, um a lot to be done to make these

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systems more trustworthy. In the context of real workflows, which is part of the reason for the

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conversation today that there really does need to be a concerted effort also from the research

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community to create a I techniques in a way that is well suited for these real world applications.

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So, um, For example, if you are deploying and machine learning or a I technique in the electric

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power system to help optimize these systems to accommodate large amounts of renewable energy.

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While electric power systems are physical systems with many different constraints, where you have

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to maintain a balance between electricity supply and demand at every single moment. And

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if you're a machine learning algorithm messes that up. That can have really large scale consequences

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like blackouts on the power system. So there's a lot of thrust to say. How do we actually make

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These systems you know, trustworthy, have guaranteed kinds of properties. How do we make

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them interpret herbal or explainable? So that we know what happens when something went wrong there.

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Um, and the kinds of physical guarantees the kinds of interpret ability that we need vary based on

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the actual domain of application. And so this is why there needs to be a concerted effort to both.

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You know, do this method a logical innovation but not in sort of an agnostic or detached way

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to really understand. You know what is the domain of application that we're working on?

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And what are the actual requirements of that domain that we need to develop these methods for?

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So From that is going to be the end of my brief overview here so we can hear from some of the

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other Panelists, But I think just to wrap this up, basically, lots of different places where a I can

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help, you know. Foster climate action. So in some sense if you're sitting in the audience wondering,

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you know which one should I get into? There are a lot of choices and definitely I mean, worth diving

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in, Um, but algorithmic development and sort of of you towards what the requirements of the specific

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climate change domain are These need to go hand in hand, They can't necessarily be viewed separately,

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so it's very important to keep those domain considerations in mind would developing new

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methods. Okay, so I mean, you know, we've We've just heard that there are a huge amount of domains

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where a I can be a applied and all sorts of well, we know it's a massive problem so that that in

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itself leads to massive amounts of data, which we can talk about how that data is processed or

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processed, depending on which side of the pond you are shortly, but there's obviously going to

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be a bit of a bottleneck here. So what are some of the biggest bottlenecks around data in the

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AI for climate space? He's only any of you would like to throw your hat in the ring to talk about

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bottlenecks in a I data. I am seeing Pete moving around there. I'm going to throw it over to. You

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have to get the ball rolling. If helpful, And I think data is obviously really important for

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a I machine learning his machine animals, at least most machine learning models you stated

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train there the algorithms and to help offer value. But What we find, especially in the climate

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spaces that they collection is insufficient so often the data that we want doesn't necessarily

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exist in the first place where it does exist. It's often hard to find so data discovery is really

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challenging. So often a lot of the time machine learning engineers will spend a lot of time just

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finding the relevant data that they need. And even when they find it, the data quality is often low

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and isn't conforming to relevant standards or common standards. Often there's a lot of work

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involved in cleaning and labeling data sets to make sure that they're actually usable.

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Often. Data isn't available in clear licenses, and it sounds sort of deadly dull, but it's actually

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critically important that when people can get hold of data, and they can be sure that they

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can use it For the applications that they're wanting to not find subsequently that they

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have the right pull them element. Suddenly they can't use the data for what they were hoping to.

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And then there are a whole range of issues around data sharing and data openness that need to be

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addressed. So I think at the moment often you have incumbents in particular sectors that we

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care about when it comes to climate change, whether it's energy or transport or land use,

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often all the data holders But often there's a limited incentive to share that data with taking

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Tech innovators who can actually help optimize their systems on the basis of it. So,

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um, I think Well, I'm together with actually climate change. I and the center for a I and

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climate that I work for has developed a report for the Global partnership on AI

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this year, And in that we recommended that governments consider establishing data task forces

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to in climate critical sectors to really establish what data is needed. In those sectors. What data

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exists What's available what standards are needed
and to conduct a full analysis of dating, sharing

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incentives to make sure that actually we can
get hold of the data that we need in this space.

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David, What do you think about that? I think it's
great. I would also just add one more point on

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that which is data bias. So, um, pre already
said climate change hits people for the most

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affected are usually the people who contributed
the least people in the global South Endorsed

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countries are usually also the ones who have
not advanced infrastructure to collect data. So

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a lot of the data you see, for example, in the
field we are working on in nature and forests.

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You see, of course, a lot of satellite data from all around the world. But if you really want to

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look underneath the tree canopy like there, what kind of tree species That is? What kind

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of animal is maybe living in that forest? Than most of the data you will see is heavily based in

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countries where actually there's not a lot of the majority of biodiversity is not concentrated in

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the United States, the U. K Europe While there's I mean, Very understandably, very few data points in

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biodiversity hotspots such as, for example, Brazil or the common will because of an excess ability

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and just the possibilities for from collecting data, which is difficult, and that can result to

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very, very serious ethical problems, which I'm sure we're going to talk about later.

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Thank you, Lynn. Ah, you wanted to say something?

Yeah. I mean, those are all really fantastic

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points. Maybe adding another aspect to this from the research side is that applied machine running

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research or work? So it's really between domains and, um, Currently,

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there's still quite some issues that come with added they are really related also to building

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these datasets because the largest part of a project it's always identifying the research

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question building, the data said. And then hand labeling everything. And, um, that makes makes

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our work currently quite difficult because the machine learning community it's not incentivized

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to really work on this kind of problems. So
A lot of methods missing. They're not really

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Good peoples to rely on. If you are really faced
with these labeling task, because the the task at

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machine learning researchers are dealing with
a very different from those that are actually

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relevant in the real world, So for example, in my
work And we're looking at policy text and we're

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dealing with much smaller data sets much more, um,
language, understanding also necessary actually,

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to really get good conclusions. So we're spending
a lot of time trying to break down the problems

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in a way that it is barely learn able, um And
then we sit there and label hours over hours,

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so I really need to have like a large group of
students that just label for weeks and months and

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currently the research structures and not really aligned with that kind of work. I mean,

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students are not really ready to deal with this labeling task.

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Yet yet the need really good skills of both on the domain side and from the machine learning

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side to work on this problem, so I think there's still a long way to go here. So buckle bottlenecks

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as well as quality of data by the sounds of it and availability of labeled data. Stewart.

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You know, you mentioned large things to crowbar into a large problem, Um, Data ball tonight.

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I thought that would come back and help me, actually, Sean, Thanks for,

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um, I think for me, I'm my background is
capitalism. That's where I come from Capitalistic

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human, too. We've got kids. We've got grandkids
and all the rest of it. So I look at this really

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from a massive global macro problem, And to
that extent, I know other people say it's clip.

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But climate change is largely financing problem
largely financing problem and it's largely a

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disproportionately favoring the global South
issue. In terms of where things need to be

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solved from. It's not about producing megawatts
is not that I know what it's about reducing carbon

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That could be done anywhere in the world equally,
and economists by trading training David Ricardo

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As love compared to advantage, right? We're rich
in the West. We should be supporting those who are

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not rich in the global south and getting them to do our our global accounting for carbon Largely

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that so whatever I can do to enable large amounts of capital to flow, not VC, although that's

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hugely valuable time talking about the tens of trillions that we need to fix the problem.

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Is what should be done. And a I for climate change must see itself as part of Been tank. It must see

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itself as part of a I politics. It must see itself as part of equality. It must touch an awful lot

0:18:55.920,0:19:01.680

of things and pull them kicking and screaming into the room. To solve this problem because

0:19:01.680,0:19:06.000

from what I see both of the venture capitalists as a co founder of the business and co founder,

0:19:06.560,0:19:13.280

there are an awful lot of very, very clear
sighted. Guys working on very, very laudable,

0:19:13.280,0:19:18.560

clear sighted climate, tech solutions, But
really, people need to be more ambitious,

0:19:18.560,0:19:23.360

who need to be bigger in what they're thinking
and they need to be bringing in And in other

0:19:23.360,0:19:31.680

disciplines could no politics but whatever it
needs to be to flatten out disproportionate

0:19:31.680,0:19:41.840

difficulties in interest rates. And such. Like so,
my Bottlenecks and my probably the next question

0:19:41.840,0:19:47.360

follows as well. Children out What really excites
me is how do you bite off these enormous problems

0:19:47.360,0:19:51.760

and get everybody in the room and across
Of a cross party basis to figure out

0:19:51.760,0:19:57.680

how we do this because the consumer combined with
the scientists can fix this. We don't necessarily

0:19:57.680,0:20:02.400

the policymakers, dragging their heels and getting in the way we can fix it with capitalism.

0:20:04.000,0:20:08.960

Um Okay, We need to be more ambitious. Buffy. How do we be more ambitious with this then? Or

0:20:08.960,0:20:13.360

do you have any ideas about blocking the sex or worries? We'll certainly echo everything that

0:20:13.360,0:20:17.920

had been said so far. And certainly for the industries we're looking at. And initiatives

0:20:17.920,0:20:24.160

such as industry four point Oh, you know, have Generated vast amounts of data that picking up

0:20:24.880,0:20:32.000

pizza first comment about that. The messy data we have up loads of data that can be different

0:20:32.000,0:20:40.480

from one day to the next. So that is a hugely Time intensive piece of work, which can really impact

0:20:40.480,0:20:46.400

on what we are able to do. And if you are a plant that doesn't have those sensors are algorithms

0:20:46.400,0:20:51.440

are process. Efficiency just doesn't apply, so they're out of the running. Immediately, um,

0:20:52.160,0:20:57.200

for as a for profit company. There are commercial sensitivities around sharing data reluctance,

0:20:58.320,0:21:04.400

reluctance to do that in the UK There's something called the Cement Data Order, which was set up

0:21:04.400,0:21:11.440

by the competition Markets Authority, and that was really to restrict sharing to protect price

0:21:11.440,0:21:16.560

fixing. That's obviously a real problem, but, um Kind of hugely impact on on what we're trying

0:21:16.560,0:21:23.360

to do, and I think that's why we're having most traction with our pilots outside of the UK And,

0:21:23.360,0:21:31.280

more broadly, the power imbalance in my previous role the cost of high resolution satellite data

0:21:31.280,0:21:36.800

to do that, and climate change monitoring
was prohibitive. The NGOs I was working with

0:21:37.360,0:21:43.120

Um, So what was that? That? What was it excited
about? What? We were talking about Bottlenecks

0:21:43.120,0:21:46.880

initially and then? Yeah, One thing Stewart
mentioned was we need to be more ambitious.

0:21:46.880,0:21:50.720

So I was thinking, you know, but I mean,
there is there is this idea of, you know

0:21:52.000,0:21:56.640

A I for climate change. What? What? What element
are you most excited about? I mean, if if you've

0:21:56.640,0:22:02.720

got these problems where NGOs etcetera can't
afford access froze up an idea about well,

0:22:02.720,0:22:06.720

it's capitalism the right way to do this, But I
mean, that's a that's a different conversation.

0:22:07.600,0:22:11.760

It just coming off the back of what stupid say
you know that the market can potentially fix this,

0:22:11.760,0:22:17.040

I think is basically what What the gist of what
you said. Does that work in NGOs, etcetera.

0:22:18.560,0:22:24.240

Well, I mean, certainly talking from the carbon
right ray side of it. We feel there is a huge

0:22:25.280,0:22:30.000

capitalist advantage. We asked. Tech
technology can reduce them energy costs

0:22:30.000,0:22:34.400

as well as reduced carbon emissions. So that
should be a win. Win. The data is there it's

0:22:34.400,0:22:40.480

out there. Can we get it? Is it structured?
Well, it is a problem. But the advantages of

0:22:41.200,0:22:48.320

the algorithms is that they, you know they can
be deployed and scale. Um, massively to have

0:22:48.320,0:22:53.840

huge. Impact on carbon emissions. The the
energy intensive industries account for 20%

0:22:54.400,0:22:59.680

of global greenhouse gas emissions cement accounts for up to 8% of Glade Brook Green House emissions,

0:22:59.680,0:23:06.320

So with just a process efficiency we can reduce that by 20%. That's a huge impact, so it's about

0:23:06.320,0:23:11.840

scaling and getting out and getting that data and into those plants and generating that trust.

0:23:12.800,0:23:16.800

Okay, well, A couple of people want to want to wait in there. But just one question we've had

0:23:16.800,0:23:22.480

in which kind of relates to this energy usage as well, which Joel is sent in jail. Fisher. Could

0:23:22.480,0:23:27.760

somebody address the apparent irony that soon? A I techniques like large scale modeling are extremely

0:23:27.760,0:23:32.560

powerful agree. I mean, it's It's an interesting kind of conundrum, isn't it? But I mean,

0:23:32.560,0:23:37.280

um Maybe we Maybe we need to stick on top. It will have to think about that and come back to that.

0:23:37.920,0:23:44.240

David. You want you wanted to say something? I want to take the the point on capitalism because

0:23:44.240,0:23:49.920

I hear that very often was in climate change conferences. Um, that climate change is the

0:23:49.920,0:23:55.120

biggest business opportunity the world has ever seen. And I do not like that narrative a little

0:23:55.120,0:24:00.320

bit because we in the global North. Sometimes think of ourselves as saviors of the global South

0:24:00.320,0:24:04.240

and It's actually the other way around. If you think about it, and you look at the data,

0:24:04.240,0:24:09.520

the global South and indigenous people were only 5% of the population, but actually protecting 80%

0:24:09.520,0:24:15.040

of the bad over here on our planet, right? More than 50% of the land use. Um they are actually

0:24:16.080,0:24:19.840

are super used. They're not our customers. So we even we develop technologies. We need to

0:24:19.840,0:24:25.600

be careful community. Make sure That it's Them grow up and look, we're getting the finances,

0:24:25.600,0:24:31.200

but not only that, but also them for holding the technology, holding your ownership of the data and

0:24:31.200,0:24:36.960

actually profiting and generating business in that country's So what I'm saying is that There's a lot

0:24:36.960,0:24:43.200

of big companies in the climate plus a I tech space that is global North based, and that is

0:24:43.200,0:24:48.160

using on leveraging the global South problems as a customer basis, and that's I think something We

0:24:48.160,0:24:54.000

should definitely emphasize and say This is Not the right approach off solving a global crisis

0:24:54.000,0:25:00.320

for everyone should be a shareholder. Stuart, You want to wait in there? Yeah, I think we should be

0:25:00.320,0:25:06.080

very careful How we define capital and capitalism. I think for the purposes of my life, I define it

0:25:06.080,0:25:12.400

as natural capital Less less, and the global South clearly has got larger stock of natural capital.

0:25:12.400,0:25:17.920

Than I do here in London, So just I should be clear about what I what? I'm looking for a

0:25:17.920,0:25:24.080

return on capital for right. What I see happening from Black Rock and from other large investors

0:25:24.080,0:25:30.560

is a bottleneck that they see around how to access uniform data. How to access

0:25:31.840,0:25:40.320

Good quality, real time. Reliable scope 12345 versions of what s G is setting out to perform

0:25:40.320,0:25:45.360

because then they can divert capital because it's in the long term interest, also as a

0:25:45.360,0:25:50.720

kind of inhabitants of the planet to make sure that they live longer than every day they can

0:25:51.280,0:25:59.600

so We as a as a community needing need to be feeding. The global North Cash capital as it were

0:25:59.600,0:26:06.160

with the right kind of information, So they do the right thing and return capital return and income

0:26:06.160,0:26:12.160

and return to the global south with their natural capital. You know, we were my firm have done a lot

0:26:12.160,0:26:18.400

working Colombia to that end, helping them. Cigarette exactly what the right combination

0:26:18.400,0:26:24.640

to create a base load power should be from wind, solar and hydro. An awful lot of hydro.

0:26:25.440,0:26:29.280

Countries in the global south. There are unfortunately abusing the hydro because

0:26:29.280,0:26:36.400

they don't know how to marry it with solar and with wind to create a base load power. Things

0:26:36.400,0:26:44.080

like that practical real applications that can help countries help individuals help us so I

0:26:44.080,0:26:49.840

think it's a very sharing capitalism and talking about One of one of the questions I had down here,

0:26:49.840,0:26:53.520

which is kind of skipped ahead a bit from what you may have been briefed, but is how we build

0:26:53.520,0:26:57.600

effective AI business models because it feels like we're kind of slipping into that now, you know,

0:26:57.600,0:27:02.400

how do we build these effective? AI business models that investors and governments will back.

0:27:03.040,0:27:07.600

Um, I don't know if anyone particularly wants to kind of go. Let's go to Lyndon. Gone, then.

0:27:10.000,0:27:14.400

So we're related point that I wanted to make anyways and responsive where people said

0:27:14.400,0:27:21.120

before. Currently in many cases, we don't really have a good understanding of the costs and the

0:27:21.120,0:27:26.960

benefits associated with. Certainly I Projects.

That doesn't mean that they're not there. But

0:27:27.600,0:27:32.080

I think many entities are struggling with, you know, even getting started because

0:27:32.080,0:27:38.240

they don't understand that equation upfront because they're just In many sectors, um not

0:27:38.800,0:27:44.080

good projects that they can compare themselves to and that they can understand and learn from

0:27:44.080,0:27:49.520

because it's a relatively new technology in many sectors. That differs, of course between

0:27:50.160,0:27:56.720

applications and between sectors so some are really ahead, but especially that creates a

0:27:57.520,0:28:05.360

problem for smaller entities and for nonprofits.

And for entities in around the globe,

0:28:06.000,0:28:11.440

So I think a I has the potential to
really create also a bigger divide between

0:28:12.480,0:28:18.480

Stakeholders and that's something that one has to
contract and has to contract also really early, so

0:28:18.480,0:28:25.600

we need to figure out how to how to really enable.
Also, um smaller entities and entities that have

0:28:25.600,0:28:32.080

less access to capital to really Um, leverage this
technology and also to have a seat at the table.

0:28:34.000,0:28:39.200

Mm. I mean, yeah. Let's go over to David again on
that. I think you've got something to say every

0:28:39.200,0:28:47.920

don't I was just totally agree with you, but then
just said here but to add to add a little bit on

0:28:47.920,0:28:53.040

this. I think it's really important to first
make sure that benefit developed technology

0:28:53.040,0:28:58.000

and that technology is trained on data again.

The first thing I mentioned that aspires towards

0:28:58.000,0:29:02.880

data that hasn't only collected in Europe
and North America we've seen for example,

0:29:02.880,0:29:06.000

when we train pours money,
tongue algorithms that just a key

0:29:06.000,0:29:09.280

component of accessing, for example,
the natural capital, right? You need to

0:29:09.280,0:29:13.920

estimate how much carbon stock is never forest.
This monitoring algorithms perform really well

0:29:13.920,0:29:20.240

on the U. S in Europe because that's where a
lot of datas like the USS Monitoring every every

0:29:20.240,0:29:25.120

couple of months off DSP like high resolution
aerial data for three, but it's performing

0:29:25.120,0:29:30.080

really bad in South America. So if you would not build a business on this model, right, and you

0:29:30.080,0:29:34.000

say this problems will be well on everywhere. And then you want to unleash global capitalism

0:29:35.040,0:29:40.480

the global South then you would actually under you would create a more more problems. Because

0:29:40.480,0:29:44.560

then you will trade, for example, you would give them less carbon stocks. You would not pay them

0:29:44.560,0:29:50.080

or develop properly and these are all the hidden risks. We need to make sure we can only CNBC. The

0:29:50.080,0:29:54.800

big picture, which is like it's a It's a justice from here, also in the data hidden in the data.

0:29:55.920,0:30:01.040

The data is always the key here in the key for any eyes, obviously the data But data science has been

0:30:01.040,0:30:05.840

dealing with problems like this for decades. If well, more than decades. Probably. So,

0:30:06.400,0:30:12.560

um, yeah, If we use these kind of data driven
a I interventions, how can we make sure that

0:30:12.560,0:30:18.960

they're fair and responsible. I mean, we got
Go on. I'm looking. I'm looking around. And I'm

0:30:18.960,0:30:24.360

seeing who might want to. It Depends here. Yeah.
Who blinks first. I'm going to go to Buffy. Yeah,

0:30:26.080,0:30:30.720

um, well, I mean, it's a sneaky get
around that we're doing it. Carbon ray is,

0:30:30.720,0:30:38.160

um we are keeping a human in the loop, so the
plant operators upload their data into the cloud.

0:30:38.160,0:30:43.120

The processing happens in the cloud. It's not
integrated with any of the systems. Recommendation

0:30:43.120,0:30:49.040

comes back to that plant manager there the people
that own the responsibility of taking the action

0:30:49.040,0:30:53.200

or not. They are the people that they understand the environment that they're working and the best

0:30:53.200,0:31:00.240

place to make that so keeping the accountability with the human all costs. Okay? Pete. You think

0:31:00.240,0:31:05.200

keeping in human in the loop is the way forward or is there a way of doing this fully autonomously?

0:31:06.480,0:31:10.880

And I think ultimately what we need to do with the eyes is built Trust and I think absolutely

0:31:10.880,0:31:14.720

keeping human in the loop. Initially for whatever price is we're talking about is

0:31:14.720,0:31:19.680

really important in building trust, certainly with organizations for whom it might be a new process,

0:31:19.680,0:31:24.080

and you don't perhaps understand its potential and the risks associated with that, and there's also

0:31:24.080,0:31:28.880

something around building trust in terms of how we assess data sets that were training on models on

0:31:30.000,0:31:34.400

As as David. I think a few other people have said, You know, the data sets that we use

0:31:34.400,0:31:38.400

are perhaps where that bias or the risk of buyers enters the process

0:31:38.400,0:31:44.880

and so making sure that we were clear on how we assess datasets to minimize that risk of bias,

0:31:44.880,0:31:50.000

I think is really important because ultimately these technologies have huge potential, but

0:31:50.000,0:31:53.920

they're not without their risks, and I think that it's sort of it's incumbent on all of this working

0:31:53.920,0:31:58.800

in the space. To build that trust. And I think history is replete with examples of technologies

0:31:58.800,0:32:03.600

where they've lost trust, whether it's nuclear or GM or whatever, where where they have actually

0:32:03.600,0:32:08.960

not been able to fill their potential because of that lack of trust, and I think a I feels to me.

0:32:08.960,0:32:14.720

Is it a bit of a cross rates right now, in terms of whether it is able to build that trust with the

0:32:14.720,0:32:20.800

population at large, and I think You know, we all know of the examples of where that trust

0:32:20.800,0:32:24.720

has been broken. And we've seen examples of that happen. And I think that means that all

0:32:24.720,0:32:28.320

of us working in space need to work harder to maintain it and to build it stronger.

0:32:30.080,0:32:33.440

That makes it makes a lot of sense, Actually, that there's something's come up here in the

0:32:33.440,0:32:40.320

questions from our audience, Zewdie Lewis said. Climate change is complex and a I is complex with

0:32:40.320,0:32:45.040

possible poor forecasting. Oh interdependence and underlying data across time and space.

0:32:45.040,0:32:50.160

And the ideas, I suppose What we're saying is here that these are two very complicated things

0:32:50.160,0:32:57.280

that when aligned perhaps slightly misaligned could cause more problems than they solve. Um,

0:32:57.280,0:33:00.560

this actually suggested this questions pointed towards David,

0:33:01.120,0:33:07.200

I'm going to going to say what you see what you have to say. David I think this is, um yeah,

0:33:07.760,0:33:13.040

I think one thing to understand is that a I is not the solution to climate change. It's like it's not

0:33:13.040,0:33:18.160

a silver bullet, but it's a really important to to fill the gaps which we can see in policy. Right,

0:33:18.160,0:33:24.240

for example. Then you want the money towards climate action You need to report like progress,

0:33:24.240,0:33:28.560

like every country has to give out something
like a self report and that is very tedious to

0:33:28.560,0:33:34.080

do manually. Hey, I in conjunction with human
beings, and they're like monitoring strategies

0:33:34.080,0:33:38.160

on the site can actually fill in the gaps in
that way. So you need to understand where they

0:33:38.160,0:33:44.560

actually usable right where the right models to be
used. And usually in our AI community. Obviously,

0:33:44.560,0:33:48.880

the right models are usually the
simplest ones, which still work. Um,

0:33:48.880,0:33:55.040

and then you need to also make sure that This
use cases are and that's something that's CCB,

0:33:55.040,0:33:59.680

which we defend, have a recent, indecent,
understandable pathway to impact, But

0:33:59.680,0:34:06.880

it makes sense to have a I usage here and like Bye
Bye. Bye. Bye bye. Not others. So it's it's some.

0:34:06.880,0:34:12.160

It has a little bit special difficulty because it requires it to see the big picture, not just the

0:34:12.160,0:34:18.080

engineer. Trying to use the most fanciest, newest advanced research but actually understanding the

0:34:18.080,0:34:22.160

problem working with other stakeholders with people from the community, So maybe living there

0:34:22.160,0:34:28.000

to understand what is actually, but they need And how can I actually help So talking co designing?

0:34:28.000,0:34:34.240

That's how you get over those two complexities. Fantastic, I think also sort of related to that

0:34:34.880,0:34:41.200

is another question has come in from zucchini, which says the big question trustworthy I is. How

0:34:41.200,0:34:46.880

can we quantify Trust? And we've got to find a way to move on from qualitative trust measurements.

0:34:46.880,0:34:51.040

This is this has been directed towards Pete.

So I'm going to throw it over to you, Pete.

0:34:52.160,0:34:57.040

Wow, that feels like a bit of a hospital pass
and I'll do my best, and I think I think it's an

0:34:57.040,0:35:01.120

interesting thing. I think ultimately it's really
it is going to be really hard to measure trust,

0:35:01.120,0:35:06.320

and I think it it builds throughout. You know the
conversations. People have the headlines People

0:35:06.320,0:35:14.720

read in the newspapers. You know all the social
media information we take in or build a sense

0:35:14.720,0:35:20.080

of water technology is and what it can do and
the risks associated with it. I think there are

0:35:20.080,0:35:26.880

definitely metrics that we can try and quantify
around the work that we do in the data science and

0:35:26.880,0:35:32.800

machine learning space that support that space.
Metrics around. You know how we assess states that

0:35:32.800,0:35:38.480

I talked about earlier metrics around all the different elements of really, really codifying

0:35:38.480,0:35:44.800

almost a code of responsibility. And maybe some of that may be very sensitive. Some of that, maybe,

0:35:44.800,0:35:51.360

you know, just principles and guidelines that we we all agreed to adhere to. But I agree. I think

0:35:51.360,0:35:58.160

it would be good to think about it in a much more structured way to make sure that we're actually

0:35:58.160,0:36:02.160

not just, you know, winging it as we go along and actually thinking about it quite analytically.

0:36:02.960,0:36:06.880

And the thing to be fair, I suppose organizations like the task of that's literally. What we're

0:36:06.880,0:36:13.440

trying to do is quite you know, 25 how you how you can measure these things. There was a bit of

0:36:13.440,0:36:18.880

a follow up actually, just rewinding slightly from
Joel asking if there's any guidance, which Um,

0:36:18.880,0:36:23.600

what problems warrant the use of Ai? I mean, this
sort of links in a little bit to what we're saying

0:36:23.600,0:36:27.760

about having a human and loop and what David was
saying about it. Just being another tool in the

0:36:27.760,0:36:33.280

armory, I suppose, are very that's right. Yeah.
The weapon in the armory tool in the shed, maybe.

0:36:33.280,0:36:39.120

Um, So how do have again That's a sort of a
quantification issues that that's a suppose

0:36:39.120,0:36:43.040

what we're trying to do with the tassel. But
where do we start? Sort of thinking about

0:36:43.040,0:36:48.960

when to use a I and when not to use a I I'll go
back to beat them. I think it's a really good

0:36:48.960,0:36:52.800

question. I think this is this is in a way the
number of this question because one of the big

0:36:52.800,0:36:56.640

barriers we've seen in the application of AI of climate change is often people working on climate

0:36:56.640,0:37:01.200

change. Don't know what kinds of problems a I can help solve. Um And so there's a real There's a

0:37:01.200,0:37:06.320

real need to try and describe that in more detail. And I think Prio in her instruction gave a bit

0:37:06.320,0:37:12.080

of a appreciate this where she talked about the potential for a I to optimize complex systems. So

0:37:12.880,0:37:16.560

For example, when we've got energy systems that are becoming much more complex because

0:37:16.560,0:37:23.280

of the integration of much more, a wide variety of energy assets more diverse, more distributed.

0:37:23.280,0:37:28.880

There's a real opportunity to use a I and in that context, and secondly, to forecast events in a

0:37:28.880,0:37:35.360

much more precise way, so using historical data
to predict future patterns again, we're seeing

0:37:35.360,0:37:41.360

this used in a wide range of examples. Whether or
not it's Forecasting again energy or forecasting

0:37:42.480,0:37:48.560

climate particular variables. Forecasting is
definitely an area and then scientific modeling

0:37:48.560,0:37:53.760

and we talked about as well as being an area where
there's an opportunity to accelerate the potential

0:37:54.720,0:38:00.480

insight that we can derive So I think, yeah,
Insight from raw data is another area. So

0:38:00.480,0:38:08.160

I think whether or not it's as as we talked about
identifying a mission sources from satellite data

0:38:08.160,0:38:14.800

or the risk of forest fires from satellite
data or identifying insight from raw data,

0:38:14.800,0:38:20.800

I think is is definitely an area, but I think
all of these need to be described with examples

0:38:21.680,0:38:24.880

and to make it real for people to make it
concrete so they can get a better handle.

0:38:25.680,0:38:30.160

On where the potential lies. That makes sense
to me. I don't always like concrete examples,

0:38:30.160,0:38:34.560

or even even, you know, slightly less than
concrete examples. Just something to able to

0:38:34.560,0:38:40.800

to hang. Hang you kind of hat on. I suppose
Oliver's centered question does a. I have a role

0:38:40.800,0:38:45.200

in standardizing how we report carbon emissions.
So that sort of links into what you're saying

0:38:45.200,0:38:49.680

about, you know, kind of the satellite data and
all the rest of it. Um, he's basically asked,

0:38:49.680,0:38:54.800

as you know if it has a role in standardizing
it to make it more trustworthy. Anybody

0:38:55.840,0:39:01.760

been anywhere near that I'm going to David again, cause he put his hand up. So there's um,

0:39:01.760,0:39:06.720

currently when you look in the carbon offset market, um, which is currently \$1 billion this

0:39:06.720,0:39:12.240

year in transaction can voluntary market we did you don't have the big centralized. We call them.

0:39:12.240,0:39:18.720

The central banks of carbon offsets that basically Tell you how much project is like ripping happens

0:39:18.720,0:39:24.160

comes up right and that is better that is called standard. These are all manual measurements. They

0:39:24.160,0:39:30.000

maybe have GPS experts in the field that measure the natural capital. And then, on the other hand,

0:39:30.000,0:39:36.608

you have on the largest scale and NBC reports like Nations Countries, governments that reporting self

0:39:36.608,0:39:41.840

report how much carbon dating the mid thing so far. And also the factories and startups and

0:39:41.840,0:39:49.280

government described and business and in in all aspects, So AI that has been currently a trend

0:39:49.280,0:39:54.240

to include a A in the decision making. Of how much that is. It's it's been more and more technology

0:39:55.040,0:40:00.480

gold standard has been leveraging, for example, movements where they want to see if there's a way

0:40:00.480,0:40:06.320

to actually have a fully automated standards. That carpets here. But I think that's a little

0:40:06.320,0:40:12.320

that's a little tricky to determine. I don't think artificial intelligence is a stage where it can

0:40:12.960,0:40:20.240

give you any kind of trust groupie. Estimates of carbon stocks on its own basis,

0:40:20.240,0:40:25.120

and neither should you trust the reports from countries. You should basically don't trust

0:40:25.120,0:40:29.520

anything. That's when we When we talked to climate
traits, Actually, we had an event of them as a

0:40:30.080,0:40:35.120

couple. And we asked them so should be like if
if the country reports one number and your album

0:40:35.120,0:40:40.800

reports are not another trust. And then they said,
like, Well, you shouldn't really not trust anyone.

0:40:40.800,0:40:47.600

It's just an additional number. And in the
end, it's it's mix experts that needs people to

0:40:47.600,0:40:53.200

understand. Okay, Okay, I have this estimate of
this estimate. Um, we need to discuss. We need

0:40:53.200,0:40:59.120

to come to a conclusion and collaborate on what is
the actual intake here and then that's that's how

0:40:59.120,0:41:05.760

we see ourselves. I would never Put all my token,
some just one Only four here. Just just No. One.

0:41:05.760,0:41:10.240

If you take something away from today's session,
I'm going to come to you in a second way Street.

0:41:10.240,0:41:15.440

There's there's a question come in, which which probably relates slightly to the last thing that

0:41:15.440,0:41:19.840

David was saying anyway. It says that subsidies for the hydrocarbon industry or estimated

0:41:20.720,0:41:28.080

by the U N the IMF, the World Bank to be about \$6 Trillion, So about 10% of global GDP is spent

0:41:28.080,0:41:33.840

making climate change worse that that's coming from Damon. Huh? What was that means you, Stuart.

0:41:35.040,0:41:41.280

This is probably true. That's what I was saying. I think for me, I'm not going to be in defensively

0:41:41.280,0:41:45.280

coil my gig at all. If anyone knows you would know that, But there needs to be a transition

0:41:45.280,0:41:50.800

because these people have capital is companies and they need before Slade consumers. Government needs

0:41:50.800,0:41:56.480

to get behind me getting through the right face,
and they are beginning to get it Looks like there

0:41:56.480,0:42:03.440

needs to be bigger. Um, but back to the point
on top of the county rather than how it is.

0:42:04.080,0:42:09.360

You know the GDP might be that might be attempted
people over there. I'm not sure that's true,

0:42:09.360,0:42:15.920

but it might be But the global bond market is a
lot bigger. So the half a dozen firms that figure

0:42:15.920,0:42:21.760

out which Bonds are good, which bonds are bad,
Moody's S and P. Morgan Stanley Indian cities,

0:42:21.760,0:42:30.320

all of these guys made automated removal of the
subjective all about objective target accounted.

0:42:30.320,0:42:37.120

Period. And they need it real time we needed
immutable they needed tested. They need it now And

0:42:37.120,0:42:44.160

then they will follow tactical in large amounts,
not just a billion, but trillions will Will follow

0:42:44.160,0:42:48.720

that kind of work. So yes, Oliver. Thank you.

I think that's a really big ask. I think if the

0:42:48.720,0:42:54.800

community to figure out how we get something we need to ability and traceability verifiability.

0:42:55.600,0:43:01.280

Into carbon accounts, and that would be amazingly useful. I mean for me. Big numbers

0:43:01.280,0:43:06.880

of the important ones for me, right? Sorry about that. But you know, we need to grow in our time

0:43:06.880,0:43:14.320

In previous companies and my business we have developed about six people walks so the wind

0:43:14.320,0:43:18.480

You know lives, which is in monetary terms, probably about \$10 billion work.

0:43:18.480,0:43:24.080

So we're coming up this problem with with enormous domain expertise around what a I needs to do

0:43:24.080,0:43:30.880

on the generating side. And others. What on the generating side? Let's start with that. So I need

0:43:30.880,0:43:39.760

to Multiply what has been done over the last 30 years by 58. In the next eight years. Really get

0:43:39.760,0:43:45.200

the numbers that we need to get these objectives. Big asks big things that we need to do, and that's

0:43:45.200,0:43:51.760

why it's largely financing for that. You need to make safe, comfortable, whole bunch of financing.

0:43:51.760,0:43:56.640

That doesn't get involved in this stuff. It must be financing. It must be from the likes of

0:43:56.640,0:44:03.360

BlackRock. I'll say it again. Another big capital providers, and they love standardization they love

0:44:03.360,0:44:10.800

Automating their love and see even if the numbers are In absolute wrong. At least they can look at

0:44:10.800,0:44:16.560

one company or one country or one sector versus another company of another country, another sector

0:44:16.560,0:44:22.400

entire passage terms and they can make calls
or like that. I think that is a big ask for me.

0:44:26.000,0:44:32.480

Going, David. So having an inclusive discussion
about the right numbers are doesn't mean that this

0:44:32.480,0:44:37.840

slow down the real measurements. I do agree It's
part of the finance from but I don't think I don't

0:44:37.840,0:44:41.680

fully agree that's only appointments from. I think
it's a policy finance trump. It's actually problem

0:44:41.680,0:44:47.200

that everyone has to be involved straight example.
Costa Rica pays few money, then you protect force,

0:44:47.200,0:44:51.520

but it also pays him money. When we restore for
us the price it pays your money to restore forest

0:44:51.520,0:44:57.280

is higher than the recipe. Then you protect
crops. The result. Policy. You don't want

0:44:57.280,0:45:02.960

people cutting down forests on purpose in order
to restore them again because it pays more to

0:45:02.960,0:45:08.320

just protect existing ones, and that is the
result of wrong accounting. Wrong numbers.

0:45:08.960,0:45:14.640

Numbers that are too quick to the market and
also a capitalist, but not from David Ricardo.

0:45:14.640,0:45:19.840

As you mentioned, But like from Eleanor Ostrom,
we had another idea of how we can create trust.

0:45:19.840,0:45:24.400

And I believe trust can doesn't have to come
from an external source, but it can come

0:45:24.400,0:45:30.480

from the community within. So she started. For
example. How can some small communities ensure,

0:45:30.480,0:45:35.440

even though they are like outside from big cities
and governments ensure that natural capital And

0:45:35.440,0:45:40.960

their comments are not like outsourcing company
vanished and that they did it by discussing among

0:45:40.960,0:45:45.680

each other, But it's the truth. Established rules.
They established money talk among themselves,

0:45:45.680,0:45:50.080

and I believe this is the right way to go in
order to create something that just really

0:45:50.080,0:45:55.280

trust her feet, something that's decentralized
something that is explained. And also created in

0:45:55.280,0:46:00.480

design with other stakeholders and shareholders,
and that's I think that doesn't have to conflict

0:46:00.480,0:46:05.840

this real time at all. Thank you, David. Just
want one quick point. I think we're going

0:46:05.840,0:46:10.400

to have extras noise from somebody's microphones.
So just be aware of, and perhaps muted if you're

0:46:10.400,0:46:15.920

not actually talking. Thank you Ever. That was
Lynn. I think wanted to come back to the idea

0:46:15.920,0:46:23.600

of using a I and creating kind of like carbon Ah
because of the use of power in trying to determine

0:46:23.600,0:46:34.160

you know the modeling so over to you Yeah, it's
it's much less an idea as it is, like a sort of

0:46:34.880,0:46:42.480

Side effect of a I because those are computational
systems, so they use energy for, you know,

0:46:42.480,0:46:49.840

running their computations and, um, a I systems
why they're very different from one another. Or

0:46:49.840,0:46:56.320

we should say machine learning algorithms. Some of
the very largest ones can use a lot of energy for

0:46:57.040,0:47:02.640

Especially the face where they are being
developed, whether being trained 1000 times or

0:47:02.640,0:47:07.360

several 1000 times in order to arrive at the right
architecture that then has the best performance.

0:47:08.000,0:47:14.160

And these numbers can be quite large. So we really
talking about, um, emissions that are comparable

0:47:14.160,0:47:21.280

to real world activities here, like, um, Lifetime
over car is something that someone has estimated.

0:47:21.280,0:47:27.920

Um One should note here that these are activities
that only fewer entities do so not every time we

0:47:27.920,0:47:32.400

use a machine learning algorithm you are dealing
with these kind of numbers. This is really when

0:47:32.400,0:47:37.760

you were building them when you are doing research
on them. And when you're creating a new like

0:47:37.760,0:47:43.120

training, a new model from scratch and creating
the best architecture Um, that being said,

0:47:43.120,0:47:49.280

is something that we Need to have an eye on a
need to understand Also, when which direction

0:47:50.480,0:47:55.520

The energy consumption of machine
learning is heading And maybe some

0:47:55.520,0:48:01.200

numbers that are interesting. So currently all of information and communication technologies,

0:48:01.200,0:48:08.960

everything that we're using Internet all the data streams. Everything together is around. They feel

0:48:08.960,0:48:16.000

like around one or 2% of greenhouse gas emissions so still compared to other sectors relatively low.

0:48:16.960,0:48:22.880

And only a fraction of that is attributable to a I So the overall numbers are not that alarming, but

0:48:22.880,0:48:29.120

what we need to understand better are the trends like Are we moving to, um very large models being

0:48:29.120,0:48:34.240

used by many, many stakeholders very often, right then we have a problem and in the near future,

0:48:34.240,0:48:39.040

so they're a lot of uncertainties around this problem. It is something that cannot be ignored.

0:48:40.240,0:48:45.600

This very alarming numbers usually come from activities that not many stakeholders do.

0:48:47.600,0:48:51.920

Thank you, Lynn. Thank you for that, Um, we've had a few more questions. And unless anybody else has

0:48:51.920,0:48:58.800

anything to add on this idea of kind of, you know the amount of, um carbon that's being created or

0:48:58.800,0:49:05.440

generated rather point to add. There was just you know, it's about reducing silos if there are lots

0:49:05.440,0:49:13.360

of companies, all developing the same technology training in there. In their own way. Making these

0:49:13.360,0:49:20.720

models successful Sharing Learnings is going to reduce that applying best practices. As Lynn says,

0:49:20.720,0:49:26.880

You know, being mindful of their consumption, and I think for for carbon really feel that the The

0:49:26.880,0:49:32.000

net impact is that we're going to have that negative emissions of carbon emissions.

0:49:32.000,0:49:36.640

And then there's also a piece of work that needs to be done around process efficiency and data

0:49:36.640,0:49:42.640

centers as well. So there's a lot to be done, but I think probably personally have more carbon

0:49:42.640,0:49:50.400

emissions. An energy consumption by streaming HD on Netflix. And so I think it's a big one problem

0:49:50.400,0:49:57.840

that we need to talk about that think terms of sharing a I models. That will be a next step.

0:49:58.560,0:50:04.960

Fantastic. Thank you that somebody's zone. Spencer Question is a porter. Common answer to the tricky

0:50:04.960,0:50:10.480

problems is to put this responsibility on the human in the loop. Is it fair to expect them to

0:50:10.480,0:50:17.040

mitigate the system? Bias? Uh, that's you know, is that kind of visit. Is that the blame game?

0:50:17.040,0:50:21.680

We'll blame the person rather than the rather than attack. I don't know anyone going to

0:50:26.053,0:50:28.960

sound like you know more about the system
designed and the human in the late personally

0:50:28.960,0:50:32.960

in terms of reducing bias. I wouldn't I
wouldn't put the onus on them. I think

0:50:32.960,0:50:38.080

often the human loop is to make sure that nothing
goes wrong and and that is working as it could,

0:50:38.080,0:50:43.840

but But I think it's going to be hard for that
human often to even Unless they've got the tools

0:50:43.840,0:50:47.680

they need to to identify the bias unless
it's been addressed in the system design.

0:50:50.080,0:50:53.840

It. Thank you for that. We've got a
couple more questions coming and we've

0:50:54.400,0:50:57.840

only got a few more minutes left. But also
trying to address a couple of these questions.

0:50:58.400,0:51:04.320

Um, so Jedi was asked is, it is difficult to develop any reliable AI or machine learning

0:51:04.320,0:51:08.720

based prediction in data poor regions like the global South. So what's the way to get

0:51:08.720,0:51:16.320

around that issue? How do we get around the issue of Um yeah. Data, poor regions,

0:51:16.320,0:51:22.880

which perhaps haven't got enough data to make good predictions about, um, David. Anything spell that

0:51:24.320,0:51:29.440

Yeah, One simple solution paid them to collect more data. I believe that the like If you talk

0:51:29.440,0:51:34.880

about finance flows that should be directed from the global north to the global south. And we have

0:51:34.880,0:51:39.920

this obvious problem that there is missing data in the global South. That is the obvious. That

0:51:39.920,0:51:44.080

is the obvious financing. Reason you don't have to wait for carbon stocks to come up or you don't

0:51:44.080,0:51:49.280

have to wait for buying diversity banking to be established in the UK We need those ML comments,

0:51:49.280,0:51:55.280

which is like those models. That we need to train and that are fair and effective on every country

0:51:55.280,0:52:00.800

on this planet, and we need them now, right? I guess as um as we already mentioned, but we need

0:52:00.800,0:52:04.800

that data from those countries which are still missing, contributing their data. So why don't

0:52:04.800,0:52:09.840

we pay them Because that's what we are seeking for and everyone's benefiting. You don't have to wait

0:52:09.840,0:52:15.840

for any AI model to be developed. The development of the air model itself can be a great way to

0:52:15.840,0:52:20.960

the digital economy for those communities. Thank you, Pete. Did you want to say something on that?

0:52:22.080,0:52:29.920

With disagreeing. I think Lynn did, though. I'm happy to jump in here and another interesting

0:52:29.920,0:52:36.880

direction here is using actual knowledge so physical models, for example, or incorporating Are

0:52:36.880,0:52:43.280

the forms of human knowledge into the models, so people are really working on creating more robust

0:52:43.840,0:52:51.360

models by coupling them with with simulations with physical equations. And that's an That's

0:52:51.360,0:52:56.800

an interesting way to create more General Izabal models that transfer also better to data poor

0:52:57.920,0:53:04.200

regions. Potentially so there's a lot on machine learning research that that can be done here. Um,

0:53:04.800,0:53:10.080

in addition to avoid obviously collecting better data on the ground and really making

0:53:10.080,0:53:14.320

sure that models are developed with people who understand the situation.

0:53:15.920,0:53:21.920

Fantastic. Thank you so much. Um, I think that's probably just about all we've got time for today.

0:53:21.920,0:53:28.800

So reminder that the conversation continues on social media. You can use the hashtag. T a s

0:53:28.800,0:53:35.920

convoked T A S. C O N vo are not Twitter handle is at tests Underscore Hub Pretty I know has put

0:53:35.920,0:53:40.880

some relevant resources into the conversation on the where we've been asking the questions so

0:53:40.880,0:53:46.720

you hopefully can go down there and Check out some of those links. Thanks to all of you for watching

0:53:46.720,0:53:51.280

today and joining in with the questions and thank you to all our contributors today. That's Lynn,

0:53:51.280,0:53:57.120

David, Buffy, Pete and Stewart. And having missed anyone off today, we'll obviously prayers here as

0:53:57.120,0:54:01.280

well. But And helping with the questions. Thank
you ever so much for helping with making sure

0:54:01.280,0:54:05.200

we get to as many questions as we could. If you
enjoyed this. Remember the living with airport

0:54:05.200,0:54:10.640

AI podcast has lots of episodes, And sometimes
I even get a l the right way around. For more

0:54:10.640,0:54:16.400

information on the TAS hub. Check out tas.ac.uk and there's a poll that's going to pop

0:54:16.400,0:54:25.040

up any moment. Um, for you to fill in and please
do that once wants to broadcast is finished. Um,

0:54:25.040,0:54:28.320

So it's just it reminds for me to say thank
you to all our Panelists. Thank you very much.

0:54:30.640,0:54:37.967

And have a wonderful holiday period.
Everybody and goodbye from us.