Web Summit 2019 (Lisbon, Portugal)

General remarks:

Though it seems like the fact that it is the largest tech even on Earth means that it would be the most rewarding, that's actually not the case. The reward function is proportional to the *average calibre of attendee.* The average calibre of attended here was relatively low—it was all either 1) non-technical members of large companies or 2) employees of small, local, IT based businesses around Europe and the world. In any case, approaching random people was not an effective strategy to learn. Approaching booths was moderately effective, but even then arranging meetings would've been better as I could get FaceTime with the people who are actually skilled enough to answer my pressing questions, as opposed to meagre sales associates. Note that YC had past founders come in and talk to current YC batch members in a strictly off-the-records dinner, and that's where the *real* shit was dropped.

How it compares to TC Disrupt: average quality of attendee lower, so nothing insightful said in the talks, and most booths were equally drab, uninspiring startup companies. This is a mix of the size of the conference, and the fact that the European tech scene hasn't yet caught up to that of the SFBA.

Opening Night

Pitches by Tonic App (centralising common software tools for physicians), Shleep (sleep quality consulting for big companies), Eastnine (personal trainer through audio call), etc. Compared to the quality of pitches at the Disrupt Finals, these startups look like kids toys, both in terms of how compelling the technology/product was, as well as how convincing the problem was that they were trying to solve. You have to separate, in your mind, conventional measures of success like "speaking at Web Summit" and actual measures, like real KPIs.

Portugese tech scene:

"Lisbon is like Bay Area 50 years ago" feels like it rings true

A big indicator of whether an area can blossom as a startup ecosystem is the quality of its universities, since that dictates talent, and it's easier for companies to centre around talent than vice versa.

Is Silicon Valley shifting towards profit? A conversation on burn & growth vs profitability.

Rover, a dog-walking/sharing company, has legit raised $300M dollars. Imagine that being your legacy. I'm sure people want it enough to pay for it, but is that solving the world's most pressing problems?

Be careful before you dismiss burn as being silly. Spotify is a great example of how the burn fuelled explosive growth and then, when it was deployed at scale, was very profitable. The key things to pay attention to are 1) do the customers you acquire via the burn return and re-use the product? It all comes down to the "simple physics" of your company, which investors are pretty good at gauging.

Uber, Snap, DoorDash etc. that are making a huge loss are sometimes called "VC2C" business models as if they're basically taking VC money and using it to subsidise services for their users. Even in the dotcom era, the survivors (FANG) didn't have very large burns, collectively around $1B compared to >$30B of today's "hot startups".

Day 1

Has technology replaced religion?

Tech makes it easier to be apathetic, which is the opposite of passionate—dangerous.

Even at these conferences, the techno-sceptics are largely uninformed, but to the lay audience seem just as authoritative as the technologists by being passionate and loud in what

they're saying. Religion is a powerful tool for unity because of the values it promotes, not because of the literal supernatural beliefs it inspires (those *undermine* science/tech).

It's interesting to note that the most secular societies are often the most peaceful, equal, and progressive, which makes intuitive sense if you think about the kind of person who is likely to be consciously agnostic/atheist versus the average Joe, who is likely to be religious.

On protecting ecosystems/biodiversity/ Are the oceans doomed

Most people, including, surprisingly, some prominent founders, voice populist truisms without actually understanding climate/ecology science.

Poor countries may have a small advantage in developing clean infrastructure in that they have less active fossil fuel infrastructure to do away with in the first place. It was also surprising how little people thought about how technology would work at scale in poor countries, where energy tech matters most.

The way plastics are used once and then literally thrown in a huge clump does seem outdated and prehistoric—is there a juicy problem to solve there? Or is that advanced chemical engineering/policy action.

What makes SV so great?

Mentorship culture. Past winners want to find upcoming winners and support them, no matter who they are and where they come from. Generations are connected through meetups, mentorship, money. But note that all great capitals fall, and the key is in predicting when and why that'll happen. Detroit, MI, was the world capital for innovation with automobiles, until it wasn't. But note that companies don't randomly start innovating for themselves; that's not how SV came about. Instead, it was a governmental investment in the space race, and therefore microelectronics, which fed money into niche technologies like Fairchild semiconductor, which birthed a generation of tech visionaries.

Bringing payments to the masses.

Many people often repeat the truism "South-east Asia is a huge market". Take it from a south-east asian, it's not. It's an amalgamation of 30 little sub-markets, each with its own culture, habits, and idiosyncrasies that you'll have to learn to navigate it. Careem, for example, won because of a first mover advantage and because it understood the local landscape better than Uber. It knew the region wasn't well mapped, so built out its own mapping infrastructure. It knew contactless infra wasn't in place, so it accepted cash. That's how it took on Uber, and won (in MENA).

There is a compelling argument to be made that financial innovation really does change the world. It empowers those without access to capital to make big moves as if they did have that capital, and therefore changes their life. It might not be as technically challenging in the natural sciences sense as curing cancer, but I don't doubt it's just as "meaningful".

What is the role of government in regulating technology?

Some promote technology aggressively—the Portuguese government gave Web Summit a £11M subsidy to put on the event, since it adds so much value to the Portuguese economy. Heck, they got the president to give a speech at the end of the event.

Rwanda takes the "sit back and watch the effects before we regulate" approach, and Europe the opposite. This is just a consequence of how tech companies in those respective regions go about scaling. Some governments are even implementing policy were if hate speech isn't taken off Google/FB within 48h, the companies are fined tens of millions! It's really interesting to see the clash between governments and enormous companies—this is potentially where someone like Lucia (Stanford senior studying Int'l affairs) would work.

Day 2

Where will we be in 2050?

Eric Schmidt insists that the future of tech lies in biology.

The claims of AI/data transforming every facet of our lives may be taking the current most popular technology and extrapolating it to the nth degree.

As we start to rely more on cloud and high performance computing at a distance, the decrease in how fast our computational power is increasing will become more apparent as we've come to expect, and indeed rely on, these improvements in computational power.

It's important to note that if millions are forced to migrate due to climate change, our future may be spent more in solving the problems that arise because of that, rather than in genuine innovation.

Day 3

AI is most powerful when used in tandem with humans, like with Palantir.

Ping An Good Doctor, a healthcare brand in china, uses a voice assistant that makes heavy use of conversational AI, automating away the role of thousands of people who work at call centres.

Mammoth biosciences in SF is using CRISPR for disease detection, as opposed to genetic engineering. They believe that our genomic tools have exceeded our genomic knowledge. Despite sequencing the genome, we still don't understand it.

Will all diseases every realistically be eradicated? The human body is a complex, adaptive system, where stamping out one problem introduces several others by virtue of disturbing the molecular networks.

Interesting to see tech companies get involved in healthcare, starting to meaningfully take on pharma giants as they've seen how slowly they move—making big acquisitions on the way.

Frontiers of Neurotech

A short aside on CTRL-Labs, acq'd by FB for $0.7B:

Isn't it stunning that input to computers is limited by our thumbs, or, even, indeed, our speech? If computers are to our brains what the steam engine was to our muscle, why haven't BCIs been built yet? That would improve our ability to solve problems by orders of magnitude. This is the contrarian insight that Thomas Reardon, founder of CTRL-Labs, had.

The premise of the company is that humans are limited by their output. We have enormous sensory capabilities when it comes to taking in information, as well as processing it. However, where we're bandwidth limited is in out sensory output, which is shackled by how fast and easily we can use out limited muscle capabilities. For example, from a neuroscientific perspective, our brains have the infrastructure to operate eight arms, but of course we only have two. And so the purpose of CTRL-Labs is not to eliminate any pathology, but instead to extend the capability of the average human. Their first product is a band you wear on your wrist that analyses your action potentials, puts the binary from those pulses into a neural network, and captures your intent (what you meant to do with you arms), and then does the corresponding output. So it takes the mind to machine arc and eliminates the bottleneck—the effector part of the human body. This way, you can essentially grab objects at a distance, do surgery thousands of miles away, operate eight arms on a battlefield, and so much more. It makes the connection between human and machine seamless, making us masters of computational machines from the inside out.

How computation can save the environment

PVs are inefficient because of material constraints, and QC could be used to develop novel materials for these purposes [energy production]

Li-ion batteries are inefficient, and our method for trying different compounds to determine their chemical properties is archaic—why not feed in molecular structure into a ML algorithm to output conductivity for faster predictions and engineering development? [energy storage]

Lab grown meat is merely a more efficient alternative to producing the same muscle tissues as harvesting cows, which only convert 2% of the energy we feed in via food into muscle mass that we harvest. It's a question of efficiency more than of ethics. As we more fully understand myofibril synthetic routes, we can mimic them in-situ. [food production]

Investing in medtech
ML models need data. And most medical data is private, and so in order to use the private data, companies are taking DeepFaked data (changed very slightly) and then feeding it into the models.

The investors suggest finding a big problem nd then coming up with a creative solution—more important than fancy technology is that the solution is to a real problem, and is easy to implement. A good subject line for a cold email to a VC is concise and meaningful—"CNN startup for radiology w/ $5M ARR".

startups
energy/climate

shifted energy

what was the product, why was it compelling or not?

they retrofit hardware onto water heaters to be able to change when the heater heats water. they chose water heaters because that's the main thing a consumer (someone living in a house) can both afford and interface with (most people can't work with solar panels etc. but adding a thingy to a water heater is quick and cheap). they sell to utilities the fact that once they've fitted thousands of water heaters, they can adjust demand of energy very quickly to make the lives of the energy companies easier. for example, if the energy company needs a 75 kW reduction in 20 minutes, they can make that happen by turning off X water heaters (using ML to make sure the water heaters they turn off are not going to be used soon after being turned off, by tracking history). alternatively, they can take excess energy produced and channelled into the utilities and use that to heat the water heaters instead of it being wasted since it isn't needed "now". they are called shifted because they shift demand to meet supply, instead of the other way around like is traditionally done.

they made jokes about offering me an internship—> follow up with them

how did they come up with/see the problem?

how would I solve it?
optimeyes energy

what was the product, why was it compelling or not?

end to end energy company. you pay them a fixed rate per month (as opposed to a variable rate which means you don't have control over how much you pay), and they will bring in the hardware, set it up in your building (say you're KFC, in which case it'd be in your restaurants) and they'll set it up, and give you access to the online dashboard which allows you to see the status of all your energy sources (PV, capacitors, batteries) all of which are renewable when you work with these guys. their back-end uses AI/algos that optimise reliance on different devices in real-time based on changes in your input and behaviour. because it's the overarching user-facing interface that does optimisation of different systems in the background, it can be thought of as the "OS" of the energy infrastructure of a particular company. they sell to other businesses, which can then sell to consumers if they choose (not the case with KFC, but would be the case with a condo block that pays optimeyes).

how did they come up with/see the problem?

how would I solve it?

meazure

what was the product, why was it compelling or not?

sensors for large buildings and factories that collected data on temporal and spatial energy use (your energy use on floor 4 was crazy at 735pm! what did you do then? fix it!) since companies renting large spaces/buildings don't get these insights from power companies, which just present them with bills. they also had a different service where they'd put their sensors on utilities' cables and look at how much power they're supplying over time, and use ML for predictive analytics of power needs in the future.

interesting note—the guy was working as a front-end SWE, yet knew a lot about the company, how it worked, the industry, and more. he showed me a dashboard he had to built out for companies they sell to that tells them how power varies spatially in their premise, and explained how he had to develop an understanding of the metrics he was presenting so he had context on how he should design the dashboard. sure, if you're just building a web app you're mostly operating on absrtactions and won't learn much, but he did customer support and spoke at conferences and so was forced to deeply understand what the company did. moreover, talking to colleagues about implementing different software solutions means that you get an understanding of ho the pieces of the company fit together. in this context, if you're working at a stellar company, you'd both learn about working as a SWE and about the industry so it'd be a decent use of time.

how did they come up with/see the problem?

how would I solve it?

20tree.ai
what was the product, why was it compelling or not?

SaaS dashboard that takes in uploaded satellite imagery (optic and IR) and extracts information about the forests that were imaged using computer vision. they sell to anyone interested in information about deforestation, forest health. for example, they sell to utilities who are concerned with how trees are growing around their power lines (since if there's tree growth near cables they can fail and cause an outage) and to banks, who invest in companies that make wood, checking on the health of the wood produced, since you can glean a lot of information from IR and optic images, including disease, health, sequestration (of an individual tree!).

how did they come up with/see the problem?

he did a Kaggle competition that was centred around identifying species of tree using computer vision, and did really well. this coincided with him being in the middle of his career, wanting to do "good for the world" and so he started to think about how he could use ML models to do with trees, and started the company.

how would I solve it?

orxagrid

what was the product, why was it compelling or not?

- AI & algorithms that take in data from sensors connected to energy cables and output predicted demand, temporally and spatially, to tell utility companies (like PG&E) how much they need from which renewables, since renewable output is intermittent
- sensors that tell companies when their infrastructure is likely to fall apart/break since if it breaks it's costly to replace once broken and also they have to pay fines to regulators if their ability to supply power fails
- betting against energy storage, how he believes batteries will improve because right now it's expensive because materials (not assembly) is expensive since it's concentrated in politically unstable countries and thus hard to retrieve
- offshore wave/tidal and wind not expensive just because infrastructure (in fact, bigger grids and longer wires make management easier), but because the turbines themselves are hella expensive

—> send resume to CTO! he said he'd link me w/ an internship

how did they come up with/see the problem?

how would I solve it?

bios
climy

what was the product, why was it compelling or not?

algorithms that use basic building sensors that are already in place to make changes to energy use in large office buildings in real-time (like shutting off heaters when the models predict that the room won't be used in the next 3 hours based on data of when the room was used over the last few months to save energy for the company), and this is done by interfacing with the BMS (building management system), a software system linked to sensors across the building that is natively present in every large building when it's made.

they are getting funding (staying afloat) from a private investor as well as the Norwegian government, who give grants to incentivise promising startups. he says that the order of tech size in scandanavia is sweden>finland>norway, partly because the latter has so much oil and gas there's not much incentive for it to build it's tech community.

how did they come up with/see the problem?

spun out of a master's thesis that he chose to do on the topic because there was a company that he had interned with in the past that had problems with energy management that offered to sponsor his masters if he could solve their problem; he did, they sponsored it, and his brother encouraged him to spin it out into a business.

how would I solve it?

tradenergy

what was the product, why was it compelling or not?

web app to connect consumers to producers, specifically seeking/supplying clean energy. you need your home fitted with a smart sensor to collect data that is sent to their platform, which then uses ML to predict how much energy you will need in the future, and recommends producers that will give you cheap, clean energy to match that demand reliably. the fitting of the smart sensor that supplies their system with data was the IoT part of things.

how did they come up with/see the problem?

he was an installations engineer that would go to remote towns in portugal and connect them to the grid and set up the wiring, and how witnessed firsthand how difficult it was for them to get access to cheap energy since getting it from the grid had many middle-men, and the portuguese system was riddled with layers of bureaucracy so connecting a consumer with a local producer made sense.

how would I solve it?

education

sharpsurgeon

what was the product, why was it compelling or not?

surgery simulator for training of surgeons, built on top of the unreal game engine. USP is haptic feedback—which really is relatively convincing, to be fair. they sell the software to hospitals for training their residents, as well as to big medical device manufactures who want to implement their specific brand of tools (and style of tools, like philips vs j&j screws/drivers to get students used to as future customers). and that was their most basic version, where more sophisticated haptic feedback kicks in with purchases of more advanced versions.

they've run trials, confirming the fact that surgeons-in-training internalise the lessons they learn using the system 80% more efficiently than those who don't. no need for FDA approval since patients are not involved at any point.

how did they come up with/see the problem?

a spine surgeon read lots of sci-fi and reached out to his friend who knew more about game engines when he read about a surgery-training game to ask whether it's possible. they brainstormed and then came up with the company. they're starting it now because the VR technology to make it a seamless experience has only just been created in the last few years.

how would I solve it?

cleverMee

what was the product, why was it compelling or not?

another big personalised learning company is in China, Squirrel AI, which has reached unicorn status (it has some *huge* names on the board—former Dean of CMU SCS as head of AI). both them and clevermee make their own courses, and tailor the lessons/exercises to the student in real-time, getting better as you go along. it's meant to be used as a teaching tool that's sold to educators, so they can get insights on which student needs to focus on what topic. first-to-market in this market is crucial, because once students are with a personalised learning company, the content gets better and better with time so they don't leave; thus it's crucial to be the first one to get the learners in the first place.

interesting to note that even these big companies don't think abstractly, philosophically, or long-term about their businesses. for example, the founders of these companies are just looking to get funding and sell to schools, they aren't thinking deeply about the education system, operating at scale in the future, incompatibilities between education and technology, the history and development of education—they read and think about none of that because it's not directly relevant to the implementation of personalised learning. they don' even think too much about *why* you need

personalised learning, just see that it leads to better results and thus should start a company around it. this is why my method of learning about industries is so powerful.

how did they come up with/see the problem?

there are some big unicorns in the space, and yet not many people seem to have been doing it a few years ago, so they got stuck in.

how would I solve it?

miscellaneous startups spoken to
HIDAC

what was the product, why was it compelling or not?

a new technology to purify radioactive waste using thermal decomposition, of sorts. it was fundamentally a new technology, so there was a big moat and strong barrier there that gave them an edge. it's 10x faster, cheaper, and cleaner than best existing solutions. what's interesting is that despite them doing a test with Russian nuclear waste, and validating the fact that it's a better solution, the Russian government declined the product. the founder believes that this is because they have invested a lot in existing infrastructure, and want to make use of it. this underscores how *even if your solution is an OOM* better than existing solutions, you also have to make sure the problem is pressing enough that a better solution is aggressively wanted, not just better if implemented, since there's a large barrier to adopting a new technology, especially when operating with the government, and especially when there's legacy infrastructure in place already.

how did they come up with/see the problem?

he has a degree in chemical engineering and has worked in waste purification, then believed he could do it cheaper and faster, so left to start his own company. like most people I speak to, he got an intimate look at the existing best solution, and had some powerful reason for believing that he could do it better.

BNPetro Biofuels

what was the product, why was it compelling or not?

"the first green petroleum company in the world"; they were apparently converting landfill to biofuels (syngas, synfuel, coke) using technology that no-one else has.

an important take-away is that beautiful UX/design won't put you far ahead, but poor UX/design *will* keep you behind, as even when I was reviewing their flyer, the fact that the layout looked like I could have put it together took my focus away from really focusing on the content and their technology, which made them look childish. it should be noted that with chemical/biotech companies like these, you really do need some expertise, or a willingness to read deeply about the area in which they're working, to assess how likely their technology is to succeed, since I really can't assess their validity without deeply understanding the science.

how did they come up with/see the problem?

how would I solve it?

Viezo

what was the product, why was it compelling or not?

They're harnessing the wasted kinetic energy of vibrations in an industrial setting (whirring machines and things like that in factories) and then using that (admittedly small) amount of energy to power sensors in those factories, since those sensors usually have batteries that are finicky to replace, and when you're getting constant power from this vibrational source, you then don't have to replace the sensors' batteries and can save costs in labour that way. it's a smart way to deal with the fact that the piezoelectric energy harnessed is relatively small in size.

how did they come up with/see the problem?

the founder wanted to somehow collect the energy stored in rain falling to the ground, but that turned out to be infeasible no matter how you look at it, and so he started thinking about harnessing other wasted forms of kinetic energy, and the industrial setting turned out to be an interesting application that came to mind immediately. so this was essentially a big pivot—to the extent that it almost seems a bit forced and tryhard to try and get the waste kinetic energy concept to pan out.

how would I solve it?

Adesoft

what was the product, why was it compelling or not?

how did they come up with/see the problem?

how would I solve it?

TonicApp

what was the product, why was it compelling or not?

how did they come up with/see the problem?

how would I solve it?

Rente.ai

what was the product, why was it compelling or not?

how did they come up with/see the problem?

how would I solve it?

talks for today, nov 7
nurjana tech (defense)

what was the product, why was it compelling or not?

how did they come up with/see the problem?

how would I solve it?

bonako games

what was the product, why was it compelling or not?

people in africa don't have bank accounts, and so can't buy things on app stores. this includes games. they do, however, have lots of mobile money—the mobile penetration in africa is off the charts. so bonako is building a games platform where users can pay for apps/games using mobile money, and they take a commission. Google/Apple aren't doing this because there simply isn't enough money involved to make it worth it, but these guys are doing it out of patriotism.

as far as tech in africa is concerned, the hubs are South Africa, then Nigeria. the former because all the big tech companies are based out of there and the latter because of its large population. they built their app platform using Java, but the difficulty is now in getting games to onboard onto the platform, since that comes down to the network effect.

how did they come up with/see the problem?

how would I solve it?

raccoon.world

what was the product, why was it compelling or not?

using gaming (VR, ML) to improve rehabilitation. they have a handheld device that the user uses to practise certain movements that are impaired (arm supination, extension, etc.) by playing a video game of their choice. the client comes in complaining of pain, the platform recommends a few tests based on input, gets output and recommends games to play using their handheld device that will use ML to incorporate the movement patterns they need to practise subtly into the game, and make changes based on feedback they get by looking at the sensor data they collect using the handheld information.

how did they come up with/see the problem?

they started by making a handheld device for VR video games, and quickly found that most of their users using the device had physical disabilities, so pivoted to think about how they could use the device to tackle neurologic/physical disabilities in a new way.

how would I solve it?

I have seduced models in Lisbon and argued with math PhDs, I have breakdanced at nightclubs and studied energy physics. I have had dates with women I met off the street and have discussed education policy with school teachers. I have won a full-ride to college and architected complex software, I have cracked the coding interview and learned to do the waltz.

Snowden Files, NSA Surveillance Notes

The US government is legally allowed to monitor "three degrees of connection" away from suspects, which is essentially nearly the entire population. It sifts through terabytes of data every *second*. Sure, that's a small fraction of all internet traffic but—*it's a meaningful fraction of all internet traffic!* This includes collecting extensive data on foreign politicians. If the government knows that you called the number of a psychiatrist three times in one day, once after midnight, they already know a lot about you, without knowing anything about you. You should know that PRISM was hailed as one of the most successful, productive programs the NSA ever implemented; in addition to metadata, they collect actual data as well, of course.

Snowden leaked because what he saw them doing was unconstitutional, as the constitution claims it will prevent citizens from unfair searches to obtain private information, without a warrant. This is

dangerous because it means that people in power have *even more power*—they have more power over others by knowing more about them, and it brings us one step closer to a "big-brother" type government, one that's no longer a reflection of public will.

The leaked NSA docs showed that they require Verizon (amongst other networks) to submit metadata on *all calls made on a daily basis*. This was all done under the Obama administration.

This was one example of many tech giants being forced to collude with the government. In reality, Facebook shares all your messages, pages you view, how long you view that terrorist video, and more. Apple shares all the emails you send. Google shares all your search information, cognito or otherwise. This way, the government knows who you are, what you're like, what you want, what you do, things *even you don't know about yourself*. This is not some dystopic fan-fiction, this is the world you inhabit. It should be said, though, that some companies opted to shut down rather than hand over data to the government.

But this stuff is justifiable if it saves lives. But how many lives does it have to save for it to be alright? The NSA claimed it was useful in foiling over 50 acts of terror, but fact-checks have brought that number down to single figures.

And how did it come about? The fear of terrorism in the wake of 9/11 coinciding perfectly with technological explosion. And you should know that this isn't limited to the US. The UK does a similar thing via it's version of the NSA, the GCHQ, and data is shared between the two countries because of how close they are.

And how is this data shared? These huge companies can't simply exchange hard drives or send emails. Instead, the huge tech giants allow the government to physically tap some of their fibre-optic cables, as well as deliberately introduce some encryption back-doors for the government to exploit. Snowden advocates using Tor and PGP to protect your data from being tapped this way.

It's interesting to note that even the government is not all-powerful. The judicial system is constructed that the courts and the judges thereof can call the government to explain themselves, and indeed they did when these documents were released, since it went against surveillance legislation that had been passed for similar reasons in the past.

According to a recent study, the majority of Americans believe that preserving the rights of US citizens is more important than preventing terrorist attacks. And what's happening in response to the leaked documents. For one, the debate Snowden wanted to spark is taking place. And it's leading to some action; there are lawsuits from all sides demanding reform and new legislation, so the political will is there, both from the companies and public. Whether any meaningful change comes of it, though, is a different story.