

Ask the Expert About Artificial Intelligence: Q&A



Brian, what are your thoughts on Evolutionary Neural Networks where the system can try and evolve not just weights, but various topologies (number of layers, number of neurons, recurrent.), activation functions etc. to evolve a system best suited for a given problem.



This is an emerging area of study and for simple data sets there have been reasonable results, however for more complex data sets this has not worked well, and I see still a black art around convolutional network design for particular problems and how the data epochs are configured during training to prevent overfitting etc. Nevertheless I am sure that progress will be made in self configuration of the networks themselves not just the weights by labeled data sets etc. please see this [paper](#). - Brian Levy



Do we really need AI? How to avoid AI ruling us?



This is a complex question, in the more general sense do we need Facebook and Social Media. I think the genie is out of the bag now with AI and there is no way to put it back, it is coming, and it will be very hard to stop it. The changes that AI will make to society are profound – Self driving cars, Call Centers with no people, automated operations, automated doctors etc. It will be more disruptive to society than the industrial revolution, it can be for the good of society or the bad, that is our choice at the end of the day. For the telecommunications networks of the future AI will absolutely be needed to drive automation, however the effects on society of AI will be far more profound than this. Can it be controlled, well I think the first question will be how can we avoid being too dependent on it. Imagine a world of self-drive cars, delivery vans etc. and the system goes down. In the longer term it will be very hard to understand the answers that AI delivers so working out how to control it may well be beyond our capacity. - Brian Levy



Do you believe that AI can one day substitute the human brain?



In many areas AI systems can today exceed our human capabilities however the human brain is far more complex than the best AI systems today and has more overall capability, however over time AI systems will exceed our human capabilities I am sure, but will we understand what they tell us, and will we be able to control them, or will they control us by our dependency on them. Are they the next evolution who knows...? - Brian Levy



How many percentiles of current AI commercial products' accuracy are there in the market that we can trust? If less than 50%, how can we make it better into a near human interaction level?



AI systems can be very accurate in certain tasks where a great deal of training data exists, and the problem is reasonably bounded. One example is the use of AI for the automatic tagging for pictures my Google, Microsoft and others. I could not give you the exact figures except to say they can categorize millions of pictures in hours and not years to a greater accuracy that humans can. - Brian Levy



Any REAL use case of AI in telecommunications world? I mean, something more impacting than chat box?



The best I have seen up to data is the use of unsupervised machine learning by dark trace take a look <https://www.darktrace.com/> - Brian Levy



1: It is possible to have some recommendation about cognitive platforms about unstructured text profiling and about image recognition?

2: Is possible to share some use cases list, or some catalysts projects running, of AI application different from "the classical" Customer care bot?



It is difficult to give specific recommendations here as there are so many companies in this emerging field. Artificial Solutions <http://www.artificial-solutions.com/> are a leading company around natural language interaction (NLI). They have a system that can converse in 35 languages. We can follow-up on the catalysts, however there are three application areas that I believe will be of most interest to service providers

1. Customer experience
2. Service management and optimization
3. Network Management and Optimization

Check out this great paper on the Knowledge Defined Network for something more inspiring than Chatbots: <https://arxiv.org/pdf/1606.06222.pdf> - Brian Levy



What is the concrete use case for AI in carriers?



I think there are three key areas

1. Customer Experience
2. Service management and optimization
3. Network management and optimization

Use cases are still being developed in all these areas, which is the best depends very much on the specific issues . - Brian Levy



What kind of data environment is ideal for AI to leverage? Inferring from completely unstructured data provides a probabilistic result, but big data lakes in practice tend to be big data swamps.



One of the great things about unsupervised machine learning is the way it is able to look for patterns in data and spot things that humans miss. There are algorithms out there like K-Means see: http://home.deib.polimi.it/matteucc/Clustering/tutorial_html/kmeans.html - Brian Levy



What are the most valuable use cases that AI can be used for telecom operators, and what challenges are there to realize these use cases?



I think there are three key areas

- 1. Customer Experience*
- 2. Service management and optimization*
- 3. Network management and optimization*

I see the biggest challenge will be connecting the AI ecosystem of players to them to gain maximum advantage from the innovation being generated. Some SPs are developing their own AI systems, but few have the expertise required - Brian Levy



How do you see the role of TMForum in relation to AI?



I believe that the TM Forum has a big role to play for our industry. The new ODA (Open Digital Architecture) under discussion in the forum has the aim of making our future OSS and BSS integrated architecture AI Ready

There are three KEY requirements for this

- 1. Having a holistic data architecture across BSS and OSS to which AI systems can plug in*
- 2. Being able to receive intent messages from AI systems in a consistent way and to federate that Intent to all layers of the model so that it could control customer interaction, Service interaction or Network Interaction etc.*
- 3. Having a BSS and OSS architecture capable of being controlled much faster than that of today with a human controlled management system*

Secondly, we need to help connect the AI ecosystem of companies to address the communications industry.

In simple terms we can define how AI would connect in a consistent way to BSS and OSS of the future and then enable innovative AI companies to develop applications that would plug in to this, creating a platform for them to sell into our industry and add value to our service provider members. - Brian Levy



What are the current industry trends in building Emotional Intelligence into machines?



This is in fact the next horizon for many machine learning systems for example it is planned for Amazon's Alexa to detect the emotion in your voice soon and to modify responses accordingly. It will also get personal as it starts to recognize individual voices. I can see in the future AI driven person companions for the elderly etc. and may more uses, some scary... - Brian Levy



How can we control/regulate research in this field to avoid catastrophic outcome, is it even possible for that to be regulated?



That is a difficult question, AI will change our lives and the lives of our children dramatically, my immediate concern is about our dependence on it which will become extreme in my view. Imagine a world of self-drive cars and the system down. Automated food production that stops etc. etc. In the past we had a more resilient society in many ways.... The dangers for the future are many such as AI warfare, killing machines of the SI-Fi world becoming a reality...it's down to the good folks in society to control, are we as mankind ready for this challenge? - Brian Levy



I have 12+ years of IT experience. Started as an Oracle PL/SQL developer and now from last 2 years I am working as an OSS Component Designer [Associate Business Consultant]. My question is, how AI will help me or change the way I work?



In the first instance it could change your work, there are lots of opportunities for data scientists and programmers in the emerging world of AI... do not get left behind. - Brian Levy



Are there any safeguards being discussed to address or prevent AI from learning and taking actions based on inaccurate or intentionally inaccurate data? Is it conceivable that an AI could evaluate the veracity of information before taking it into account, and would this even be desirable?



This is a significant problem, we have seen AI systems being taken down for exactly this reason. There are companies now that offer data cleaning services for training data. What is needed is domain knowledge and to build in some governing values. On what basis does an AI system evaluate the truth of data, this is a complex question, how do we evaluate fake news...not that well...let's hope an AI system can do better? - Brian Levy



For our industry, where quality is measured in PPM and 'always on' is a non-negotiable service expectation, what are the control mechanisms being designed to ensure AI-enabled network management guarantees improved received customer experiences?



Today the effectiveness of AI systems are measured by humans. Many AI systems are closed loop and are trying to constantly improve, however in the wider context the technology needs further development. - Brian Levy



As a process consultant, I am more driven by Governance processes around any new IT trend. AI is relatively a new kid in the block, though old enough for some institutes. What are the Governance Mechanisms and Bodies which control the AI at this point in time? To avoid any scare (as we see in the movies :)), how it is being governed? What are the rule engines in place as we speak and what is changing in these mechanisms for adopting the rapid growth and AI applicability across the World?



I do not know of any controls on AI directly at this point. There are controls on data usage and access such a GDPR however these do not stipulate AI access.... as usual lawmaking is behind technology development. - Brian Levy



How can AI change the thinking of leader of 100% state-own Telco company in the fields of Human Resource Management, Risk Management, and Change Management?



I am sure it will impact all these areas, and hopefully getting positive results. - Brian Levy



How can we take care of security issues in AI?



That is a complex question. Maybe in the future AI will defend itself... which could lead to some difficult situations. - Brian Levy



Most of the AI machine learning also requires significant amount of data for creating a learning model. Telecom has the availability of that mammoth data, but I have not heard any Telco deploying a BOT for responding on customer care help desk or IVR portal or any of the customer interaction point. Is that the transformation customer experience using AI not their cup of tea? Still seems they are submerged into their operational and tactical fight while OTT are changing the industry landscape.



*Some Telco's are actually deploying chat bots see this from Vodafone
<https://blog.vodafone.co.uk/2017/04/12/meet-tobi-chatbot-latest-addition-vodafone-uks-customer-service-team/>*

But it is early days for all this, I see three key initial areas for AI; Customer Experience, Service management & optimization, and Network management and optimization. - Brian Levy