Unleashing the Power of AI and Software: Opportunities for Startups in the Indian and Global Market

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Ahmedabad University

Heritage – AES, University and School

The Founding Vision & Inheriting the AES Legacy

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Founding

- In 1932, to bring highest quality education to Ahmedabad
- At the behest of Sardar Patel, Kasturbhai Lalbhai, Ganesh Mavlankar and many other Industrialists from Gujarat and outside formed the trust
- More than 500 members of the Trust

Focus on Academic Scholarship
No needy student must be turned away
Diversity in student body

Land Bank and Corpus

- Started with 1000 acres
- Around Rs 1000 cr

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Source: Presentation by Vice Chancellor, Ahmedabad University

About University

- Established in 2009 by Ahmedabad Education Society
- Private, non-profit research university
- Major Schools
  - Amrut Mody School of Management
  - School of Arts and Sciences
  - School of Engineering and Applied Science
  - School of Public Health
  - 5 Centers

- Founding Phase 2009 – 2015
  - Programs BBA, MBA, Engineering, Life Sciences
  - Venture Studio (Incubator)
- Building Phase (2015 – 2021)
  - New Programs, New Schools and Centers, Active Learning
- Expansion Phase (2021 – 2027)
  - Research Activities, Global partnerships with Institute and Industry
  - Expansion of Campus Infrastructure

About School

- BTech with Majors in
  - Chemical Engineering – 30
  - Computer Science and Engineering - 150
  - Mechanical Engineering - 30
- Post Graduate Major
  - M.Tech. CSE - 20
    - (Data Science and Analytics)
- Doctoral Programmes – 5 per year

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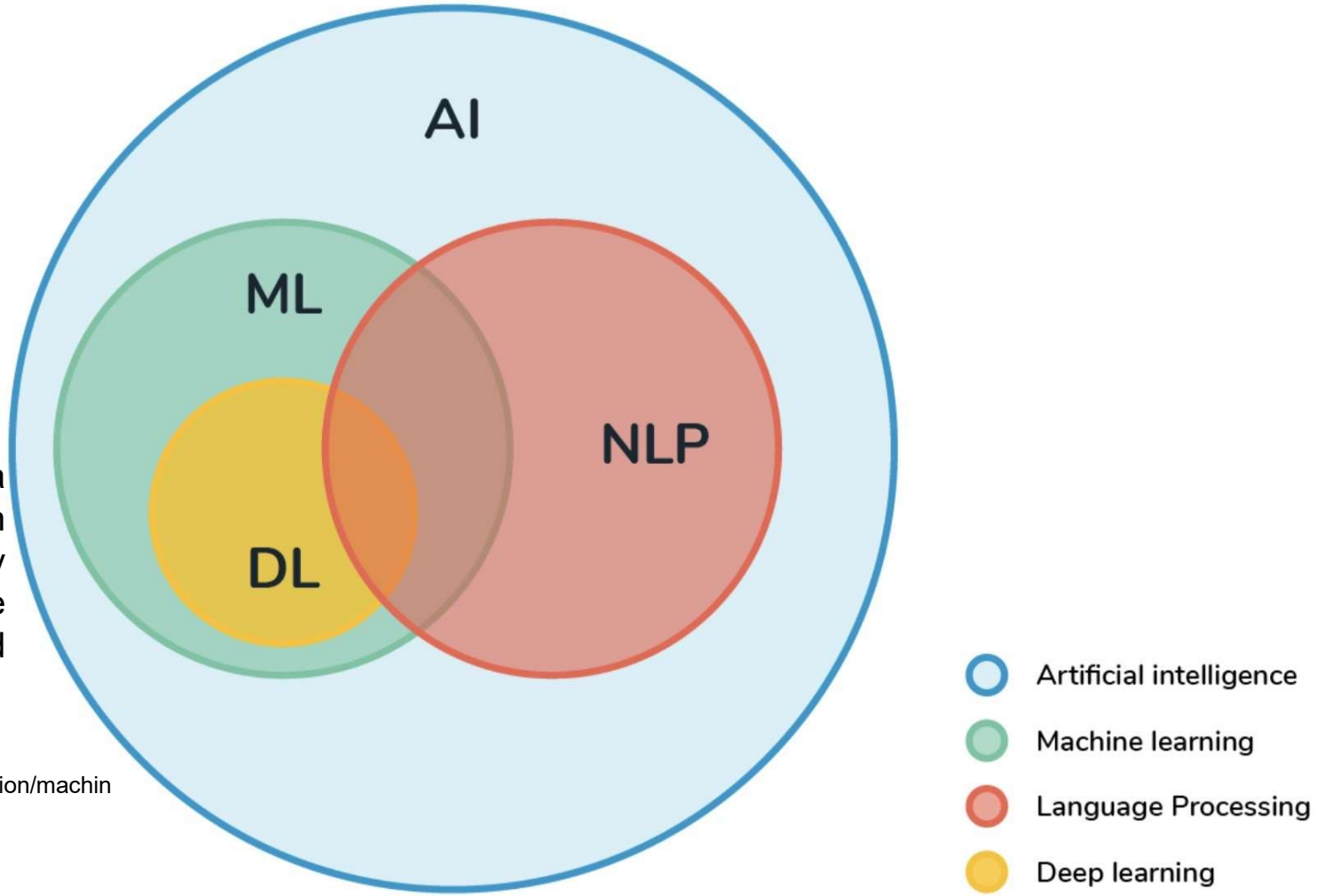
ML: The capacity of a computer to learn from experience, i.e. to modify its processing on the basis of newly acquired information.

Source: https://en.oxforddictionaries.com/definition/machine_learning



Source: https://www.quora.com/In-what-order-should-I-learn-AI-ML-data-science-deep-learning-NLP

AI spring – Here to stay

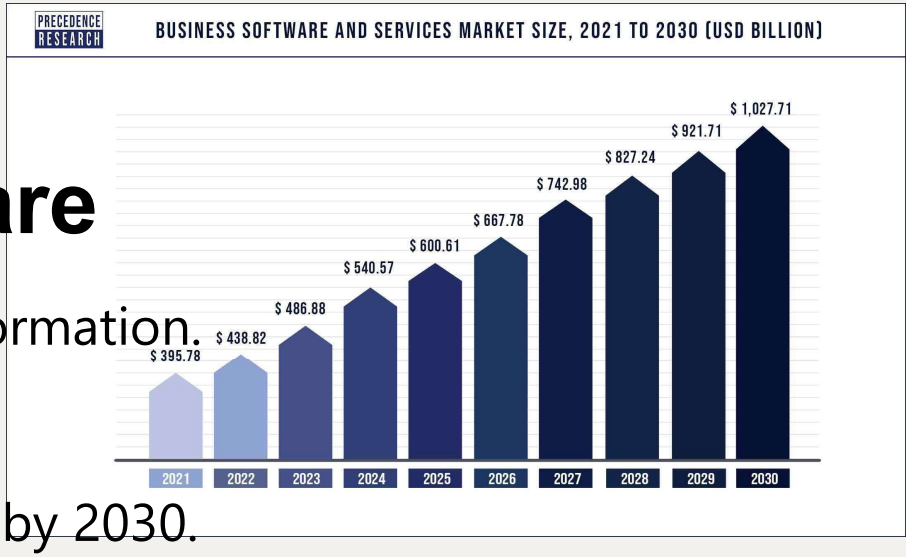
- Unlimited access to computing power [1]
  - Forecast public cloud services: $ 597.3 Bn in 2023 [2]
- Rapid increase in computing power
  - GPUs- NVIDIA hits $ 1 Tn valuation mark [3] driven by AI boom.
- Huge fall in data storage cost [1].
  - 15 GB Google drive free; Paid 2 TB $10 per month
- Explosion in data digitization
  - Global data sphere – 163 Zeta bytes [4]

[1] National Strategy for AI – Discussion paper https://niti.gov.in/sites/default/files/2019-01/NationalStrategy-for-AI-Discussion-Paper.pdf
[2] Gartner report - https://www.gartner.com/en/newsroom/press-releases/2023-04-19-gartner-forecasts-worldwide-public-cloud-end-user-spending-to-reach-nearly-600-billion-in-2023#:~:text=Worldwide%20end%2Duser%20spending%20on,latest%20forecast%20from%20Gartner%2C%20Inc.
[3] https://www.forbes.com/sites/dereksaul/2023/05/30/nvidia-hits-1-trillion-market-value/?sh=61b7df653eab
[4] Data Age 2025: "The Evolution of Data to Life-Critical whitepaper by International Data Corporation, 2017"

Overview of AI and Software

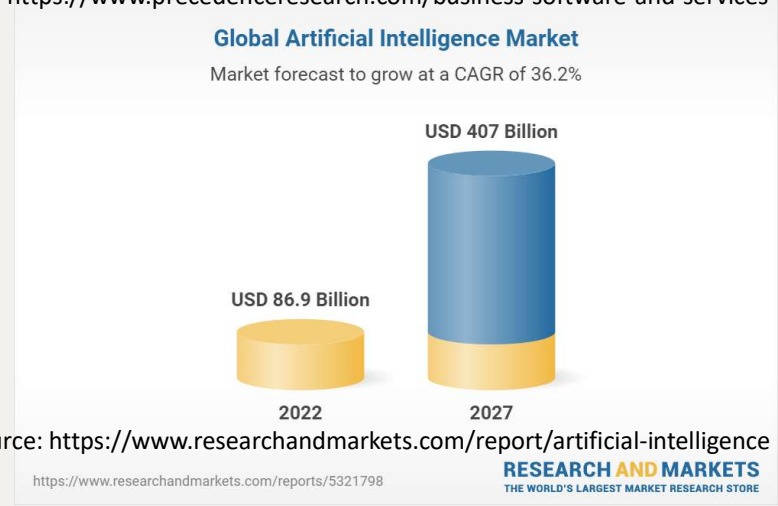
- Artificial Intelligence (AI) under rapid transformation.
  - Software - $ 1 Tn. By 2030 – Rapid digitization
  - AI - $ 407 Bn by 2027
- The Indian tech industry growth to $500 Bn by 2030.

  – Debjani Ghosh, President NASSCOM



Source: https://www.precedenceresearch.com/business-software-and-services-marke

Source: Strategic review – 2023 https://nasscom.in/knowledge-center/publications/technology-sector-india-2023-strategic-review



Source: https://www.researchandmarkets.com/report/artificial-intelligence

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Indian AI Scenario

- "Investments in Artificial Intelligence in India is still a small percentage (~1.5%) of the total worldwide spend." – $881 Mn by 2023 @2.5% 340 Bn global AI investments.
- Making **AI REAL** is still some time away.
- AI adoption can add $500 Bn to Indian GDP
- Four major sectors
  - Industrials and Automotive
  - Health care
  - Retail and Consumer Packaged Goods
  - Banking and Financial Institutions

Source: The NASSCOM AI Adoption Index - https://nasscom.in/knowledge-center/publications/nasscom-ai-adoption-index

Market Analysis

- India as global leader in AI skills [1]
  - 1st rank in AI skill penetration
  - 1st rank in AI talent concentration
  - 5th in scientific publication
- Growing demand for AI solutions across various sectors
  - Four sector contributes ~60% of potential AI driven value to GDP by 2026 [2].
  - Industrials, Automotive, Retails and CPG has higher penetration of AI [2].
  - Majority companies have active POC and defined use cases across functions.

[1] Source: State Of Data Science & AI Skills In India https://nasscom.in/knowledge-center/publications/state-data-science-ai-skills-india-data-and-art-smart-intelligence
[2] Source: The NASSCOM AI Adoption Index

Market Analysis

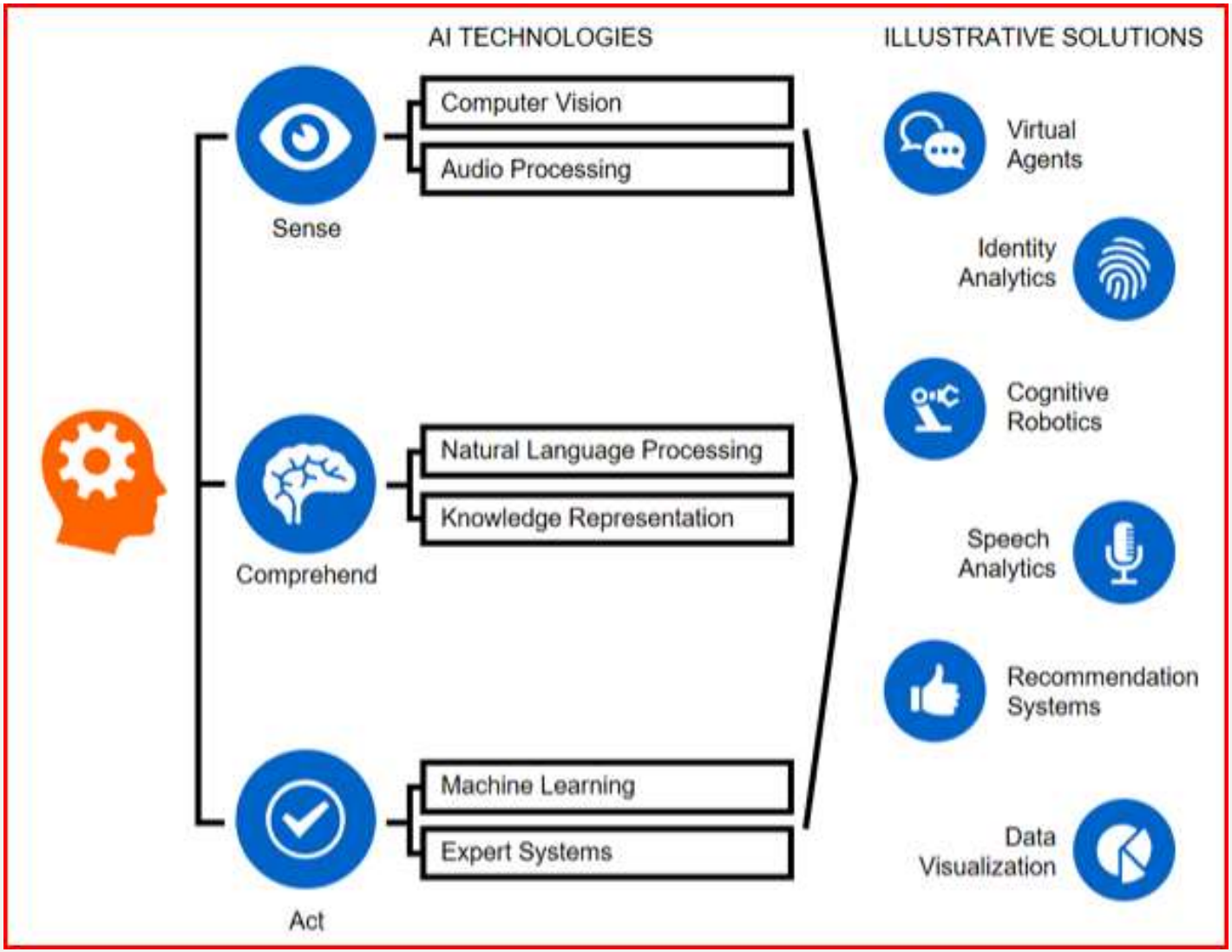
- Government Initiatives and Policy
  - National Strategy for Artificial Intelligence #AIforAll [3]
- Focus on five sectors
  - Healthcare – Access and affordability
  - Agriculture – increases income, productivity, reduce wastage
  - Education – improved access and quality
  - Smart cities and infrastructure – efficient and connectivity for population
  - Smart mobility and transportation – smarter and safer mode, better traffic and congestion management
- Digital India Program [4] – Transforming India to empowered society and knowledge economy; Infrastructure, services, empowerment to citizens

[3] https://niti.gov.in/sites/default/files/2019-01/NationalStrategy-for-AI-Discussion-Paper.pdf
[4] https://digitalindia.gov.in/vision-vision-areas/

Strong ecosystem

- Startup India [5] – Catalyze startup culture, inclusive ecosystem for innovation and entrepreneurship in India
- The National Program on AI – INDIAai [6]
  - Knowledge portal, research organization, and ecosystem building initiative
  - Government of India, NASSCOMM, State Governments, IT companies, academic institutes, startups
- Global Partnership on Artificial Intelligence (GPAI) [7]
  - Bridge gap in theory and practice of AI
  - Expertise from science, industry, civil society, governments (29 members), international organizations and academia to **foster international cooperation** on AI related priority.

[5] Startup India https://www.startupindia.gov.in/content/sih/en/about-startup-india-initiative.html
[6] National Program on AI https://indiaai.gov.in/national-ai
[7] https://www.gpai.ai/



Source: Accenture and National Strategy for AI, Niti Aayog

Eyenuk Inc

"Eyenuk, Inc., is a global artificial intelligence (AI) medical technology company and the leader in real-world AI Eye Screening™ for autonomous disease detection and AI Predictive Biomarkers™ for risk assessment and disease surveillance.

- Harnessing the power of AI to analyze retinal images was the inspiration of **Eyenuk Founder & CEO Dr. Kaushal Solanki.** During his own health scare, Solanki faced a four-month long wait to see a specialist about his retinal scans. His own father's struggle with diabetes led Solanki to better understand the risks of diabetic retinopathy, as well as the shortage of qualified professionals to address the issue."
- https://www.eyenuk.com/en/company/
- Product Eye Art https://youtu.be/3fdEXNPuTFM

KissanAI

“Revolutionizing Agriculture with KissanAI (previsouly known as KissanGPT) is an advanced multilingual AI chatbot engineered to provide farmers with personalized, voice-based assistance for all their agricultural needs. Leveraging our expert and expanding knowledge base, and powered by OpenAI's latest langauge models, KissanAI delivers seamless, and efficient support in many languages. KissanAI is not only designed for farmers but anyone with interest in agriculture such as students, researchers, and even hobbyists.”

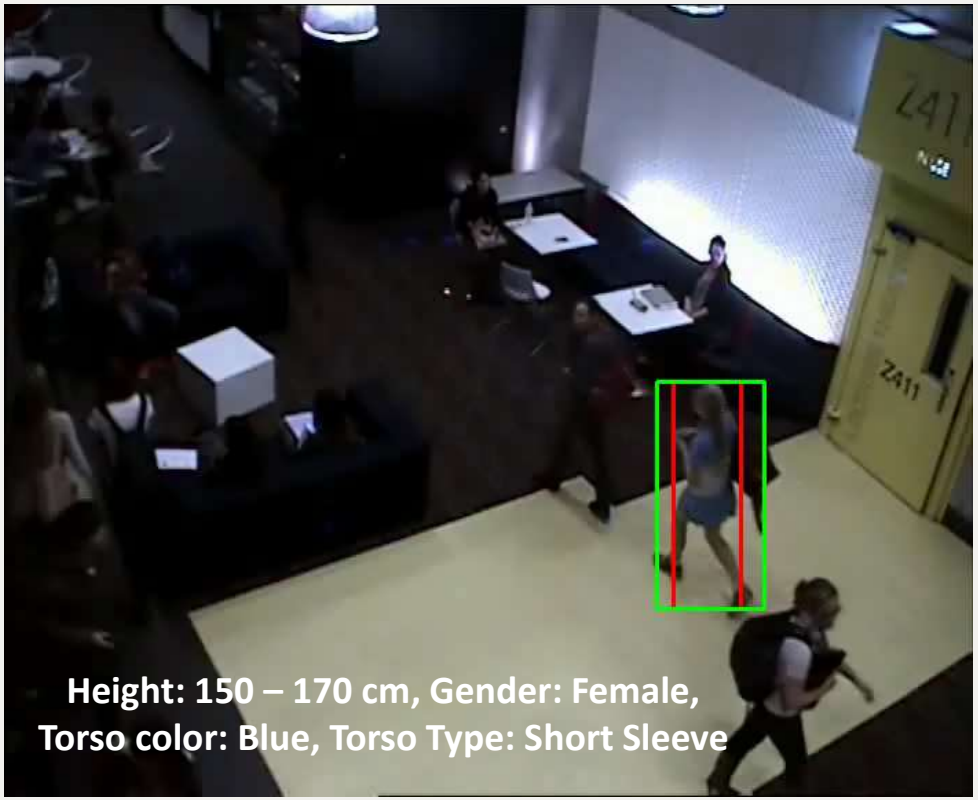
- https://kissan.ai/
- Kissan GPT https://indiaai.gov.in/videos/kissangpt
- **Pratik Desai, PhD**

Founder KissanAI (KissanGPT), Titodi, Cognify Studio| Computer Scientist, Author, Farmer

https://www.linkedin.com/in/pratikkumardesai/

Glimpses of AI @ University

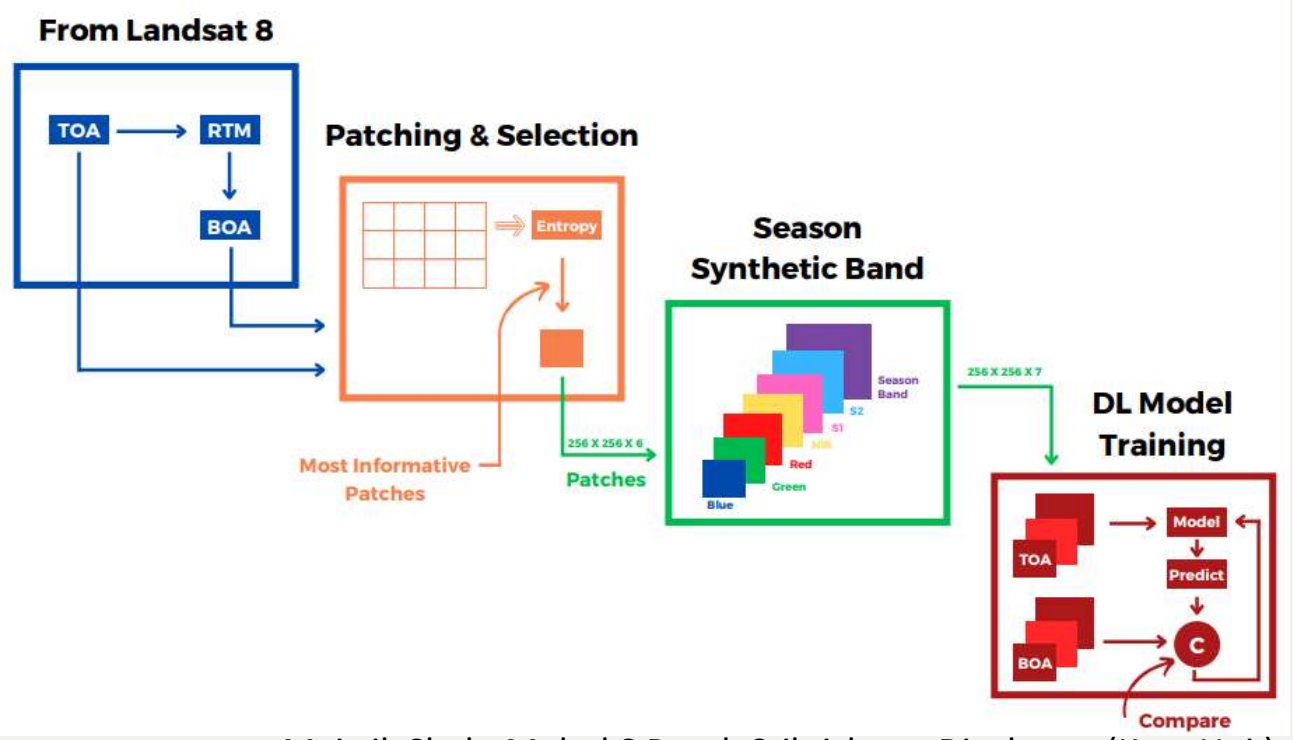
Identify Analytics

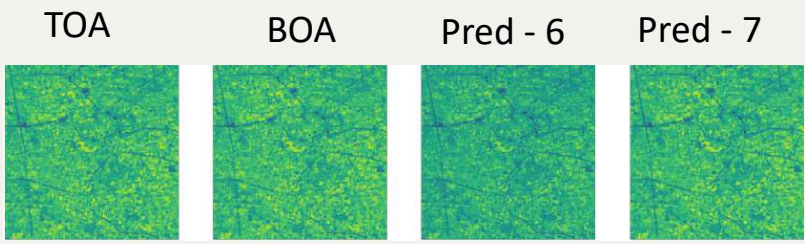


Height: 150 – 170 cm, Gender: Female,
Torso color: Blue, Torso Type: Short Sleeve

Height: 170 – 190 cm, Gender: Female,
Torso color: Black, Torso Type: No Sleeve

SURFACE REFLECTANCE RETRIEVAL OF REMOTE SENSING IMAGES





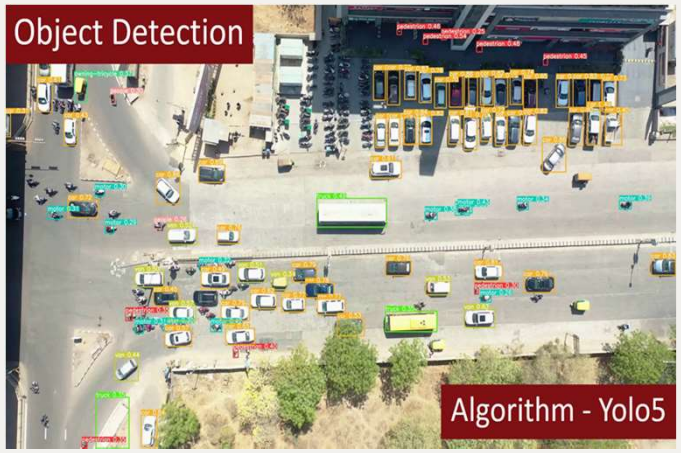
Maitrik Shah, Mehul S Raval, Srikrishnan Divakaran (Krea Uni.), Debajyoti Dhar – SIPG, SAC ISRO

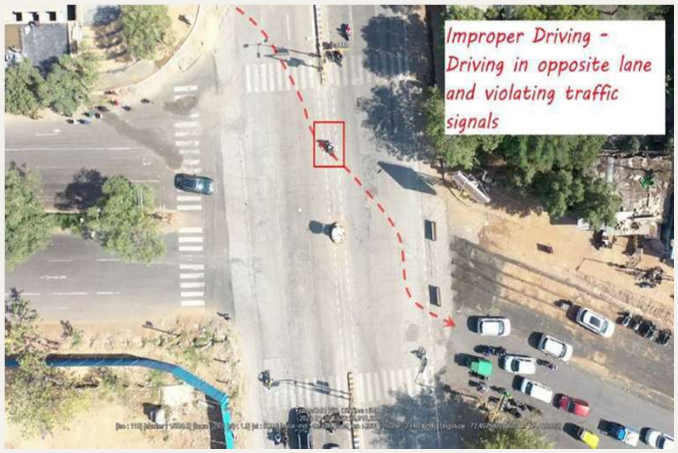
5G enabled ITS in Gujarat – Dhaval Patel (PI)/Mehul S Raval/ Mukesh Zaveri (SVNIT) / S N Merchant (IITB)

- **Research Project # 3: DST- GUJCOST: Design and Development of 5G Enabled Intelligent Transportation System in Gujarat [Ongoing Project]**
  - Analyse coexistence of Cellular-V2X and Wi-Fi 6
  - Low cost and accurate data acquisition framework for 5G-NR-based C-V2X Networks
  - Data acquisitions and analytics:
    - Network Simulators: NS3, OMNet++
    - Traffic Simulators: PTV-VISSIM, SUMO
    - HW Devices: USRPs, Cohda Wireless MK6, AUTOPI, LORA
  - Intelligent routing for Integrated Access Backhaul (IAB) Networks in 5G Advanced: 3GPP-R16/R17 Specification for Vehicular Network
  - Warning information provision for collision avoidance in Cellular – V2X based Network scenarios
  - Effectual Execution of Vehicular Smart Platooning for Mixed Traffic Conditions
  - Deep Reinforcement Learning based Optimized Traffic Signalling

Automating Road Safety Audit (Traffic Analytics):

Mazad Zaveri and Mehul S Raval





Technology Vision 2047 - A Brainstorming Workshop

Mehul S Raval and ChatGPT- 4

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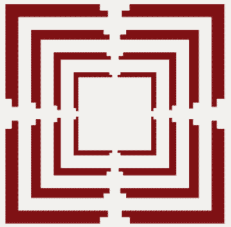

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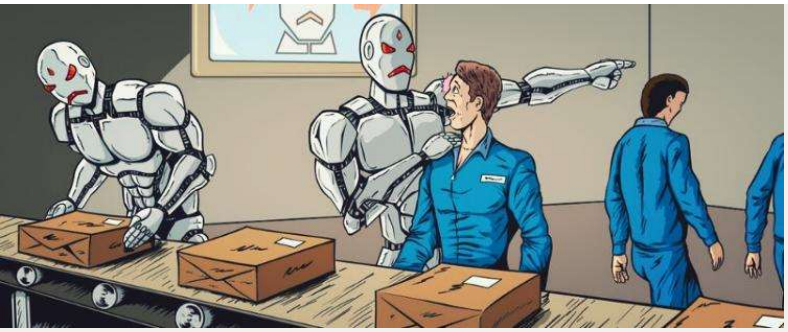
Disclaimer:

Predicting exact issues beyond 2032 is challenging, but based on current trends projections are in the following slides.



https://imageio.forbes.com/blogs-images/cognitiveworld/files/2018/08/1_GQm0ZlcZVltBd_9XwJGyNw-S1.jpg?format=jpg&width=960

Issue: **Advanced automation and job displacement**
Solution: Industry 4.0 can create new jobs, novel markets, Novel Opportunities.
Reskilling and up skilling workers

https://builtin.com/artificial-intelligence/ai-ethics

Issue: **AI ethics and regulation**
Solution: Built Technology with ethical considerations FAT (fairness, accountability, transparency). Collaborative efforts industries, governments, and academia for regulatory framework

https://sundayguardianlive.com/news/india-needs-bridge-increasing-digital-divide

Issue: **Digital divide**
Solution: Development of affordable, accessible infra and accessibility
Equitable access across region and social class.

https://sundayguardianlive.com/wp-content/uploads/2020/05/Kundan-digital-divide-edited.png

Issue: **Cybersecurity threats**

Solutions: Use AI-driven threat detection and response systems, block chain technology and Advanced Encryption.

Issue: **Environmental sustainability**

Solution: Smart manufacturing, IoT, and data analytics → optimize resource usage, reduce waste

https://upload.wikimedia.org/wikipedia/en/thumb/3/31/Sustainable_Development_Goals_logo.svg/1200px-Sustainable_Development_Goals_logo.svg.png

https://www.edtechreview.in/research/where-s-the-upskilling-and-reskilling-market-headed/

Workforce up skilling and reskilling:

Solution: personalized learning and training programs, leveraging AI, virtual reality, and online platforms, Metaverse, Omniverse

https://www.turningcloud.com/blog/wp-content/uploads/2021/08/supply-chain-resilience-1.jpeg

Issue: **Supply chain resilience**
Solution: Real-time data analysis, IoT-enabled tracking, and AI-driven predictive analytics for adapting to disruptions

https://images.indianexpress.com/2015/02/fb1.jpg?w=389

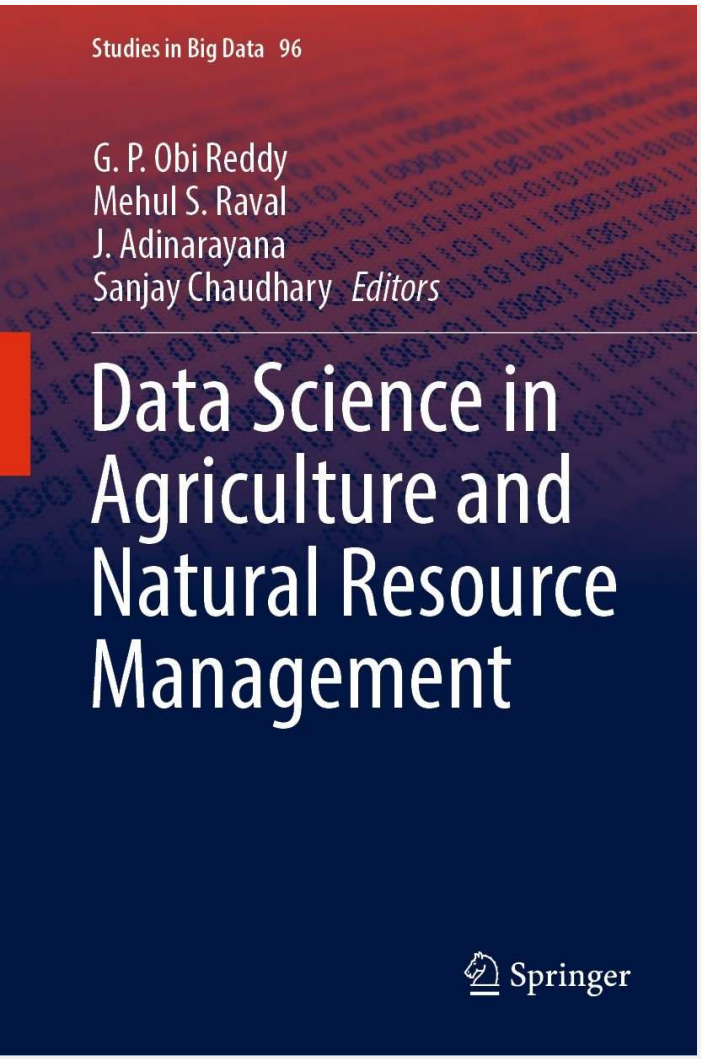
Issue: **Data privacy and ownership**
Solution: Blockchain technology, encryption methods, and decentralized data storage systems maintaining transparency and traceability.

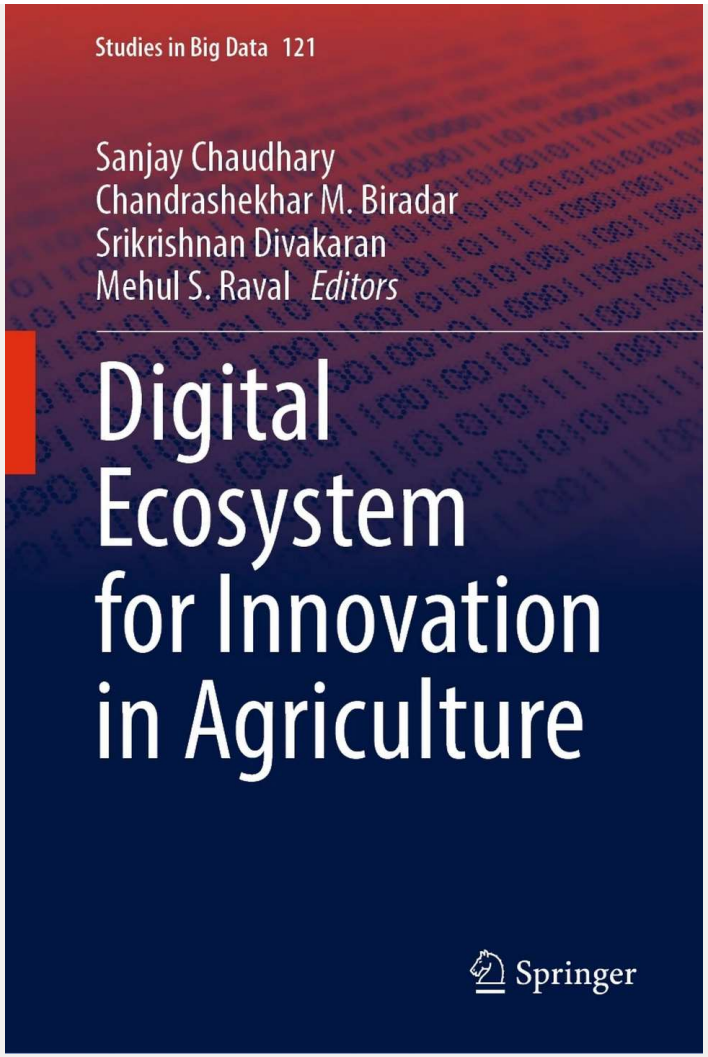
https://media.licdn.com/dms/image/C4E12AQHyncj3rUo_7Q/article-cover_image-shrink_423_752/0/1520093088838?e=1685577600&v=beta&t=C5QgkOLou4AuokU9DRuPwrIlB8V0dRHOLxd6706pcc

Issue: **Human-machine collaboration**
Solution: Developing intuitive interfaces, cobots (collaborative robots) to work with humans, and advanced AI systems that support human decision-making.

Conclusions

- AI spring is yet to arrive but it will stay.
- Embrace the opportunity instead of freaking.
- Look for avenues where human abilities are still unsurpassed.
- Study Fairness – Accountability – Transparency roles in AI development.
- Bring in XAI angles in AI application development.
- Work on complete - data to deployment chain.


Studies in Big Data 96
G. P. Obi Reddy
Mehul S. Raval
J. Adinarayana
Sanjay Chaudhary Editors
Data Science in Agriculture and Natural Resource Management
Springer


Studies in Big Data 121
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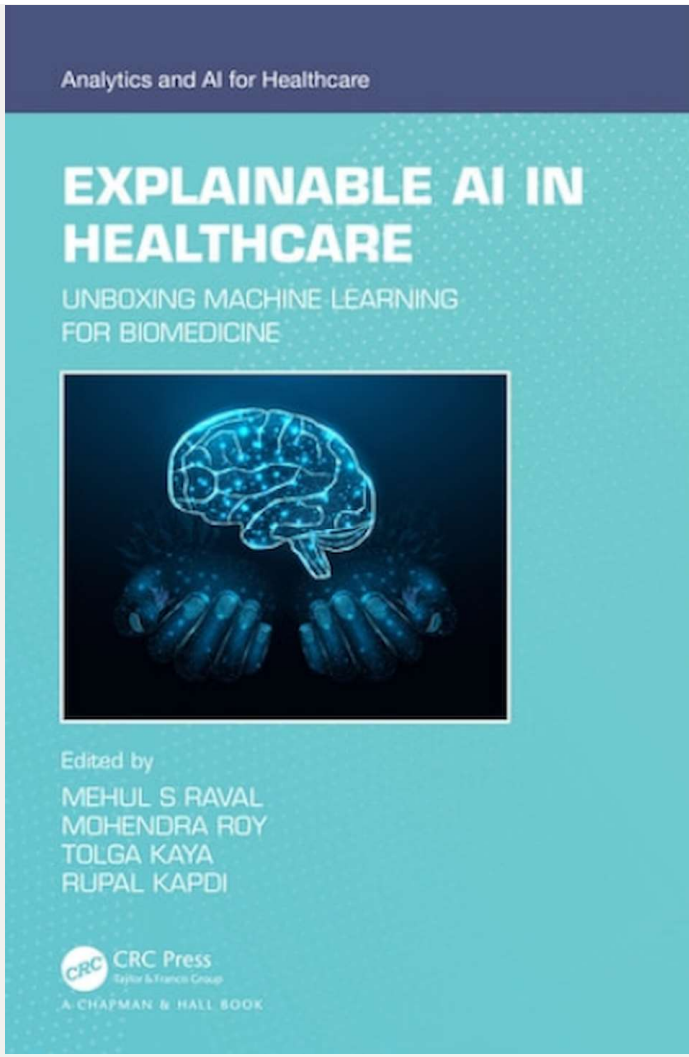
Chandrashekhar M. Biradar
Srikrishnan Divakaran
Mehul S. Raval Editors
Digital Ecosystem for Innovation in Agriculture
Springer


Analytics and AI for Healthcare
EXPLAINABLE AI IN HEALTHCARE
UNBOXING MACHINE LEARNING FOR BIOMEDICINE
Edited by
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MOHENDRA ROY
TOLGA KAYA
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A CHAPMAN & HALL BOOK

Thank you and Questions

Mehul S Raval,

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