

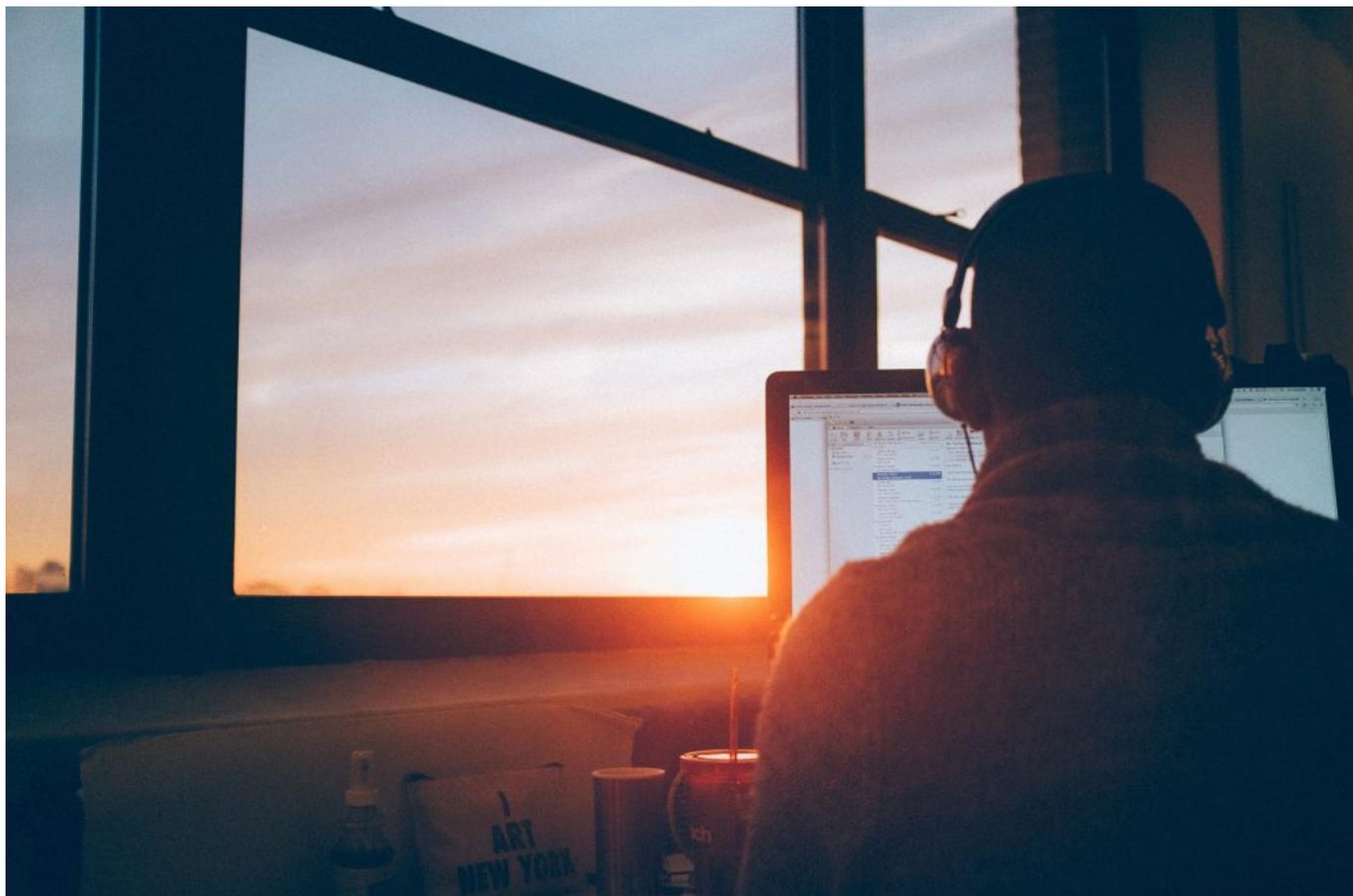
# WHY COLLABORATIVE COMMUNITIES ARE THE FUTURE OF YOUTH EMPOWERMENT AND EDUCATION



You never change things by fighting the existing reality.  
To change something, build a new model that makes  
the existing model obsolete.

Richard Buckminster Fuller

Companies around the globe are finding it difficult to recruit the right talent, especially for emerging technologies like Artificial Intelligence (AI). A recent survey by EY and MIT Technology Review<sup>[1]</sup> showed that 48% of current challenges comes in emerging technologies from a shortage of skilled talent while on the other hand, the number of data scientists and machine learning engineers has increased tenfold in the last five years, primarily due to access to online education.



This shows a huge market failure. One of the reasons for this market failure is that corporations are stuck with the old form of hiring and managing people and overlook a large segment of the population who are well-trained and skilled, but through online education. This is the segment which is “invisible” to the corporations.

This segment of “invisibles” often come from remote parts of the world, are not educated in the top universities and do not come from affluent families, but many are highly motivated to learn and grow. This article presents a case showing that if you give them the right platform to prosper, they can prove to be equal if not better than the “best” in the world.

The community-driven collaborative model

I conducted an experiment with a group of 70 third and fourth-year undergraduate students from non-elite universities, living in remote parts of India. The goal was to see if they could build a sophisticated machine learning model. The

selection criteria were simple: they all did an online course on machine learning, have implemented at least a couple of Machine learning projects related to image analysis, and were intrinsically driven to learn and grow.

The problem which the group was given to solve was neither very simple nor very complex. The objective was to build a model to identify the shadow-free rooftop area on low-resolution satellite images. This was aimed at improving solar adoption as users, with a click of a button, will be able to analyze their solar rooftop potential. Such systems have been built in the West (for example, the Google Sunroof project) but they all work on high-resolution images. Our goal was to work on low-resolution images, as these are more likely to be the resources available in most areas of the developing world.

The challenges were huge: no tagged data, inexperienced developers with no prior work experience and not from top universities, a group of people who never met each other, and a small amount of money for product development.

What happened in the next six months was truly amazing. The students collaborated and were able to test multiple machine learning models and build a model with 80–85% accuracy in identifying areas of rooftops for solar adoption.

Looking back and connecting the dots, here are the things that made this happen:

The selected candidates had huge intrinsic motivation:

In recent years education has been democratized through online courses, open source code, and models, and emerging technologies like AI have become more accessible. Anyone in almost any corner on the planet can use AI to build products, and this opens up new opportunities which would have been not possible a few years ago. However, the work and hiring model has not changed. Companies still look for degrees, universities, and experience to hire people, so students not from the top of the pyramid (see below) don't have access to good work opportunities. When given an opportunity, they are highly motivated to prove and show their skills.

The students collaborated, not competed:

This group of students realized that if they competed with each other they wouldn't succeed. They think (rightly or wrongly) that they are not the best, so they tried to utilize the power of the group and learn from each other. It is doubtful that such an approach would be the case for people at the top of the pyramid, who are often greatly driven by competition.

The collaboration also helped in making the process of testing models faster and leaner. Multiple teams were formed, each of which was independently able to tag data and build models. Each of the teams started trying different models and sharing their learnings, thus utilizing the tactic of divide and conquer. Soon, one of the models came out as the winner, based on the accuracy of its results.

Extrinsic motivation was provided, but not "winner takes all":

In the community the mentor was at the top of the pyramid, followed by the community manager, then engineers working on building models and finally data taggers. Members from each team were striving to move up the ladder to reach the next level, which created an extrinsic motivation.

However, the monetary compensation for people on the same level was the same. This fostered collaboration.

As a mentor, I listened and encouraged rather than taught:

In a TED talk titled "School in the cloud" by Sugata Mitra, the speaker says that the best form of education is where the teacher just encourages the students and lets the students learn from each other. This is what I did also. In fact, in many cases, the students knew more than me and told me about machine learning models I did not know of. What I did in return was to offer incentives like: writing articles, giving credits to the students who were part of the community; providing certificates and recommendation letters. These incentives encouraged

them to move up in rank and mentor other students. The above experiment demonstrated what I term as the Collaborative Model, where individuals driven by high intrinsic motivation form a community and the community members collaborate to build AI and Machine learning models. This makes the whole greater than the sum of its parts.

Creating inclusive and equitable learning opportunities for all

Goal

4 of the 2030 Agenda for Sustainable Development aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.” The Collaborative Model provides a groundwork to achieve this by offering the following advantages:

Empowering youth and sharing knowledge

Talent is not limited

to certain areas (like the Bay area) but is available everywhere - be it in a small town like Novi Sad (Serbia) or Odessa (Ukraine) or in big cities like Ho Chi Minh (Vietnam). With today's technological advancement, online courses and available tools, talent is everywhere and can be accessed easily.

Smriti Bahugana, a

recent master's student from IIT Guwahati, adds: “It is also important to see that such impacting projects do not need a heavy setup; we are working on our laptops, at our homes, on something that we all are enthusiastic about.”

Building trust and respect  
for one another

A community can also

help to build trust. Companies that emerge from communities share common values, beliefs, and often a bigger vision that serves the long-term interests of those communities. This builds more trust and makes people more willing to use such systems and share their data, something which is receding in products built by large corporations.

According to Piyush

Choudhury, a 4<sup>th</sup> year student of IIT (ISM) Dhanbad, “Since we work

remotely, we need to trust each other more. Everyone understands that a person cannot be free all the time, thus we adjust our time according to others and this builds respect for each other."

Helping to build a truly communal product through diverse opinions

Communities across the world with different values and perspectives are needed to build great products that strengthen human capabilities and solve pressing problems in today's and tomorrow's world. Products which are built from the incorporation of diverse opinions end up being more inclusive and appeal to a larger audience.

Raghav Saraf, a 4<sup>th</sup> year student of Vellore Institute of Technology, says: "Everyone can share their opinions to help solve the problem and this is great as we get to look at the problem from many perspectives."

Building a decentralized, equal-opportunity and peaceful world

Through this model people no matter where they are born or live, if are equally talented, get equal access to work and opportunities. Additionally, people from diverse communities, who might dislike each other, can be brought together to collaborate and solve a common problem, thus creating an environment of mutual trust and understanding and leading to a more peaceful world. This is what the future world should be. A world where work is distributed, equal, transparent, and trustworthy and people collaborate to solve real problems.

Is it possible to build such a future? Yes, according to Iresh Mishra, a 4<sup>th</sup>-year student of Shri Mata Vaishno Devi University: "Any real-world problem could be best solved if a group of people comes together to put in their dedicated efforts. When it comes to the collective efforts of dedicated individuals, Success is bound to occur!"

A personal story

Before

ending this article, I must tell a personal story. Six months ago a girl named Shruti joined the solar project. At that time she worked as an Engineer in Oracle but was keen to become a Machine Learning (ML) Engineer. She did some online courses and also few projects online, however, she lacked real-world experience and no one was willing to hire her as an ML Engineer. She joined the above-mentioned project, worked during weekends and evenings while keeping the full-time job and was instrumental in implementing the most accurate Machine Learning model. She is now ready to become a mentor. Stories like this make this collaborative approach such powerful.

The Author

Rudradeb Mitra started his career as an AI researcher in 2002 and worked with research labs, startups and banks to build AI products. During that period, he also published ten research papers on AI.

After graduating from the University of Cambridge, he built six tech startups. In the last two years, he is busy with sharing his knowledge and experiences. He is a mentor of Google Launchpad, MIT Enterprise, Impact Hub, and Founders Institute, an Entrepreneur in Residence at WeWork Labs, and a senior AI advisor of EFMA. He is also an invited speaker from 24 countries and has spoken at over 70 events. He is an avid writer and wrote his first book titled "Creating Value With Artificial Intelligence: Lessons learned from 10 years with building AI products." His current interest is creating collaborative AI learning environments and building products with social value. He sees that AI have the ability to solve the fundamental problems of human society and improve existing services in banking, insurance, energy and healthcare.

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<sup>[1]</sup> Building a Better Working Europe[online], EY Survey December 2018, Available at: [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_gl/topics/attractiveness/EY-European-Attractive.pdf?download](https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/attractiveness/EY-European-Attractive.pdf?download).