

AI in Education

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Office of the Principal Scientific Adviser
to the Government of India



Innovation & Science @Bharat series - 6

Artificial Intelligence (AI) in Education

🔊 Speakers



Industry

Dipakshi Mehandru,
Director, Government
Affairs & Public Policy,
Dell Technologies India

Rajesh Saha,
CEO, and
Co-founder
of Quiklrn

Academia

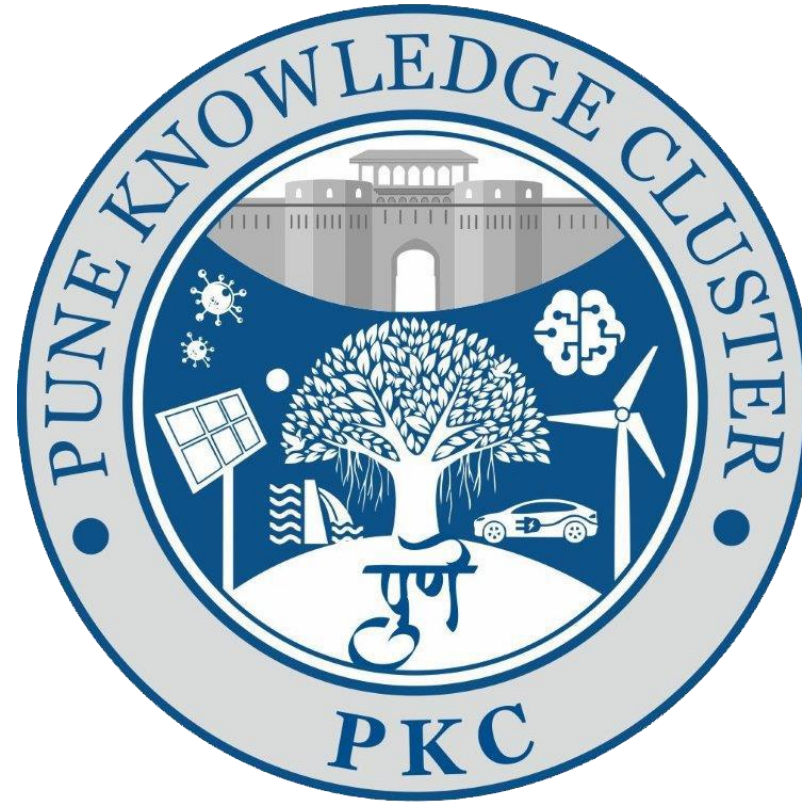
Prof. Ajit Kembhavi,
IUCAA and Pune
Knowledge Cluster,
Pune



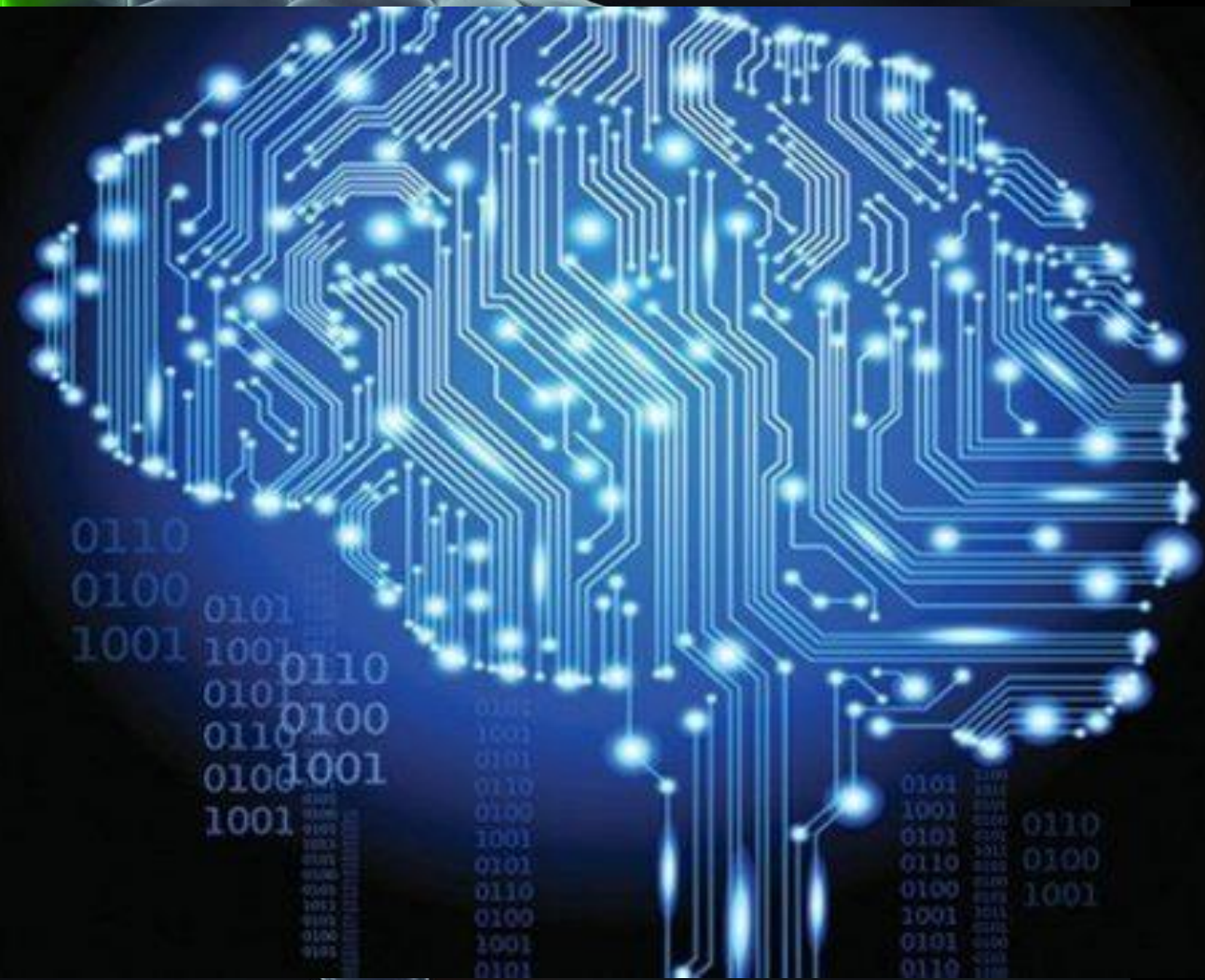
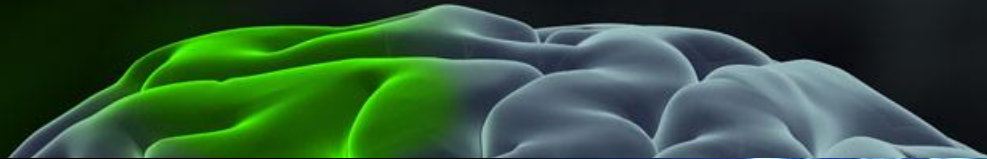
📅 18th June, 2021 ⌚ 03:00 PM

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Artificial
Intelligence

Barred Galaxies



NGC 1300, HST



NGC 1073, HST

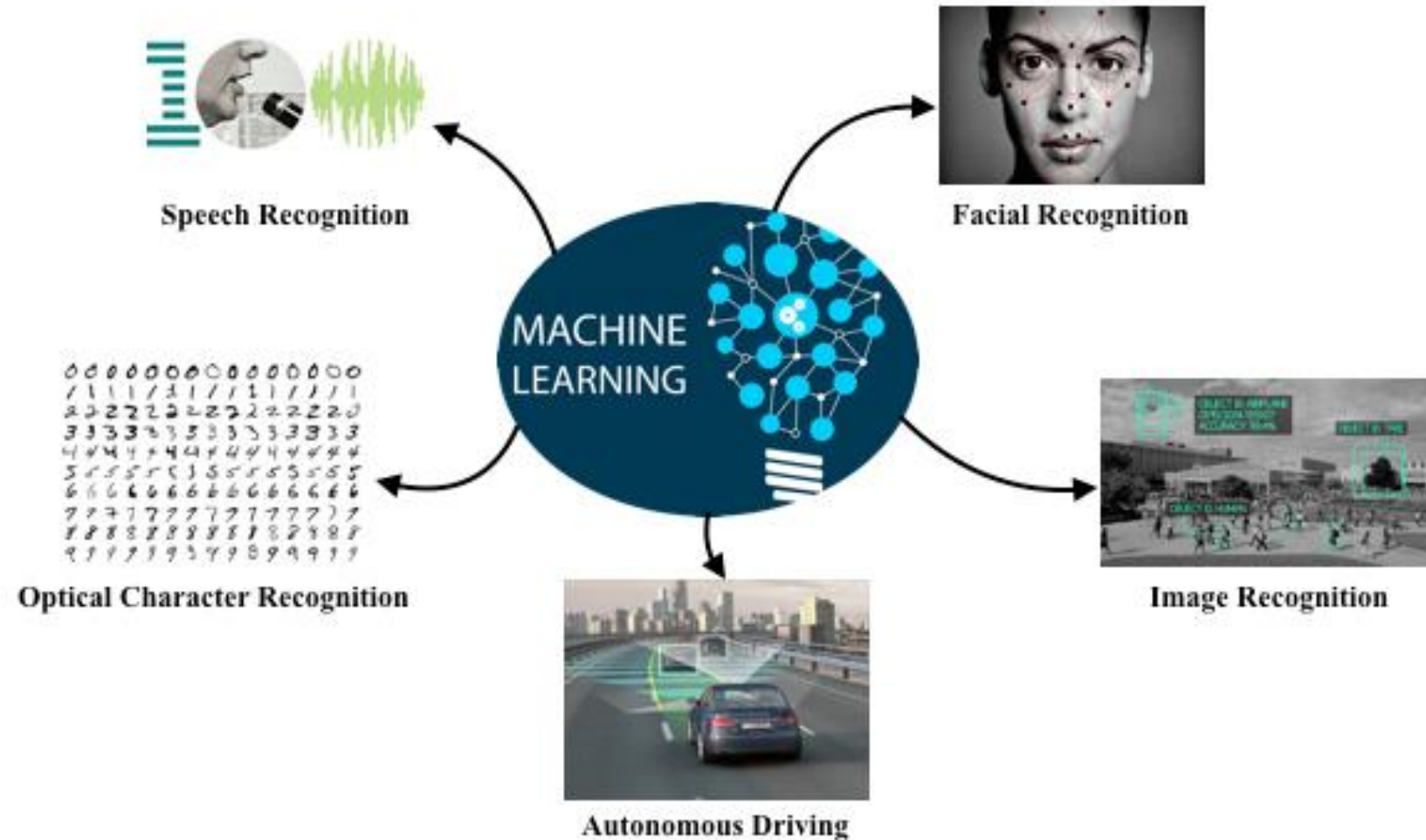


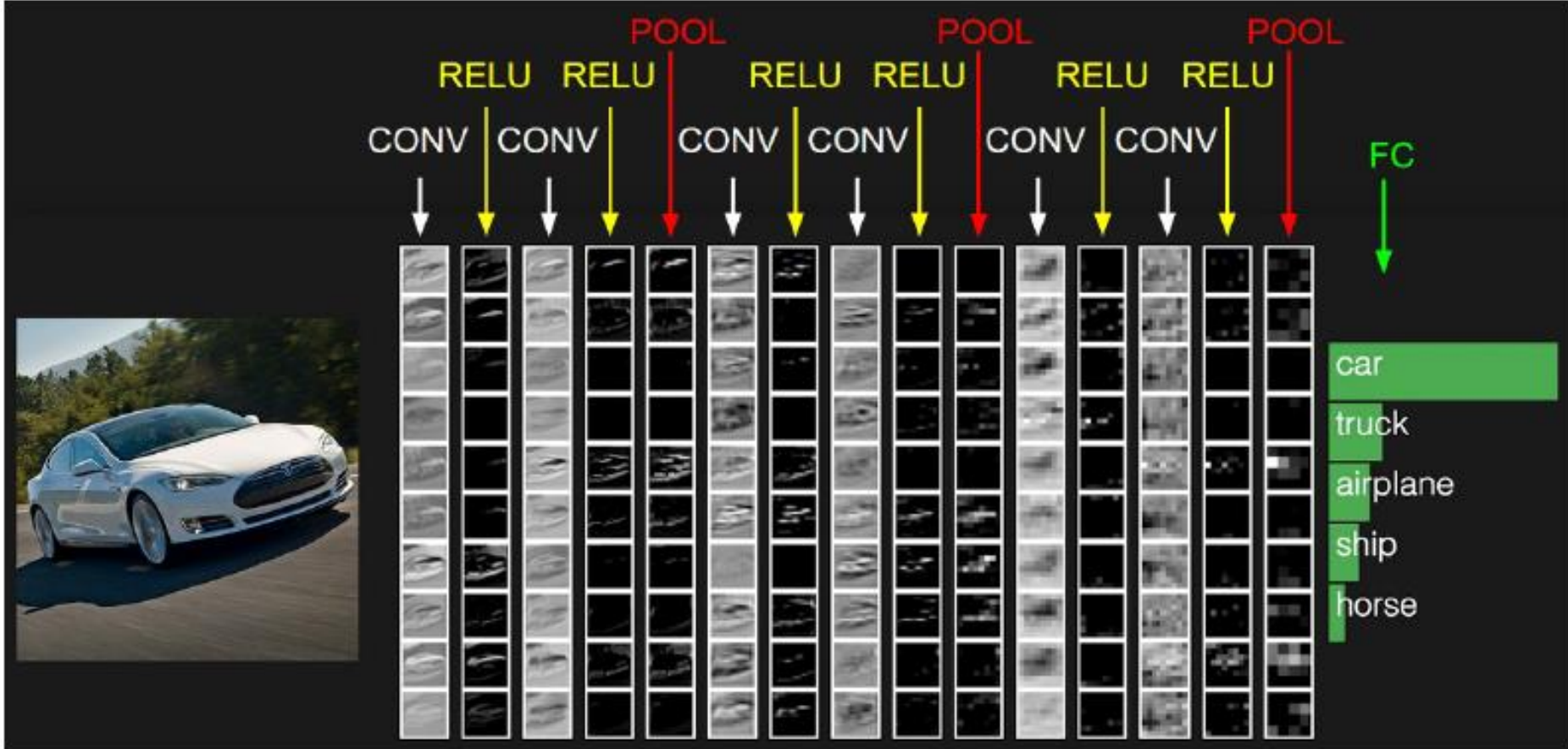
NGC 936, HST,
Lenticular



Machine Learning Applications

Machine Learning → Deep Learning





AI & Education

Education in AI

Researchers
Professionals

Colleges &
Universities

Educationists
Administrators

Schools
Citizens

AI in Education

Learning
Teaching

Examinations
Evaluation
Proctoring
Counselling

Administration
Management



AI in Education



Institutional

**Marketing & Recruiting
Admissions & Enrollment
Curricula & Resource
Planning**

System Facing



Student Support

**Guidance
Just-in-Time Financial Aid
Early Warning**

Student Facing



Instructional

**Self-Paced Progress
“Personalized Learning”
Pedagogical Improvement**

Student &
Teacher Facing

AI in Learning and Teaching

Student Facing

Personalised Learning Platforms

- Use learning systems which take into account a student's learning pace and the progress made
- Use dynamic assessment of progress to recommend additional material, or omit some parts of a course
- Use responses of students collected over a period of time to determine course content and approach

AI in Learning and Teaching

Student & Teacher Facing

Student Support Systems

- Help students to schedule their course load
- Help select courses, streams and paths to careers; recommendations are based on historical data on students
- Use early warning systems to monitor physical and mental health of students; granular data on student behaviour is needed for such purposes

AI in Learning and Teaching

System Facing

Organisational Matters

- Conducting admission tests at remote sites including homes
- Counselling, admissions
- Scholarships, part-time jobs, hostel facilities
- Fair conduct of exams at remote venues, including homes
- Campus discipline, security

Example: TCS iON Remote Examination system

- Locks down the candidate's device – desktop, laptop, tablet smartphone, and just enables it to capture exam responses
- Leverages the camera of the device to send a video stream to a central server on the cloud. Analyse using AI to detect malpractice attempts and alert the invigilators
- Enables invigilators to proctor candidates in real-time, from anywhere
- An AI-driven Command Centre has been launched in Chennai for centralised monitoring

Automated Sanitation Inspection (ASI) System

Problem Definition

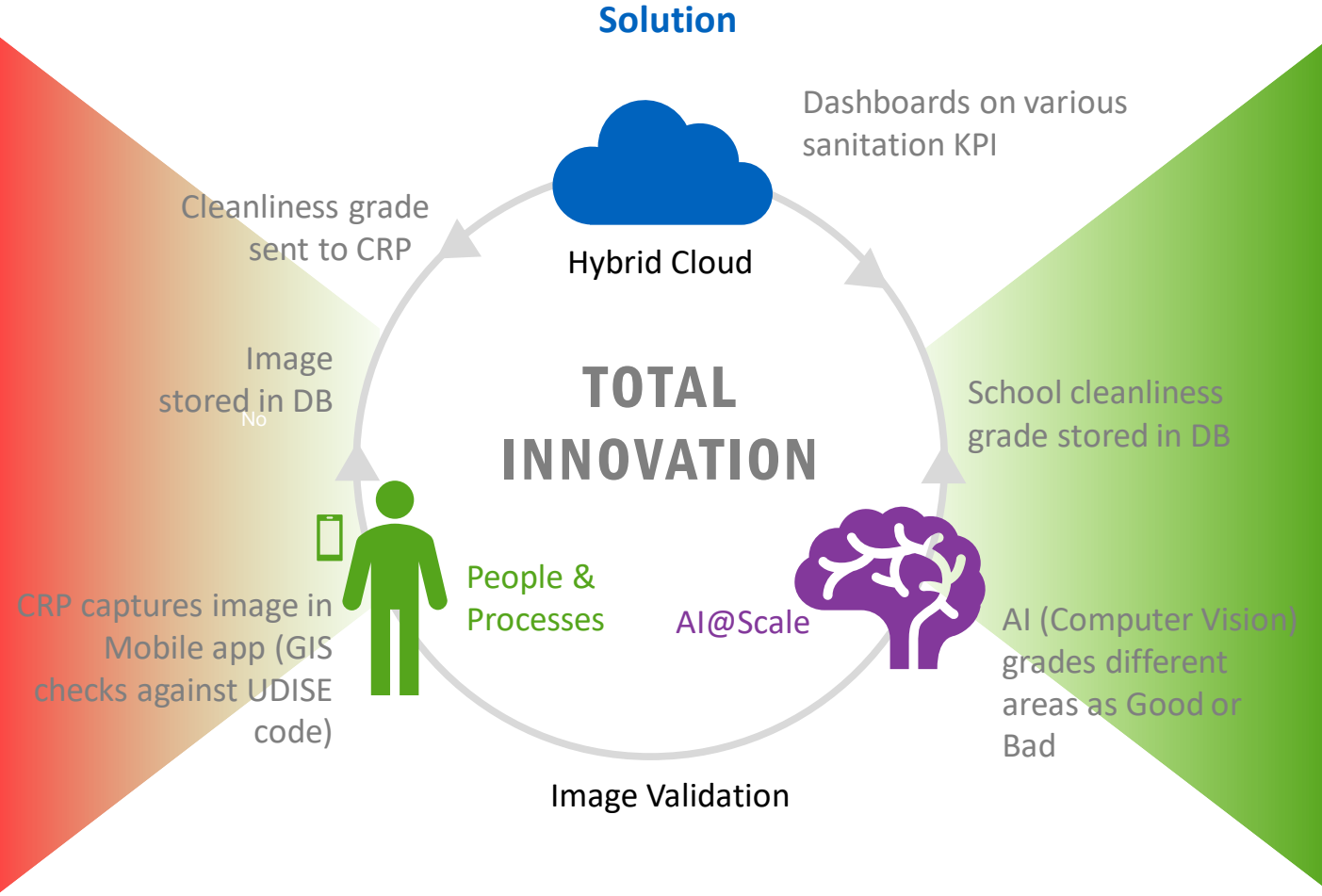
23% Girls Drop Out of the schools due to poor Sanitation
(2014 report by the NGO Dasra)

5 million school going kids in 45K Govt Schools.

0.5M photos to be scanned in 3 hours

Who will label the dirty toilet images?

Counter manipulations done by workers



Outcome

IMMS - Govt of Andhra Pradesh

Date: 11-10-2020

School ID	28110100203
Category	BoysBlocks
Sub Category	Toilet4

AI Processed Image 

Commode Rating	Good
Floor Rating	Good
Overall Rating	Good

SUSTAINABLE DEVELOPMENT GOALS

- 3 GOOD HEALTH AND WELL BEING
- 6 CLEAN WATER AND SANITATION
- 4 QUALITY EDUCATION
- 10 REDUCED INEQUALITIES

It is neither about "doing different things" nor about "doing things differently";
it is about **“creating exponential difference”**



The Importance of Data

- The AI models used in building applications are trained using data on a large number of students.
- The learning enables underlying complex, non-linear relations to be used in making predictions.
- The accuracy reached depends on the quality and relevance of the data.
- There can large differences depending upon social and cultural circumstances, economic conditions, educational levels and so forth
- Results therefore cannot be simply extrapolated from one place to another.
- The collection of data can lead to privacy and ethical issues, particularly when it goes beyond mere scholastic issues.

AI in Education

Collaboration Between Academics and Industry

- India has great diversity, with many disparities including
 - Many languages
 - Regional and social differences
 - Economic differences
 - Levels of technology and development
 - Aspirations
- This diversity has to reflect in AI models and training data sets, so there is a great deal of work to be done
- There is great urgency due to **remote learning necessitated by the pandemic**
- There is immense scope for collaboration between academic and industry

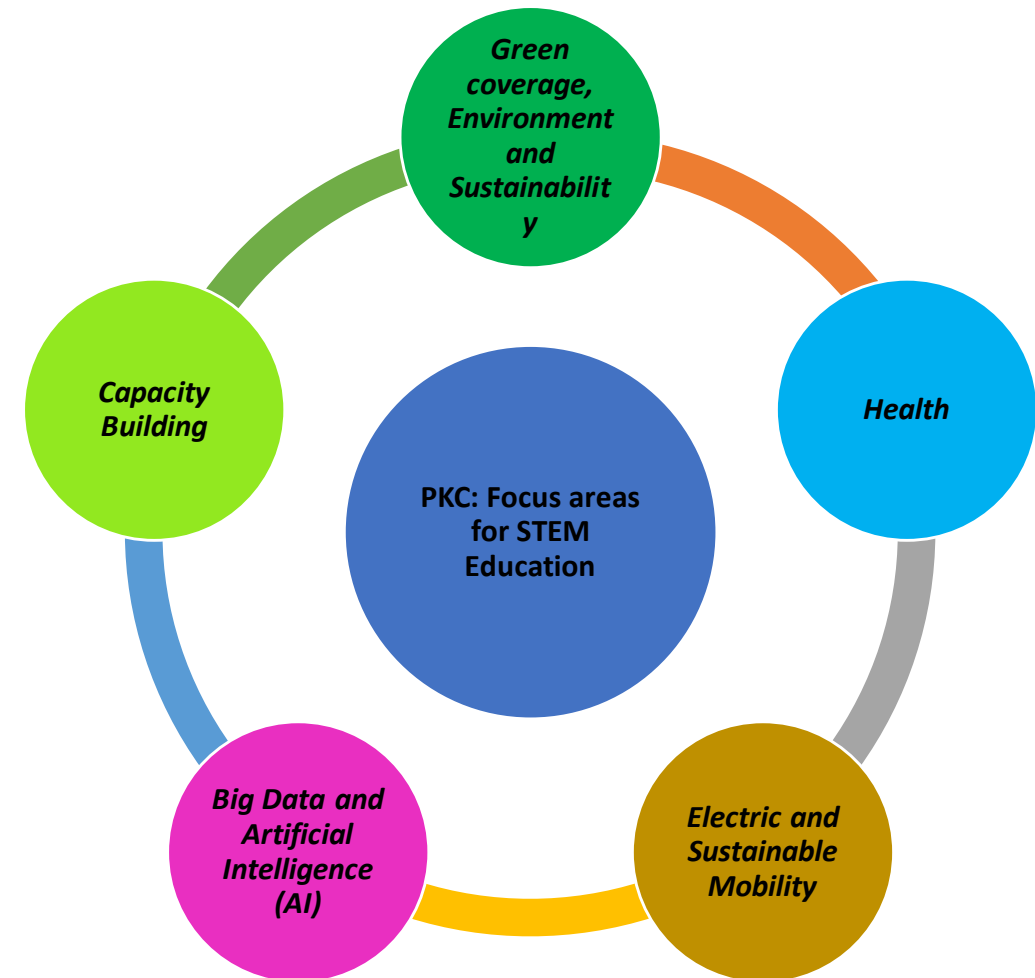
STEM Education Program

Key Features:

- Three-level STEM programme for school students and teachers of classes (grades) from 6th to 11th
- Developing STEM modules mapping to the curriculum
- Develop pedagogical skills in teachers in line with NEP 2020
- Explore concepts through hands-on, minds-on and hearts-on activities and a passion for STEM among students.
- Develop content such as lectures, courses, hands-on toys, laboratory exercises.
- Train teachers to use various pedagogical techniques and use technology to teach effectively

Prachi Pasalkar

PKC: Focus areas for STEM Education



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Linking Researchers and Resources

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I-MITRA



I-STEM Portal of the government

Equipment

Equipment SEARCH

Equipment	Model	Make	Category
Flame Photometer 128	Elite Ex	Pelican Equipments	Research Instrument
pH Analyser	LI 612	Elico	Research Instrument
Yona Hot air Oven	Yona Hot air oven	Indian Instruments Manufacturing Co.	Research Instrument
-20 Freezer	LF-DW25-200	Vestfrost Solution	Characterization
-80 Freezer	UUS-552A-1-G2	ESCO	Characterization
DAQ Card LABVIEW Full Development System	6013, 6014	National instruments	Research Equipment
Electrical Cell Substrate Impedance		LABMATE	Characterization
Elelctroporator	ECM830		Research Equipment
ENA Network Analyzer, 20 GHz	E5071C	Agilent	Research Equipment



Thank You!