Digital And The Everyday: From Codes To Cloud
Department of Multidisciplinary
International Institute of Information Technology, Bangalore

Lecture - 01
Introduction to the Course

My name is Sachit Rao. And I am an assistant professor here at the International Institute of Information Technology, Bangalore. I would like to introduce briefly my education and research background. I obtained my Ph.D and MS degrees both in mechanical engineering from the Ohio State University. Both these degrees were presided by a bachelor's also in mechanical engineering from the University of Mysore.

My research interests are in the area of control systems theory with an emphasis on variable structure systems, and sliding motor control. During my research experience I have applied this algorithm to several applications in mechanical, electrical and aerospace engineering. I also have several years of industrial experience in an Indian robotics company. And during this time I have come to realize the importance of incorporating hardware constraints, and controller design and implementation as well as analysing their effects in the performance of unmanned systems. This industrial experience has also planted the seeds of research in the domains of human robot collaboration and artificial intelligence in the large. At triple IT Bangalore, I am closely associated with the electronic systems design group, which offers master's and doctoral degrees since 2014 in this domain.

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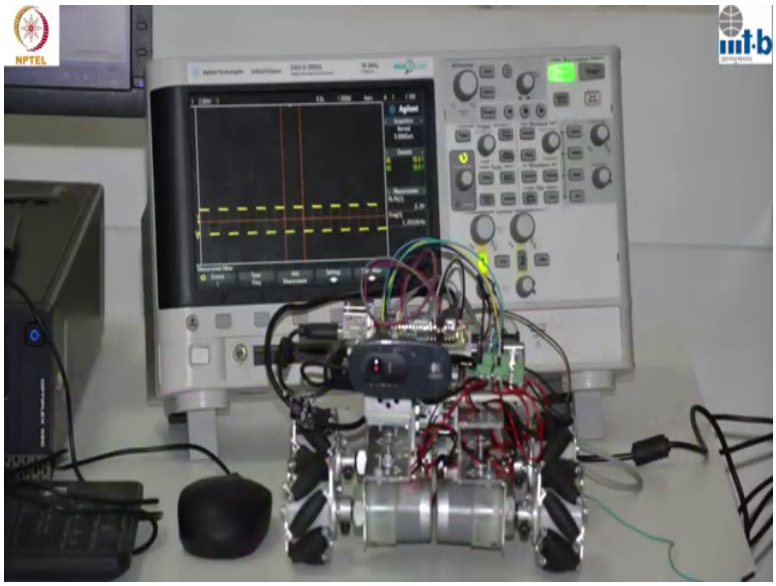

The focus of this particular group is in the areas of embedded system and system on a chip.

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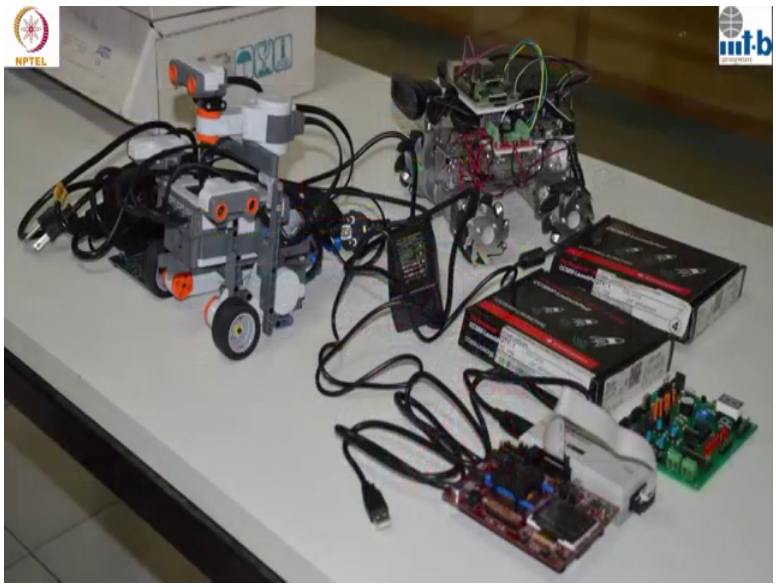

These two focus areas was selected based on the revolution that is being unleashed by the idea of the internet of things as well as the availability of low cost and low power hardware platforms.

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As well as the convergence of software and hardware.

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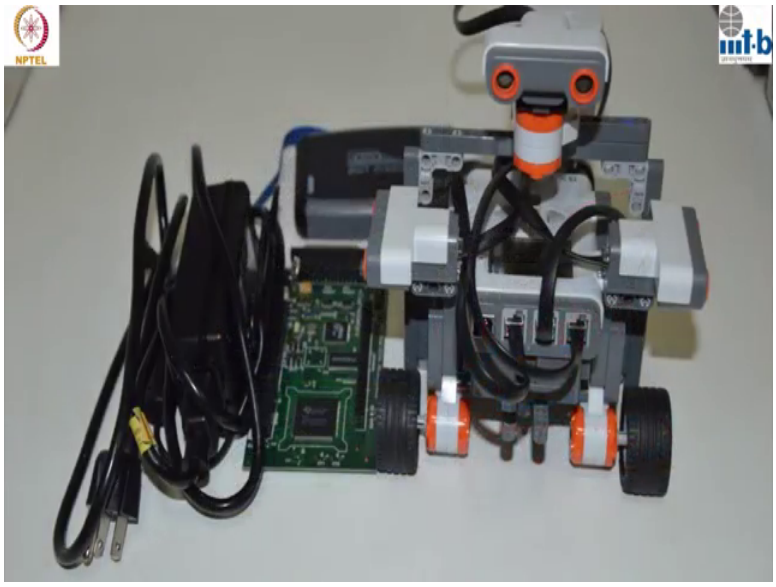

My talk is primarily based on the work that has been done by researchers from several domains such as social scientists biologists as well as neuroscientists to try and numerous press articles to try to explain why, why people spend extended durations of time on such social networking sites. From a personal research point of view, the positive reinforcer which helped me in choosing this particular topic for different school is the concept of feedback which is being used so successfully in biotechnology in enabling the popularity

of social networking sites. And it is the same concept of feedback which forms the bedrock of the most basic results which have been presented in the area of control systems and theory.

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Hello, I am T.K Srikanth, professor here at the International Institute of Information technology, Bangalore. I work in the areas of geometric modeling graphics and 3D printing as well as mobile and internet applications. I am part of the research group here called the E-Health Research Center or EHRC maybe look at how information communication technologies can improve healthcare services especially in India. This lecture IT in health care opportunities and challenges we look at how it is being used in healthcare both in terms of existing deployments as well as emerging uses of some of these technologies. Healthcare by nature is data intensive with a variety in disparate data acquired from a variety of sources.

We will look at how such data can be organized, accessed and analysed especially with the use of electronic health records or EHRS. We will see how EHRS can play a big role in helping to improve some of the services. We take a special look at public health in India where we believe that IT enabled services can make a significant improvement in the delivery of healthcare services. So, we look at how electronic health records EHRS can play a key role in improving delivery of healthcare services.

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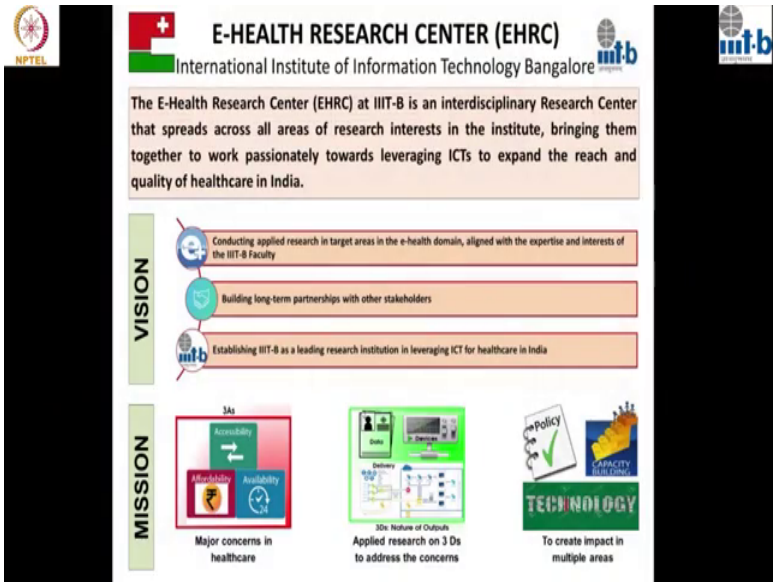

Specifically we look at how IT enabled services in the public health sector can improve the availability, affordability, accessibility and quality of services which are crying needs in India right now.

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When we start collecting data and crossing lots of data it also brings in issues of security, privacy and confidentiality of data both individual data as well as that of communities. So, we will also look at technical regulatory and policy approaches to these problems and how together these can make EHR based systems more viable option for the impacting

healthcare. These are some of the research area that we are looking at the ehealth research center here and triple IT Bangalore. We work with doctors, hospitals, government agencies and other entities involved in the healthcare ecosystem to see how we can make an impact in the space.

Thank you.

I am a faculty in the Center for Information Technology and Public Policy here at triple IT Bangalore. So, my work primarily is on telecom regulation and policy. So, I specifically work on spectrum regulation, spectrum management and other associated policy issues. Of late, I have also been looking at data protection privacy as it is closely related to telecom and internet services. So, in this particular session on data protection privacy for the digital era, I basically look at the different aspects of data privacy I provide a taxonomy for data privacy.

In fact, on everyday life, we exchanged lot of data with internet service companies over the top players such as Facebook, Google also with telecom companies. However, with the recent pronouncement of the Supreme Court judgment on the right privacy, the data protection privacy has become very very important especially in India. And also the data protection bill is on its way to the parliament to be enacted. And therefore, it is very important for all of us to know how data is used, and what is the right has data objects that we have on the data, and also what are the regulatory and policy protections that we have as individuals with respect to our private data. So, that is the overall view of this particular session that I will be teaching.

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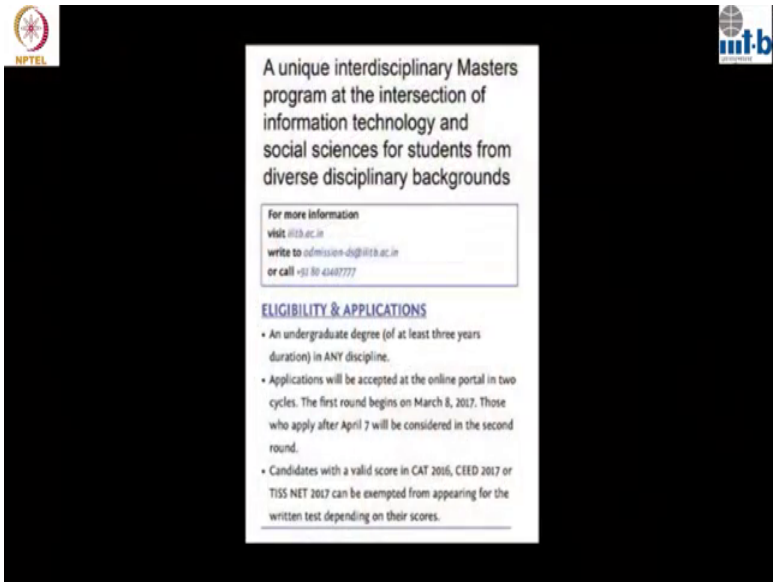

My name is Amit Prakash and I am a faculty member at triple IT Bangalore. I am associated with the Centre for IT and Public Policy, and the e-health Research Center at the institute. I am part of the IT and society research domain. And I am also coordinator of the M.Sc digital society program. My research interests are in ICTs and development in e-governance in public policy, largely looking at development and social sectors. And of late, I also been looking at social complexities and trying to adopt and adapt systems approaches to understanding and modeling some of this complexities inherent in social and digital systems.

This session is on digital technologies and our everyday interaction with the state. In this session, we plan to look at what constitutes our everyday interactions, why do we interact with the state as citizens. And in those interactions what can digital technologies do for us. We look at certain project designs see which perspectives of governance and development those portable designs embody, and try to deconstruct the notions of what those technology designs, and what those technologies can lead to in terms of better interactions and better relationships between states and societies.

Hi, I am Vidisha; I am an assistant professor at triple IT Bangalore. I have a degree in sociology and political science. My research interest includes e-governance and social shaping of technology. Currently I am working on a project, which looks at how biometric ids an Aadhar in particular is shaping the relationship between the state and

citizen. At triple IT Bangalore, I am affiliated to Center for IT and Public Policy; and work in the domain in IT and society. As part of this domain, we run interdisciplinary masters program in a same digital society which is a unique interdisciplinary program for two year which is open to all bachelor students from any discipline. And it is looking at the intersection of IT and social sciences.

The calls are usually out in march every year; and as I said it is a two year masters program. As part of IT and society domain, we also have our research program which is imaged by research and Ph.D. Here also we look at interdisciplinary approaches to the understanding of the relationship between technology and society.

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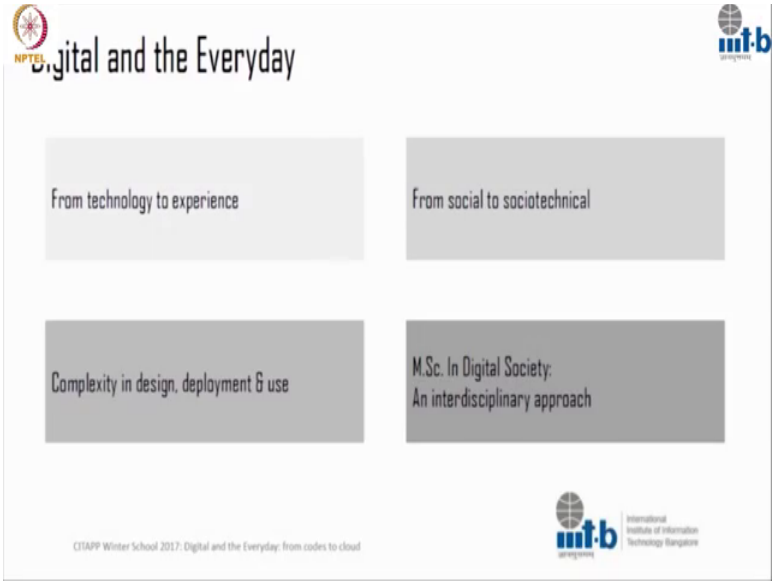

In the introductory lecture, I give an overview of the course and also overview of how the digital technologies are becoming increasingly part of our everyday life, and who are the main drivers behind such an entanglement of the digital in our everyday life. I also try to emphasize the need for an interdisciplinary approach to understand the relationship between technology and society at large. And also give a overview of the following lectures which all of which try to strive for a holistic approach towards this relationship. In my lecture on data driven identities, I provide an overview of the digital data world who are the major actors in this world, and how this digital data world has both technical as well as a social dimension. By looking at both this dimension, I will examine what implications that the digital data world has on our identities in everyday life.

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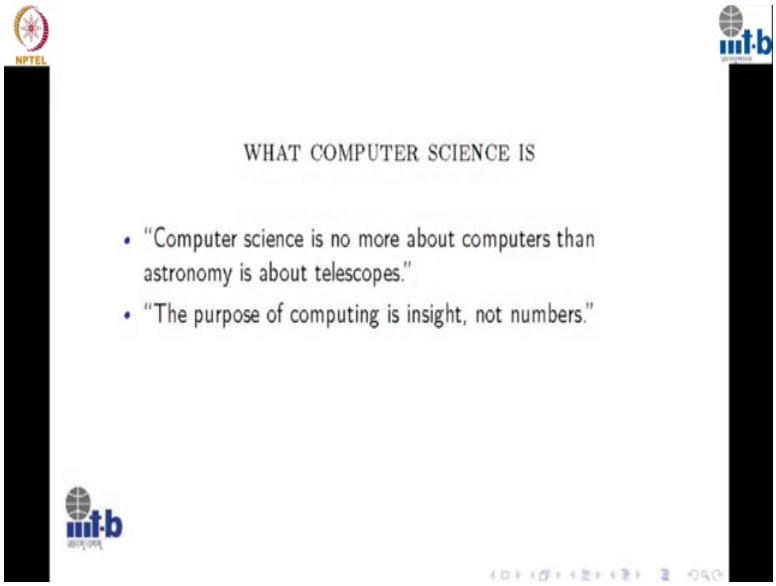

Hi there, my name is Shrisha Rao. I am a full professor at triple IT Bangalore. And I am here to tell you a little bit about my research which is mostly in computer science right here in triple IT Bangalore. Computer science is not just the development of computer applications, it is computational thinking, it is the application of computing concepts to real world problems. Here are a couple of well known course, computer science is no more about computers than astronomy is about telescopes. Similarly, a different quote is the purpose of computing is inside, not numbers. And the point in all this is to clarify that computer science is not merely about using computers to crunch numbers, it is about using computers to get insights into real world problems that we can use to affect real world solutions.

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So, in general all scientific research is concerned with problem solving. Problem solving of course, requires fact discovery, or artifact creation. Computer science research is likewise most useful when it touches on some real discipline and solves some real problem.

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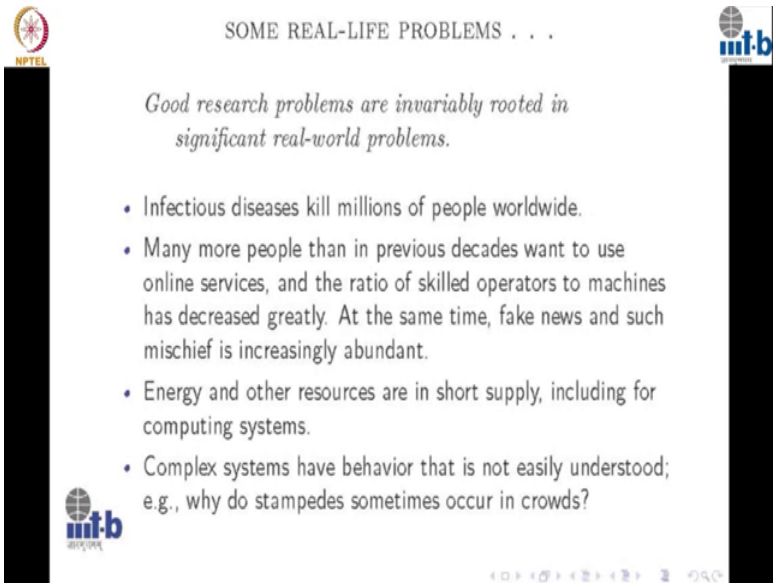

Here are some real life problems that I have looked at in the course of my research. Infectious diseases such as mosquito borne diseases killed millions of people worldwide; and they does not seem to be any cure inside. What can we do about that? Now. we are

seeing many more people than in previous decades who want to use computing resources who are online all the time, who need various services including IT enabled services delivered to them. At the same time, we do not have enough skilled operators to provide such services manually. This requires AI - artificial intelligence. At the same time, there are major nuisances that have come up because of the proliferation of IT including fake news, what can we as computer scientists do about that.

Yet another problem is that energy and other resources are in short supply that is of course, true for other systems it is also true for computing systems. What can we do about that? Similarly, complex systems have behaviours that are not easily understood for example, why do stampede sometimes occur in crowds. What can we do to prevent such stampedes? How can we design buildings more effectively to control crowd behaviour? And based on these real life problems as I have just briefly described them to you.

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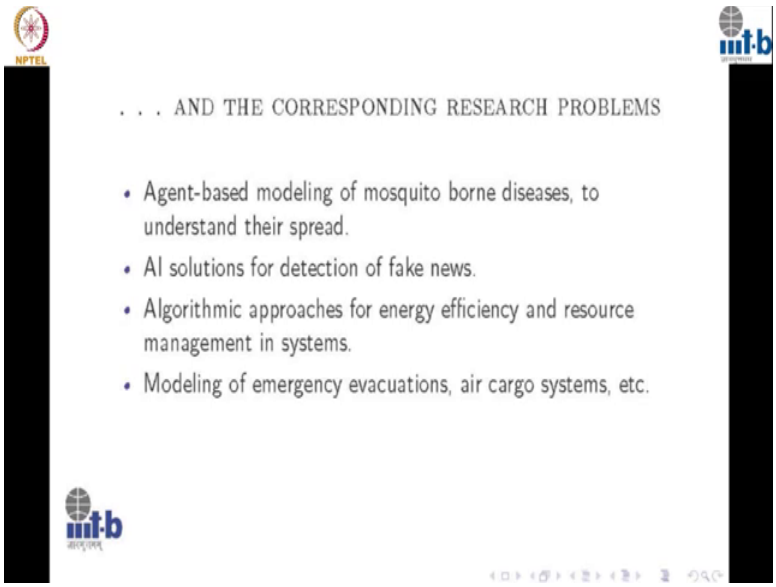

Here are the corresponding research problems. Agent-based modeling of mosquito borne diseases, to understand their spread you have done that. AI solutions for detecting fake news using deep learning and other techniques. Algorithmic approaches for energy efficiency and resource management systems; and modeling of emergency evacuations, air cargo systems and so on.

My talk in this winter school deals with one important question, which is how are algorithms affecting our society, and what do we need to do to be aware of and mitigate any possible ill effects. As we know very well computing systems form an increasingly important part of human society, we all depend on them for many important needs. They have taken on the role of advisers, trusted confidence, friends and much more. They recommend which movies we should watch, which books we should read, what news articles we can possibly believe in and so on. And in many cases algorithms are making such hefty decisions without our understanding their possible biases and the effects that they have on influencing our culture. So, this talk looks at some of the issues that affect us in terms of how algorithms govern our lives, and I hope it will help us be more informed, and more aware of our citizenship duties in regulating how algorithms in turn affect our society.

Thank you.

My name is Janaki Srinivasan; I am an assistant professor here at triple IT Bangalore. I work as part of the IT and Society Domain here at the institute. And I am also affiliated with the Center for IT and Public Policy. I have an interesting academic background if I say so myself I initially started with a training in sciences and NIT, but my Ph.D was at an interdisciplinary information school where I studied the politics of information based initiatives for social change and that continues to be the kind of work I do. But coming from this interdisciplinary background, I see the value for training students in similar ways and that is why I am so excited to be associated with a fairly new M.Sc in digital society program. In addition to teaching for those program and other programs of the institute, I also supervise MS, Ph.D students.

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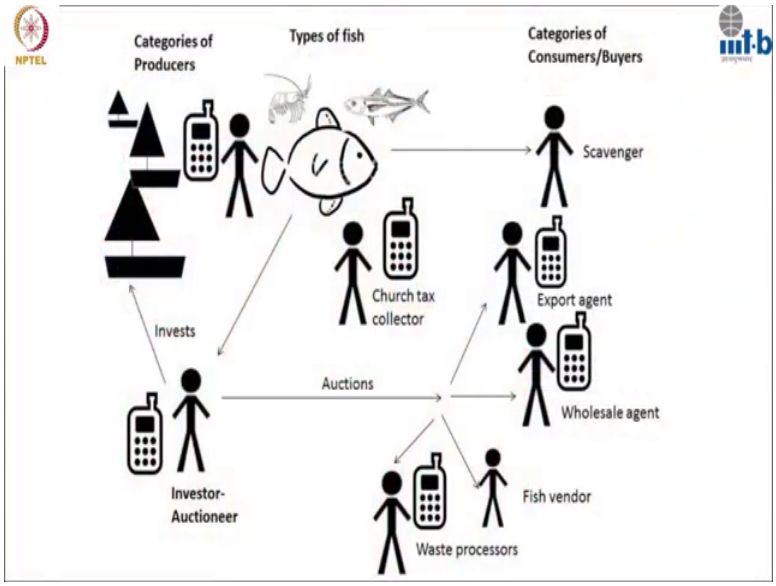

My research recently has been on digital financial transactions for which I have worked with the institute for money technology and financial inclusion at UC Irvine.

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I have also been recently involved in research on identity infrastructures in India. As part of this NPTEL course, I will be teaching a module on digital finance. As part of this module, we will be basically be looking at remittances, payments and credit.

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We will be looking at examples such as m-pesa poster child for mobile money in Kenya as well as various new innovative credit scoring mechanisms.

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Overall, we will be trying to understand what is it that digital innovations bring to this field, these various subfields of finance. And also try and understand; who are the people that these kinds of innovations end up excluding or including in conversations about everyday financial transactions.