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LATEST UPDATES WORLD

Unlocking the Potential of Blockchain Technology: Decentralized, Secure, and Scalable Vision of the Department

Algorand uses a unique architecture developed by MIT Professor Silvio Micali to offer a decentralized, secure, and scalable blockchain.

The Republic of the Marshall Islands is a country of around 50,000 people spread across more than 1,000 islands in a remote part of the Pacific Ocean. The country relies heavily on cross-border finance and trade, and the complexities of that system can make it difficult for citizens to get certain goods and financial services efficiently.



Now the federal government is seeking to become the first to issue a national digital currency using blockchain technology. Officials hope the move helps citizens avoid high transaction fees, simplifies compliance with international partners, and protects against inflation (the currency will have a fixed supply rate).

The new currency will be based on blockchain technology developed by Silvio Micali, the Ford Professor of Engineering in MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL), and commercialized by Micali's startup, Algorand.

There has been considerable hype around the potential for blockchain technology and associated cryptocurrencies to disrupt the way money and other assets move around the world. Skeptics of that vision say blockchain technologies are not sustainable or efficient enough for mass adoption.

Algorand believes it has solved those problems with a unique, scalable architecture that doesn't sacrifice traditional benefits of blockchain technology like decentralization and security.



“The notion that something was impossible really attracted my attention, because in cryptography, and MIT more generally, our business is to prove the impossible possible.”

says Silvio Micali, pictured. Credit: Courtesy of Algorand

An increasing number of people are using Algorand for a wide range of applications, from creating carbon credit marketplaces to expediting real estate transactions and, in the case of the Marshall Islands, creating new legal tender.

“The advent of blockchain technology has opened up a world of opportunity for small nations like ours,” Marshall Islands Minister-in-Assistance to the President David Paul said when the country announced its plans. “By issuing a currency that is not physically embodied in cash, that can travel the globe instantly, and that is tamper-proof and completely secure, the Marshall Islands will finally be connected to the global financial system on its own terms.”

Starting from scratch

Micali has long been recognized for his work in cryptography and security. He's been a member of MIT's faculty since 1983, and in 2012 was awarded the Turing Award with his collaborator and fellow MIT professor, Shafi Goldwasser.

Working with others, Micali's achievements include a new way for distributed parties to agree on a value or strategy even if some of the parties are corrupt (reaching so-called byzantine agreement), and a method for parties to securely send information to each other in a way that can later be verified by the public (called verifiable random functions).

Much of Micali's work occurred long before the rise of modern cryptocurrencies and hype around blockchain. In the case of verifiable random functions, Micali says he knew they'd be useful somehow, but couldn't figure out the application. Still, Micali put off learning about blockchains for years after the creation of the first blockchain-linked cryptocurrency, Bitcoin, in 2008. One day he finally walked into his lab and

asked some of his graduate students to explain it to him.

“I had two main reactions,” Micali remembers. “One was it’s a beautiful idea. Two was it’s a very inelegant solution.”

Of particular interest to Micali was a problem put forth by the founder of another blockchain, Ethereum. The founder said blockchains can guarantee at most two of the following: decentralization, security, and scalability.

“The notion that something was impossible really attracted my attention, because in cryptography, and MIT more generally, our business is to prove the impossible possible,” Micali says.

Micali also credits MIT’s ecosystem with helping him start Algorand. Of his first 10 hires, eight were from MIT.

“It’s not only the tech, it’s also the entrepreneurial spirit at MIT and the fact that we don’t shy away from challenges,” Micali says.

“But the most important source for me and Algorand is also the most important resource at MIT: the people.”

In 2017 Micali started from scratch to build a better blockchain.

The term blockchain refers to records of information, stored in blocks, that users can add to, forming chains. Each block contains an abbreviated version of the previous block and time stamped information like transaction data. As more blocks are added, the previous blocks become harder to alter, providing a secure ledger of transactions and other information. Many public blockchains have associated cryptocurrencies, or digital assets, and information about cryptocurrency transactions is stored on the blockchain ledger.

“The challenge is who should be able to append the next block of transactions to the blockchain,” Micali says. “Because if I have the ability to

declare something common knowledge, I have a lot of power. Who should have that power?”

Some blockchains select users to add and validate the next block by having them devote computing power to solving cryptographic riddles. That approach has been criticized for being inefficient and energy intensive. Other blockchains give users holding the associated cryptocurrency power to validate new blocks on behalf of everyone else. That approach has been criticized for being too centralized, as relatively few people hold the majority of many cryptocurrencies.

Algorand also relies on an associated cryptocurrency to validate new blocks. The company calls the currency Algo coins. Rather than giving the power to validate new blocks to the people with the most coins, however, Algorand has owners of 1,000 tokens out of the 10 billion in circulation randomly select themselves to validate the next block.

The tokens are selected in a microsecond-long process that requires relatively little computing power. The random selection also makes the blockchain more secure by giving no clear target to hackers, helping Algorand solve the “trilemma” put forth by the Ethereum founder with a scalable, secure, and decentralized blockchain.

On top of that architecture, Algorand’s community has developed additional features tailored to specific functions, like smart contracts, which can self-execute based on predefined conditions in their code, in some cases eliminating the need for central authorities and intermediaries like lawyers.

To allow smart contracts to execute on its blockchain more efficiently, Algorand created a programming language called Transaction Execution Approval Language (TEAL). TEAL returns a true or false value depending on if specified conditions are met, simplifying the

process of creating and executing contracts on the blockchain.

The contracts have since been used to enable financial transactions, build a marketplace for small purchases of gold, and collect small-scale investments in startups.

Unlocking the potential of blockchain

The Italian Society for Authors and Editors was founded in 1882 after artists organized to avoid exploitation. A lot has changed since its founding, with conglomerate streaming services coming to hold huge amounts of power over content like movies and music. The result is a complex copyright ecosystem where royalties for artists are reduced by publishers, lawyers, auditors, and other intermediaries.

But today more than 100,000 artists in the organization have their copyrights digitally represented and can trade or sell those rights at publicly listed market prices on Algorand's blockchain. The artists can give permission to use their songs in certain cases while retaining the copyrights.

"We enjoy artists, but we often don't give them what is due to them," Micali says.

The use case fulfills a central promise of blockchain, empowering people to exchange goods without centralized authorities taking up money and time. It also exemplifies what's been a huge source of business for Algorand so far: the tokenization of digital assets, also known as non-fungible tokens, or NFTs.

The application also hits home for Micali, who has been happy to see people in his home country of Italy benefiting from his solution.

"It shows how you can regain possession of your own information," Micali says. "That's a big trend, because very often to make information available you have to give the rights of your information to someone else, who then owns your information. It's easy to say you shouldn't

do that, but we need technology to get around it. The only way to go forward now is decentralization."

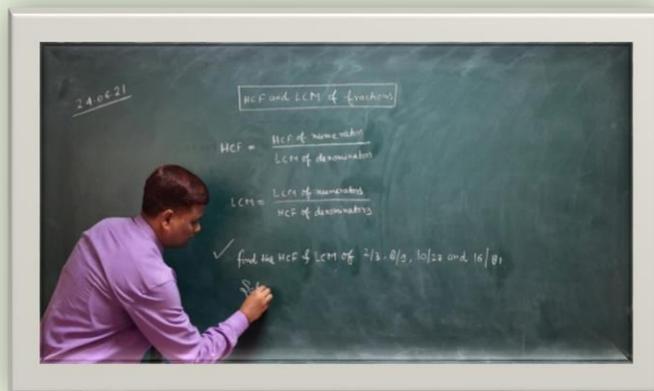
DEPARTMENT ACTIVITY

1. Zero hour activity on 24 June 2021 (Aptitude class on LCM & HCF):

Venue - MCA Class Room

On 24th June, 2021 MCA department organized a aptitude training in the club activity hour for giving a boost to student's placement preparation. In which MR. Vijay Kumar Dubey taught students some topics of aptitude related to their upcoming placement session and made a clear impact of topics among student.

In this interactive session there were so many doubt related to topic was solved by faculty. All the Students got solution about HCF and LCM related doubt.



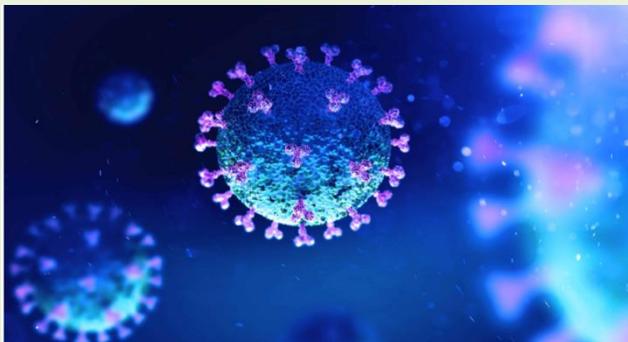
2. Ashutosh Maurya, Students of MCA 1st year got a certification from hacker rank on SQL under the guidance of Mr. Vijay Kumar Dubey, Assistant Professor, Department of MCA.



FACULTY CORNER

AI And Remote Monitoring Technologies Play A Critical Role In Tackling Pandemics Like The COVID-19

Canada-based Artificial Intelligence backed platform BlueDot spotted a cluster of pneumonia-like illnesses spreading in Wuhan, China. Scanning health data from multiple sources, the platform was able to identify the contagion, warning its clients about an impending global outbreak. BluDot's prediction came much before WHO officially warned the world about the novel coronavirus threat.



AI-based data analytics and predictive modelling techniques give an in-depth insight into the spread of diseases and helps forecast future outbreaks in time to be able to prevent them. This is just one example of how the use of Artificial Intelligence is helping the human race identify, tackle and manage such diseases. To be fair, the world is not new to pandemics. In fact, over the past 10 years a series of such outbreaks have jolted the world --- be it SARS, Ebola, Nipah or COVID -19 -- the latest and the most devastating of zoonotic diseases to have hit the globe. While the world is still grossly under-prepared to deal with such pandemics, new age digital and Artificial Intelligence backed technology using biosensors and remote monitoring is offering remarkable new ways to tackle such health crisis.

Much like other fields, AI has also boosted healthcare with intelligent machines that can emulate human behavior, offer greater precision and can analyze loads of scattered data and make sense of it. According to a market research, the global artificial intelligence in healthcare market is expected to reach USD 31.3 billion by 2025. Some factors fueling this surge include increasing adoption of precision medicine, use of big data in healthcare and co-opting of cost cutting technologies in healthcare.

Speeding diagnosis and flattening the disease curve

With faster diagnosis critical to containing the disease spread and flattening the curve, Artificial Intelligence backed interventions are emerging key solutions in the global fight against COVID-19. A number of new AI-based inventions are helping the medical fraternity improve its diagnosis capability. Researchers in China have claimed to have successfully used AI to diagnose

COVID-19 from CT Scans of lungs, which is a much faster diagnostic solution than the sputum test currently being used. Another set of researchers in the US and UK have developed an AI model that can predict whether someone is likely to have COVID-19 based on their symptoms. According to the researchers this may provide help for populations where access to testing is limited.

Similarly, a team of biotechnology students and a professor from Mumbai has claimed to have developed an AI tool to test COVID-19 through voice-based diagnosis using a smartphone.

Clearly, AI based tools offer the new age solution to diagnose, tackle and address such pandemics in the future.

Mass screening of patients

Experience has shown that countries that were successful in widening their testing net were the ones that fared better in the fight against COVID-19. A wider testing net allows access to more accurate information about disease penetration and spread. This in turn allows for better informed policy decisions. Screening of people in public places, offices, hospitals or public transport systems such as airports, railway stations etc is another area that needs to be taken seriously. Accurate screening can allow authorities to better curtail entry of suspected people and contain the disease spread. However, thermally screening thousands of people every day at such joints is an uphill difficult task and also raises the threat of a large crowd gathering in waiting queues to be screened. AI-based mass screening technology can be an effective answer to this. In fact, Baidu, a Chinese multinational has already built AI-based solutions to effectively screen large populations and detect a change in their body temperature while they are on the move. This system can examine about 200 people per minute without disrupting the flow of

people. Such technologies are ideal to be implemented in crowded areas, hospitals, railway stations, airports, etc to quickly identify suspected patients and quarantine them.

In Israel, a health insurance providing organization is using AI technology to run a data screening on its members to identify those who are most at risk of severe COVID-19 complications. This tool draws upon data such as age, BMI, existing health conditions and previous history of hospital admissions to spot at-risk individuals and fast track their diagnosis.

Effective monitoring of patients

Another critical usage of AI technology is in improving treatment outcomes and installing better patient monitoring mechanisms. COVID-19 patients, particularly those deemed high risk, need constant monitoring of health parameters. However, with hospitals inundated with patients, manual monitoring of patients is not easy. AI based tools offer a valuable solution to automate monitoring of patients' parameters such as heart rate, temperature, blood pressure, oxygen saturation, among others. Digital solutions such as the ones created by Helyxon in collaboration with IIT Madras are helping hospitals across the world institute better patient monitoring mechanisms. Not just in hospitals, these digital systems offer an effective way to monitor patients quarantined at home as well. Helyxon's devices use biosensors and keep a track of the body's vital parameters. The devices keep a track of the spikes and aberrations and whenever an anomaly is observed a system-generated call alert is made to the user while an automatic escalation to the local provider is done. Interestingly, the devices are also equipped with Geo-fencing tracking alerts to keep a track of patients' movements and ensure isolated patients do not violate the provisions of quarantine.

Use of AI platforms, biosensor devices and remote monitoring technologies is helping create better disease management protocols by improving diagnosis, screening and monitoring drives. The use of such technology has also made it easier for researchers to find relevant data and studies to acquire new insights or approaches to address the COVID-19 outbreak.

Mr. Arvind Kumar Mishra
Assistant Professor
Department of MCA

COLLEGE UPDATE

- College conducted online assessment-II from 15th June onwards and practical lab Viva Voce-I from 7th June onwards for MCA first year students
- Tyro club organized the documentary completion on 24th June on the following theme:
 - My space in lockdown
 - Life of an engineer in lockdown
 - Life with a pet.
 - Phases of mother earth

Documentary completion winners list:

Sr. No.	Names	Branch -batch	Position
1.	Shruti saxena	B.Pharma-19	1
2.	Riya saxena	CS-20	2
3.	Khushi khan	CS-20	3


(Shivangi Shukla)
Tyro President

- MCA Department restarted to conduct all the offline classes from 21st June onwards.

STUDENT CORNER

Online classes were interesting at the beginning, but now I think going to college is better. We could only see the face of the teacher at online lessons, eyes were getting tired and you miss the human interaction.

Now I am back to college. My friends got taller in this period. I am happy to return to college because I can see the people and talk to them. I am having fun on breaks, but we all remember that we must be careful.

We have to avoid getting the virus or transfer it. Yes, we have lots of homework, but I don't complain. I like college and I am happy.

Samiksha Singh
MCA 1st Year Student

MOTLEY



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