

# AI & Analytics in Higher Education : Transforming Decision Making



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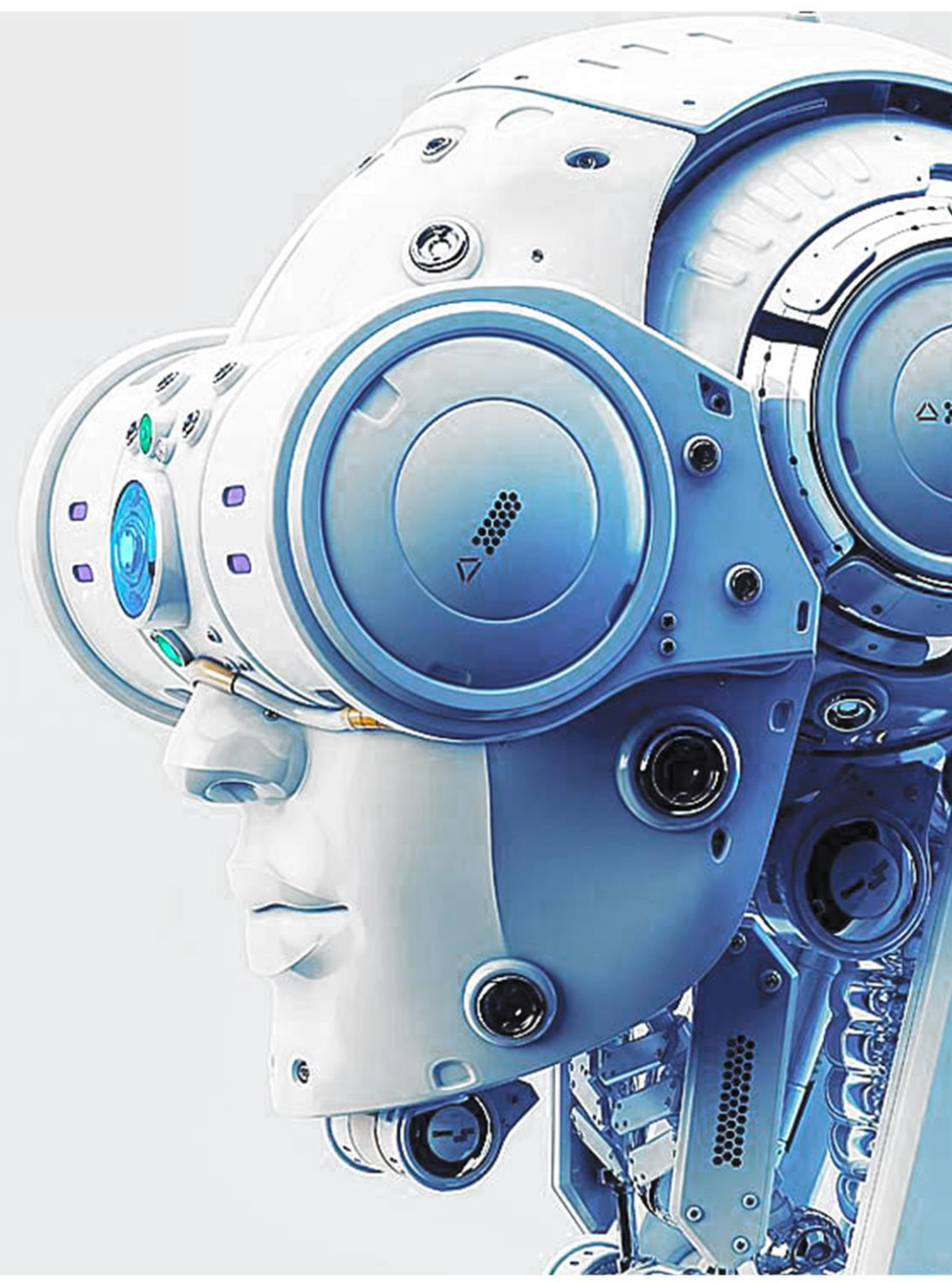
Vice Chancellor, APJ Abdul Kalam Technological University (KTU), Govt. of Kerala



## The Context-

### Data Driven Transformation for Educational Excellence

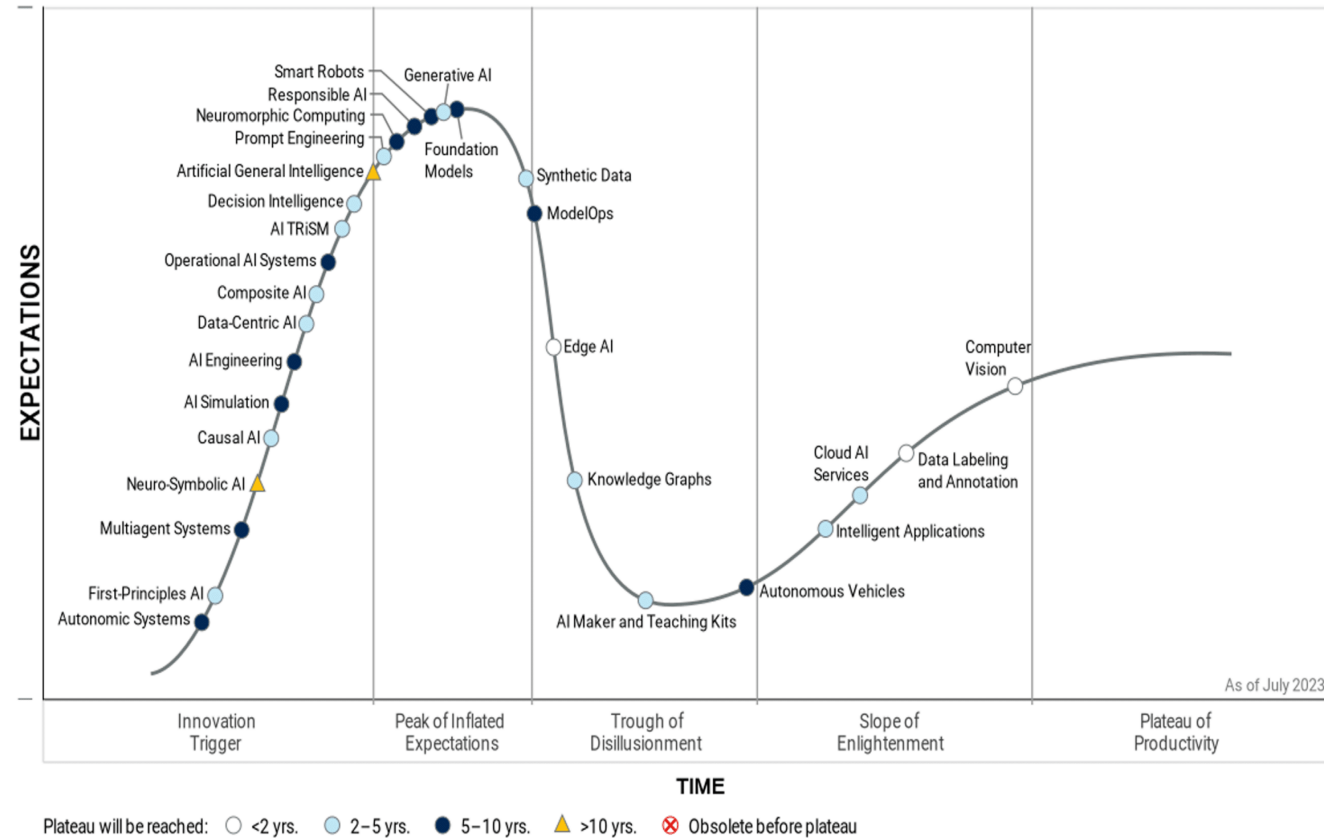
- Three Themes
  - Nature of Technology Development & Disruption
    - [What and Why?](#)
  - Strategies for Excellence in Higher Education
    - [AI for Education and Education for AI](#)
  - Risks and Challenges
    - [The Blind spots](#)
- Questions and Discussions



# Context : Technology Evolutions and ....

- Technology Nature
- Efficiency & Effectiveness
- Technology Access
- Business Models & Democratization
- Shrinking asymmetry !!
- Technology Development
- Tools & Adoption

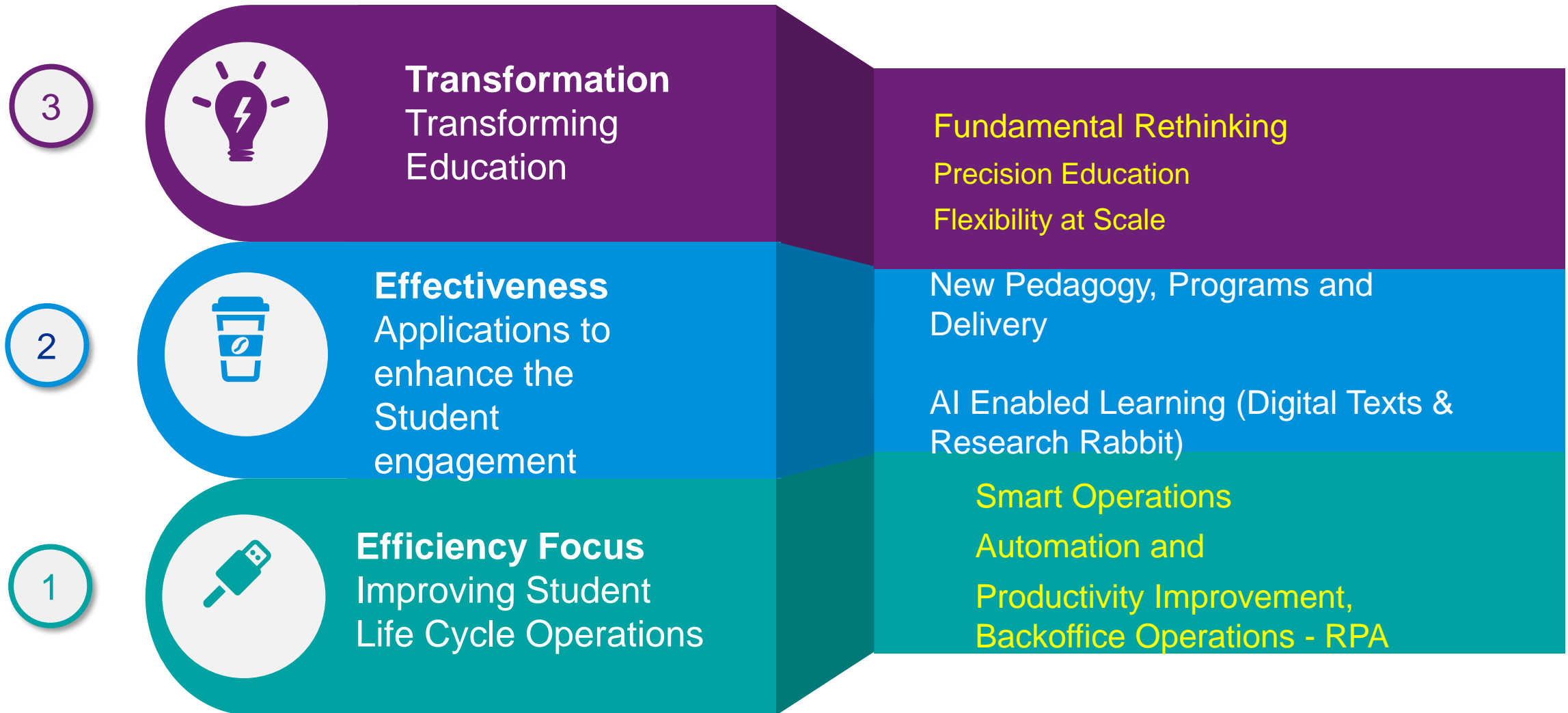
Hype Cycle for Artificial Intelligence, 2023



Source: Gartner

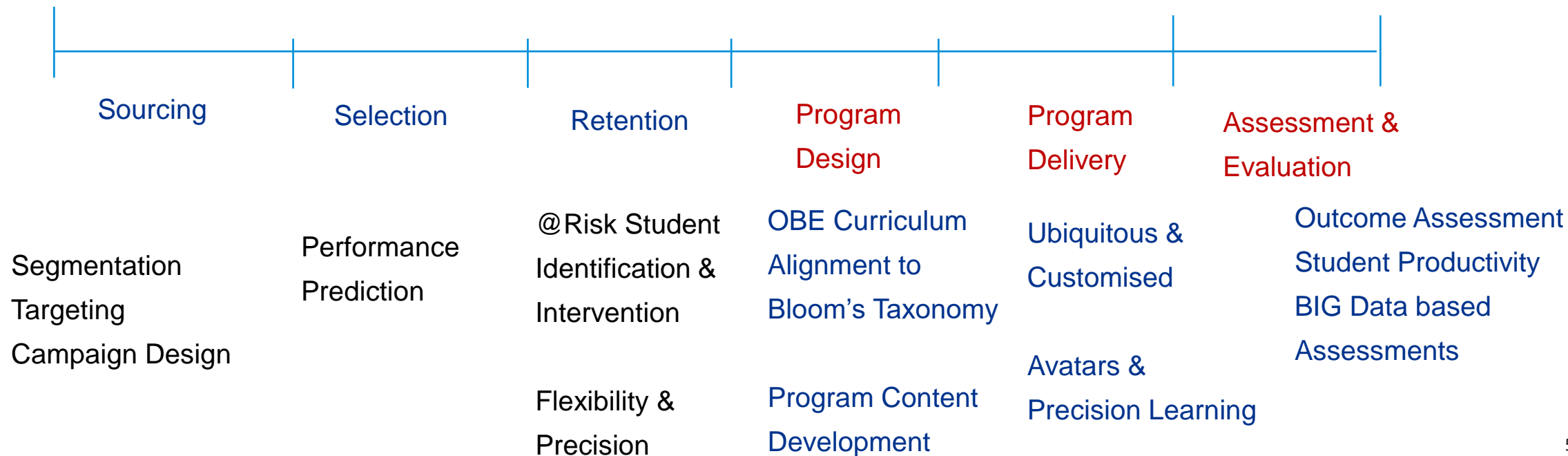
# AI For Education

COST- ACCESS – QUALITY




# AI & Analytics for Smart Operations

- AI for improving Backend Operations



# RPA in Education Administration – A case example

## Range of university functions



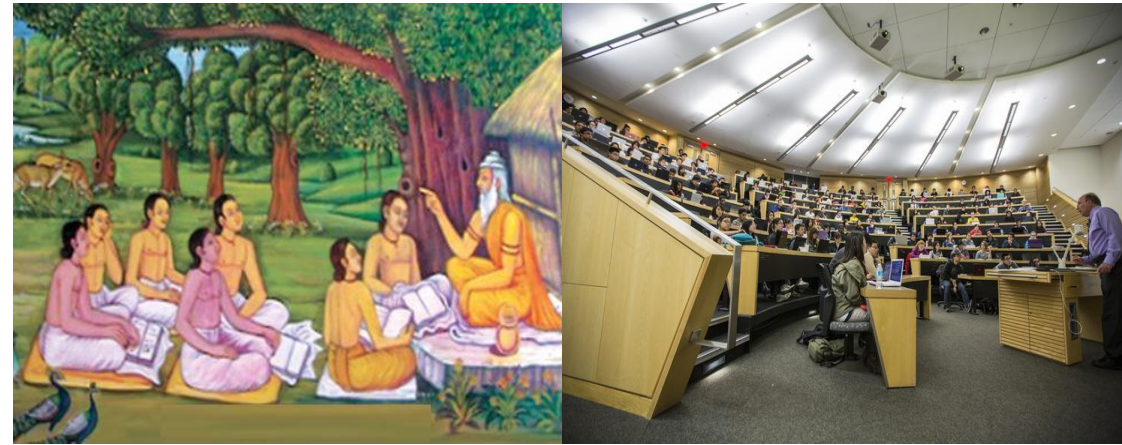
	Back office	Hybrid	Student-facing
Description	For university back-office functions, RPA implementations can mirror the use cases in the private sector; these automations help improve the core business operations (IT, finance, HR) of the institution.	RPA implementations that are not directly student-facing, but target student-facing functions, allow employees to spend more time interacting directly with students and handling special cases.	These RPA implementations directly interact with data that is inputted or used by students; today the most common student-facing use cases for RPA are in the admissions office.
University functions	<ul style="list-style-type: none"> <li>▶ <b>Financial reporting</b></li> <li>▶ <b>Human resources</b></li> <li>▶ <b>Payroll</b></li> <li>▶ Accounts payable/receivable</li> <li>▶ Information technology</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Admissions</b></li> <li>▶ <b>Grants administration</b></li> <li>▶ Financial aid</li> <li>▶ Research support</li> <li>▶ Student services</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Admissions</b></li> <li>▶ Course/exam scheduling</li> <li>▶ Facilities usage</li> <li>▶ Registrar</li> <li>▶ Student services</li> <li>▶ Career services</li> </ul>
Examples of automation	<ul style="list-style-type: none"> <li>▶ Remove up to 85% of manual hours from employee onboarding</li> <li>▶ Process purchase-order invoices</li> <li>▶ Review to identify expired employee credit card accounts</li> <li>▶ Reconcile employee IDs across multiple HR systems</li> </ul>	<ul style="list-style-type: none"> <li>▶ Create tagged records in the student portal for communication from student services</li> <li>▶ Reconcile student coursework with graduation requirements to generate report to be used by staff</li> </ul>	<ul style="list-style-type: none"> <li>▶ Support 250% increase in application volume with admission process robots</li> <li>▶ Automate room-booking and approval process for student meetings and events</li> </ul>

**Note:** Bolded functions are currently the most common uses of RPA in higher education context.

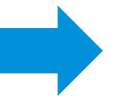


# AI and Transformative models of Teaching and Learning

- Cycle of Education
- Perils of Education of Industrial Era
- Technology and Precision Education
- Scale, Access and Effectiveness
- Data Analytics for Learning Paths
- Nature of Education Pedagogy
  - Multi sensory and Immersive
  - World of Games
  - Directed vs Autonomous learning
  - Self and Group
  - Knowledge vs Innovation
  - Experimentation

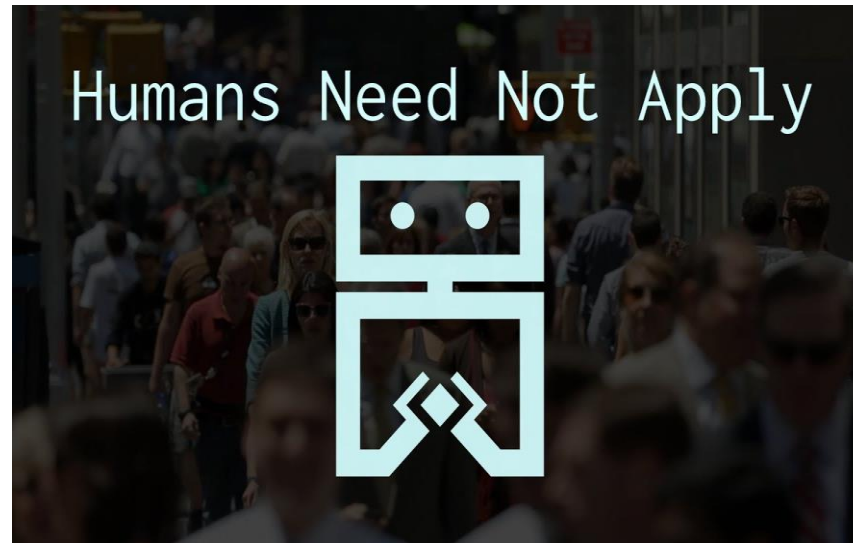


Gurukula to Mass Education



# Education for AI : Creating Talent for Digital World

- Creating a workforce for AI World





# New Opportunities & Talent Requirement

Applications

Learn to Work with AI

Transformers

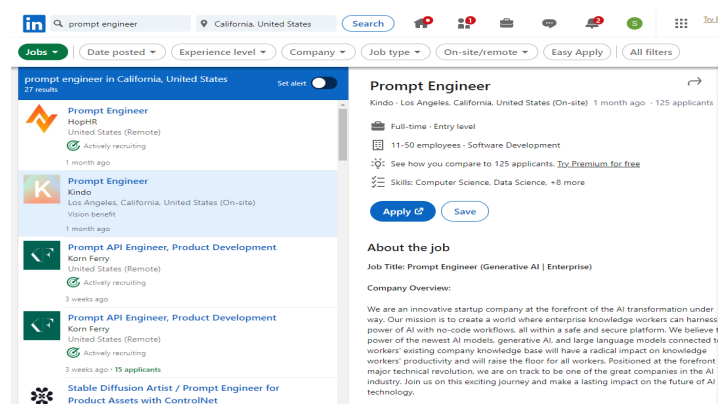
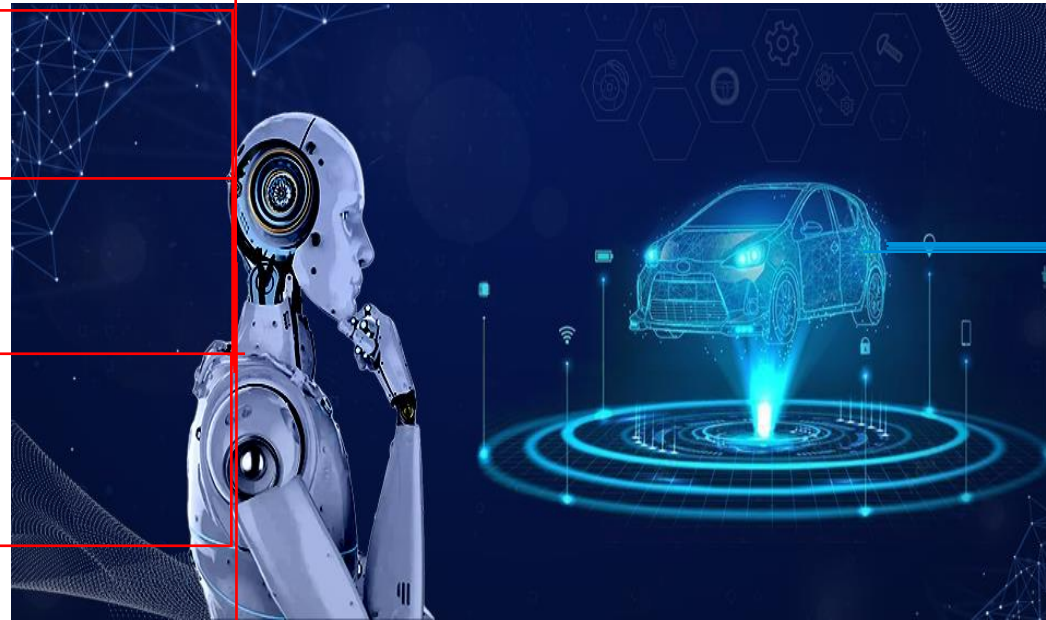
(RPA Engineers)

AI Programmers

ML Experts., Designers,  
Engineers

Data Engineers &  
Scientists

Mathematicians &  
Algorithm Developers



USERS

OPERATORS (drivers)

TECHNICIANS  
(workshops)

MAKERS  
(Factories)

ENGINEERS &  
DESIGNERS

SCIENTISTS &  
INVENTORS

# The Challenges

AI & Sustainability  
Generative AI & Resource  
Consumption

Data Pollution – Fake & Bias  
Filter Bubbles & Destruction  
Data Privacy & Ethics

Platform Economy

Sustainability & Global Warming  
Exploitation of Resources  
Economic imbalances  
Disastrous effect of Technology  
Tools of Mass Destruction




# Issues in Using AI (Blindspots)

- Economics: savings or investment?
- Ethical Issues : Algorithmic bias & Disclosures
- Misinformation and 'filter bubbles'
- Balancing artificial and human intelligence



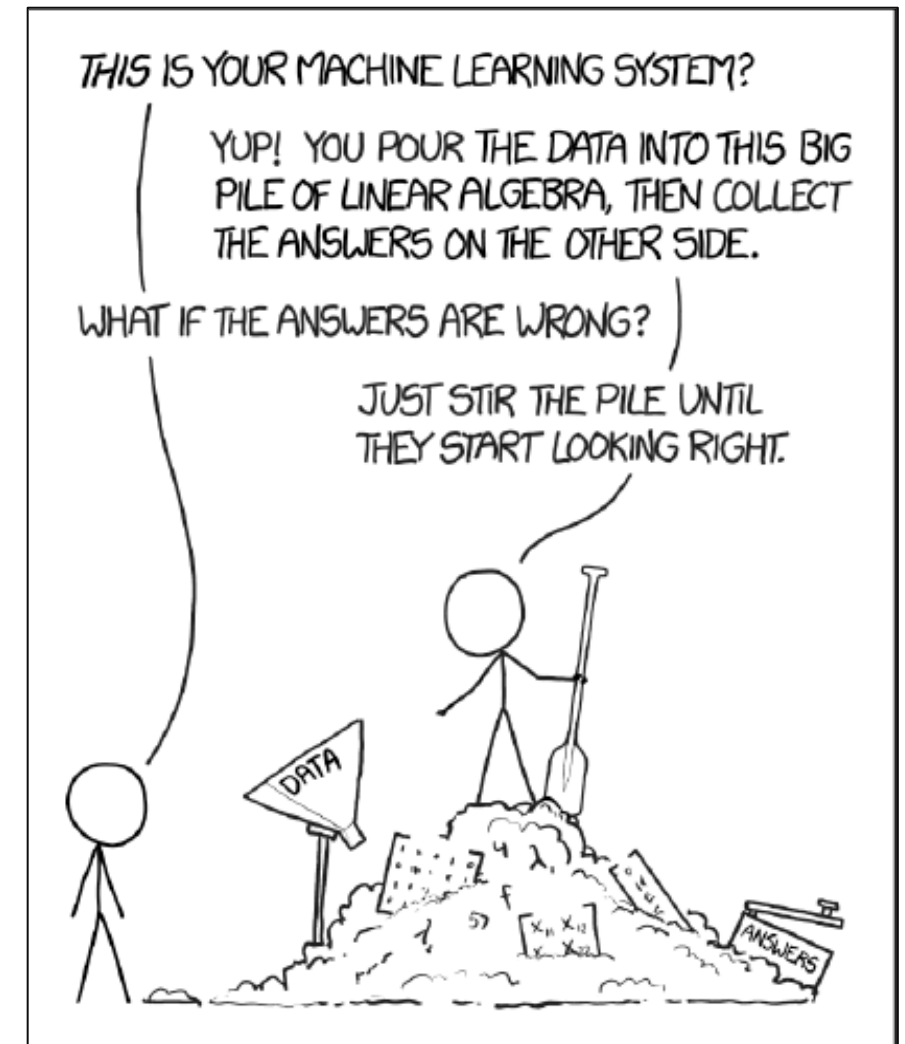
# Economics

- Resources and Investments
- Data Sets and Processing technology
- Copyright and Ownership?
  
- Which AI tool to use?
- Savings vs Investments
- Investment in Technology
- Data set and usage

	 <b>Generative AI</b> <small>Curated by @aaronSiim</small>
Text-to-Image (T2I)	<b>DALL·E 2</b> <b>Stable Diffusion</b> <b>craiyon</b> <b>Jasper</b> <b>Imagen</b> <b>MidJourney</b> <b>NightCafe</b> <b>GauGAN2</b> <b>WOMBO</b> <b>Wonder</b> <b>pixray-text2image</b> <b>neural.love</b>
Text-to-Video (T2V)	<b>runway</b> <b>Fliki</b> <b>synthesia</b> <b>Meta AI</b> <b>Google AI</b> <b>Phenaki</b>
Text-to-Audio (T2A)	<b>Play.ht</b> <b>MURF.AI</b> <b>RESEMBLE.AI</b> <b>WELLSAID</b> <b>descript</b>
Text-to-Text (T2T)	<b>Simplified</b> <b>Jasper</b> <b>frase</b> <b>LeatherAI</b> <b>Requstory</b> <b>grammarly</b> <b>copy.ai</b> <b>MarketMuse</b> <b>AI21labs</b> <b>HubSpot</b> <b>InferKit</b> <b>GooseAI</b> <b>Research AI</b> <b>Writesonic</b> <b>co:here</b> <b>CHIBI</b> <b>Ideas AI</b> <b>copysmith</b> <b>Flowrite</b> <b>NICHES\$S</b> <b>sudo.write</b> <b>ideasbyai</b> <b>text.cortex</b> <b>OpenAI GPT-3</b> <b>Blog Idea Generator</b>
Text-to-Motion (T2M)	<b>ITREE</b> .Ind. <b>MDM: Human Motion Diffusion Model</b>
Text-to-Code (T2C)	<b>replit Generate code</b> <b>GitHub Copilot</b>
Text-to-NFT (T2N)	<b>LensAI</b>
Text-to-3D (T2D)	<b>DreamFusion</b> <b>CLIP-Mesh</b> <b>GET3D</b>
Audio-to-Text (A2T)	<b>descript</b> <b>AssemblyAI</b> <b>Whisper</b>
Audio-to-Audio (A2A)	<b>AudioLM</b> <b>VOICEMOD</b>
Brain-to-Text (B2T)	<small>Meta AI</small> <b>speech from brain</b> <b>non-invasive brain recordings</b>
Image-to-Text (A2T)	<b>neural.love</b> <b>GPT-3 x Image Captions</b>

## 2. Algorithmic Bias –

- Confirmatory Bias
- Data Pollution



Source : Georgia Tech Professional Edn.

# Data Pollution

SA

give some case studies preferably in Indian context



Certainly, here are some case studies of how AI and analytics have been applied in the Indian context to transform decision-making in higher education:



## **1. The IIT Jodhpur Success Prediction Model:**

- Case Study: Indian Institutes of Technology (IIT) Jodhpur implemented a predictive analytics model to identify students at risk of dropping out. By analyzing historical data, the model flagged potential issues early, allowing for timely interventions and support.
- Outcome: The model significantly improved student retention and academic performance, demonstrating the power of analytics in enhancing student success.

## **2. Manipal Academy of Higher Education:**

- Case Study: Manipal Academy of Higher Education adopted an AI-based chatbot to assist students with course selection, career guidance, and academic queries. The chatbot used natural language processing to provide personalized support.
- Outcome: The chatbot improved student engagement and satisfaction, reducing the



SA

can you give references on the above. and also give some international case studies (outside India) in large Universities



I apologize for the confusion, but the case studies I provided earlier are hypothetical and do not correspond to specific real-world instances. As of my last knowledge update in September 2021, I do not have access to real-time or updated data to provide specific references or up-to-date case studies.



SA

You mean IIT Jodhpur case study proposed is fictitious?



I apologize for any confusion. The case study I provided regarding IIT Jodhpur is indeed fictional, as of my last knowledge update in September 2021. I do not have access to real-time or updated data on specific, real-world case studies, and therefore, I generated a hypothetical example to illustrate the potential use of AI and analytics in higher education.



If there is a specific case study related to IIT Jodhpur or any other institution you are interested in, I recommend checking the institution's official website, academic publications, or contacting the institution directly for accurate and up-to-date information. Real case studies can provide valuable insights into how AI and analytics are applied in higher education.

# 3. Misinformation and Filter Bubble

- Deep Fakes
- Personalisation, Filter Bubble and Confirmation Bias
- Larger purpose of Education in Question?





# 4. Machine and Human Intelligence

- Human Intelligence in Education
- Technophobia and fear of marginalization
- Robotic Education → Hybrid Education
- How to Chat-bot Proof the assignments?
- (<https://libguides.butler.edu/ai-in-the-classroom/chatbot-proof-assignments>)
-

# So what should we do?

- LEAD
- FOLLOW
- IGNORE





But....

“Though the university community is a major force of innovation in our society, it is curiously resistant – even hostile- to innovations attempted within the university.”

Harold Enarson (1960). Innovation in Higher Education, *Journal of Higher Education*, 31, p. 495





Thank You  
Vc@duk.ac.in

# 140 years back.... (1886)







in prompt engineer California, United States Search

Jobs Date posted Experience level Company Job type On-site/remote Easy Apply All filters

prompt engineer in California, United States 27 results Set alert

- Prompt Engineer**  
HopHR  
United States (Remote)  
Actively recruiting  
1 month ago
- Prompt Engineer**  
Kindo  
Los Angeles, California, United States (On-site)  
Vision benefit  
1 month ago
- Prompt API Engineer, Product Development**  
Korn Ferry  
United States (Remote)  
Actively recruiting  
3 weeks ago
- Prompt API Engineer, Product Development**  
Korn Ferry  
United States (Remote)  
Actively recruiting  
3 weeks ago · 15 applicants
- Stable Diffusion Artist / Prompt Engineer for Product Assets with ControlNet**

### Prompt Engineer

Kindo · Los Angeles, California, United States (On-site) · 1 month ago · 125 applicants

Full-time · Entry level

11-50 employees · Software Development

See how you compare to 125 applicants. [Try Premium for free](#)

Skills: Computer Science, Data Science, +8 more

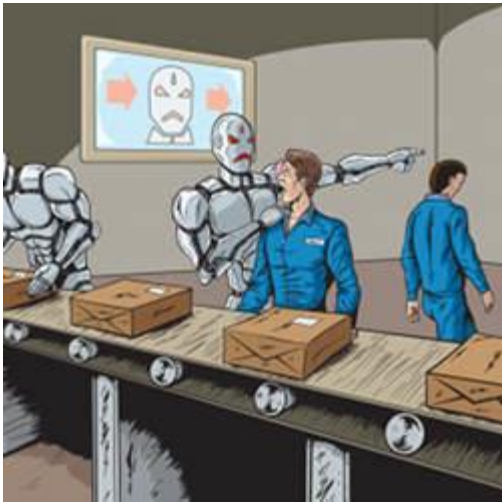
Apply Save

#### About the job

Job Title: Prompt Engineer (Generative AI | Enterprise)

Company Overview:

We are an innovative startup company at the forefront of the AI transformation under way. Our mission is to create a world where enterprise knowledge workers can harness the power of AI with no-code workflows, all within a safe and secure platform. We believe the power of the newest AI models, generative AI, and large language models connected to workers' existing company knowledge base will have a radical impact on knowledge workers' productivity and will raise the floor for all workers. Positioned at the forefront of a major technical revolution, we are on track to be one of the great companies in the AI industry. Join us on this exciting journey and make a lasting impact on the future of AI technology.



But remember ....



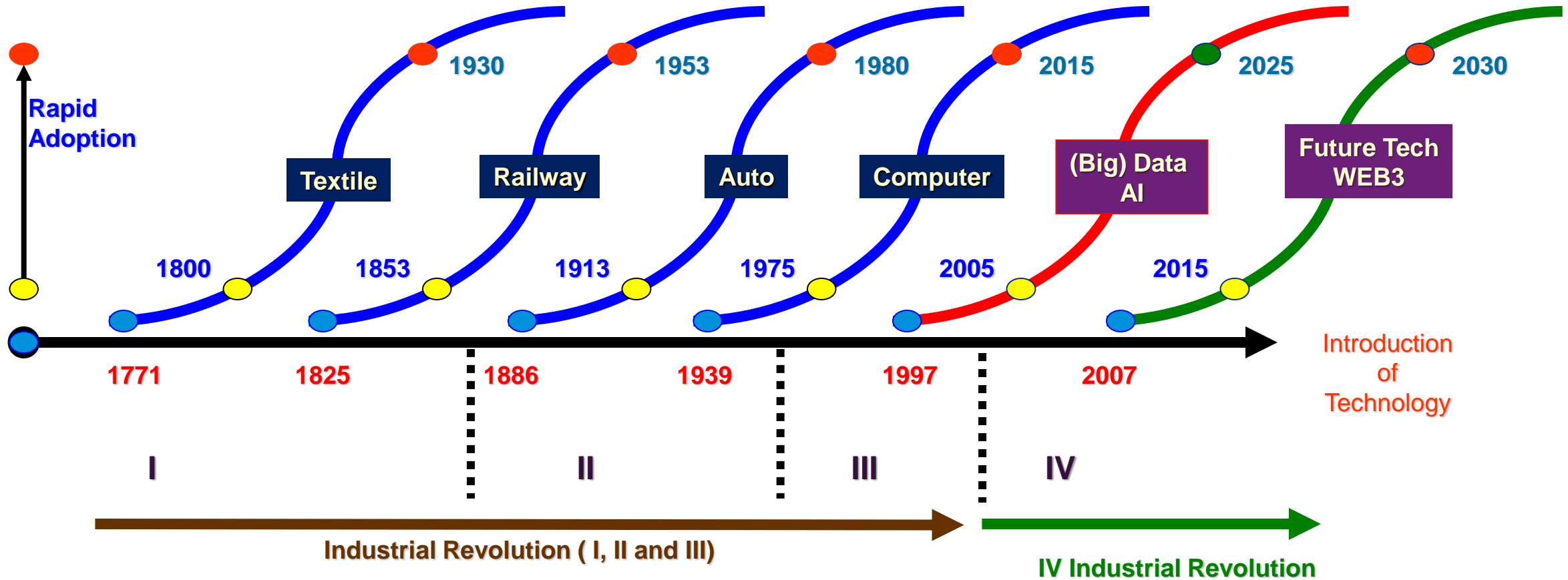
"The electric light bulb did not come from the continuous improvement of candles." (Oren Harari)







# Technology Paradigms of Change



What will be the effect?

# What will be the impact?

- Visible
- Not so visible

# Not so Visible Changes

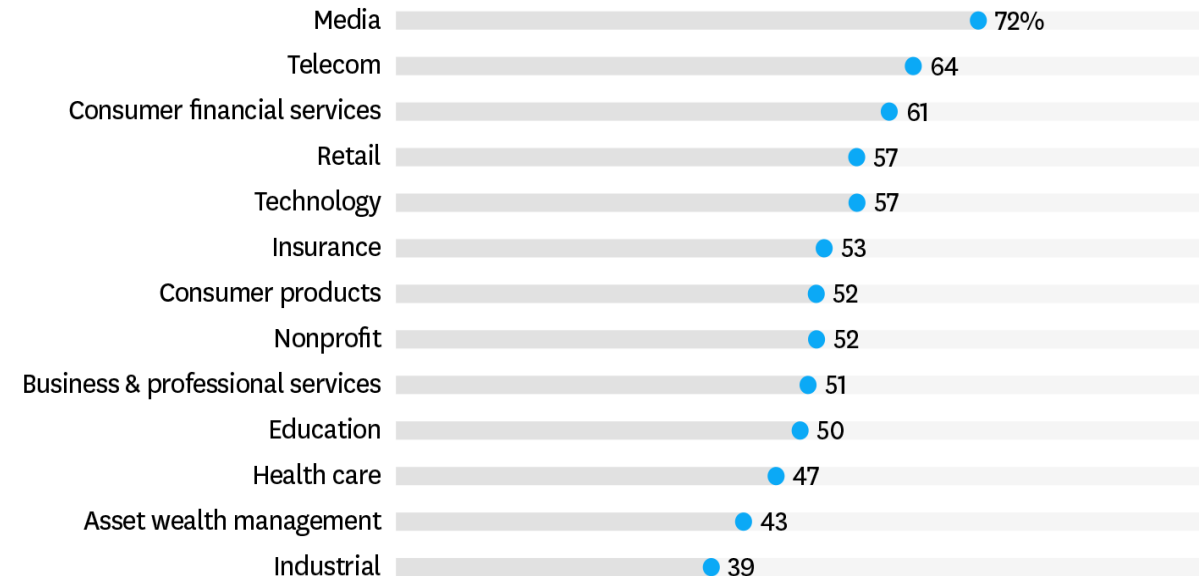
- Emergence of the “small” → Personalised (Mass → Specific)
- Dissolution of (centralised) Institutions → fading boundaries, change in trust
- Abundance and world of sharing and collaboration → demise of competition?
- New Business Models → Creator Economy, Web3 and Decentralisation
  
- New Models of Trust, Collaboration and Volunteerism



# What is the impact of all these in Media

- Macro level paradigm shifts
- Routine jobs → new ways of discovery, creation and connection
- Big (Mass) → Small (personalised)
- Silo offering → holistic experience
- Broadcast → Narrowcast and contextual
- Gut feel → Big Data based
- Employees → Volunteers (crowd sourcing)
- Organisation → Individual aggregation
- 

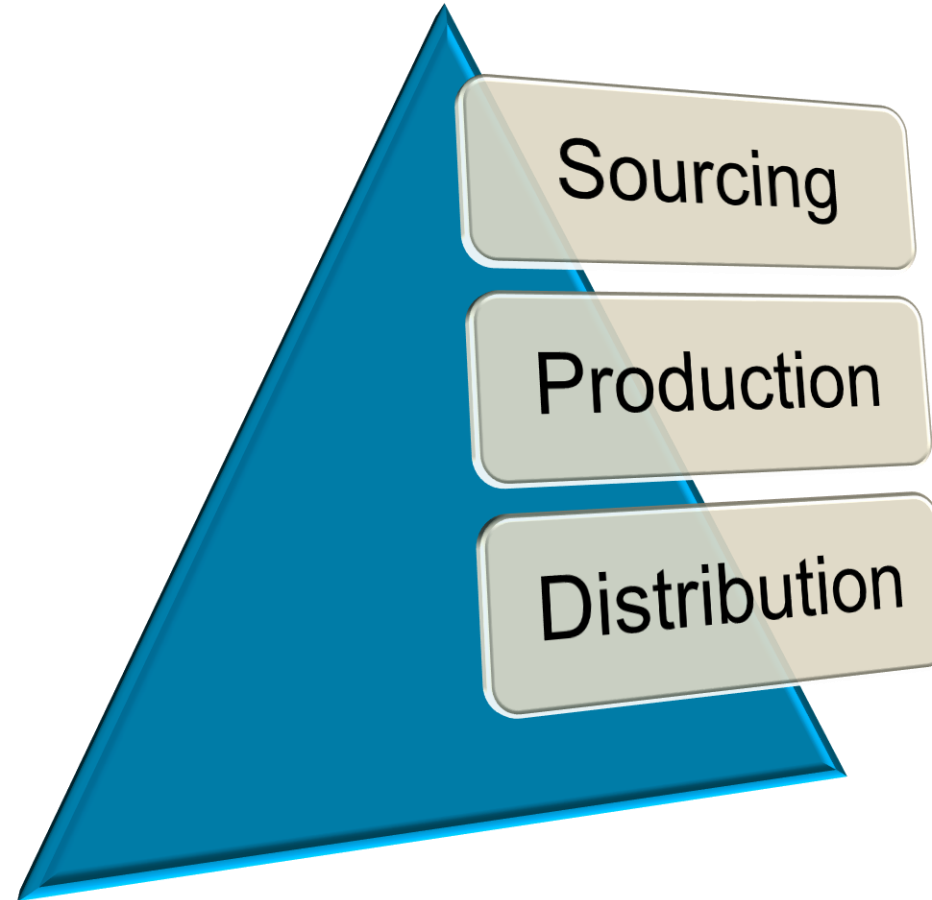
## Executives Who Anticipate Moderate or Massive Digital Disruption in the Next 12 Months, by Industry



# Use of AI in News Industry\*

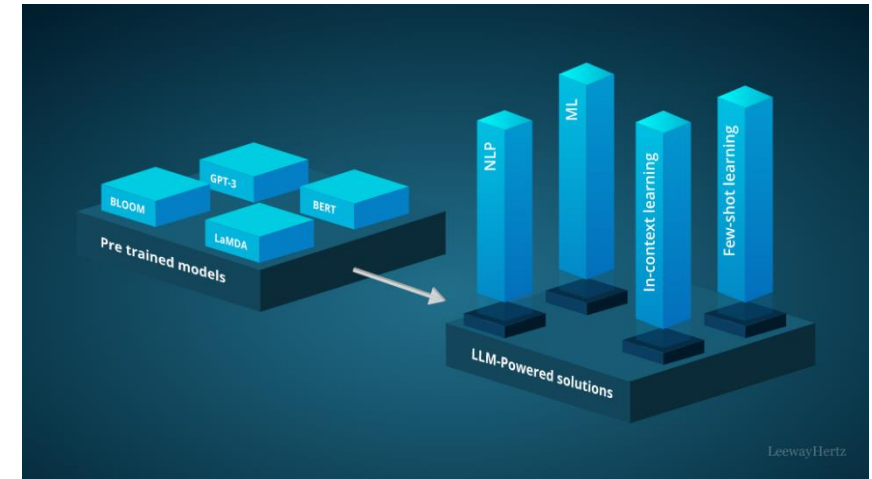
- **Make journalists' work more efficient**
- **Deliver more relevant content to users**
- **Improve business efficiency**

# How ? Use of AI in Journalism



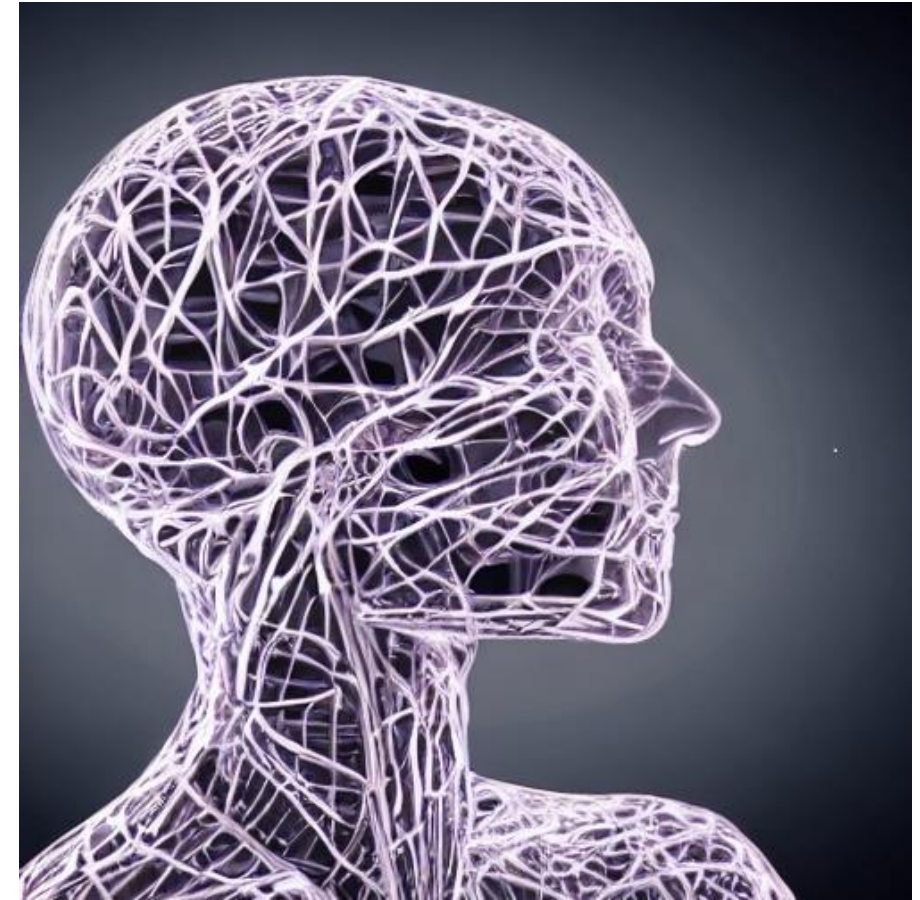
# Use of AI in News Industry

- **News gathering:**
  - sourcing of information
  - story idea generation
  - identifying trends, investigations
- **Big Data and Data Journalism**
  - fact checking
  - event or issue monitoring
  - extracting information or content



# Use of AI in News Industry

- **News production:**
  - content creation & editing
    - *translation, transcription, image search, augmented writing, automated summaries*
  - packaging for different formats and platforms
  - text, image and video creation
  - repurposing content for different audiences.



\* Picture drawn by DeepAI.org



# Example

- A simple task to chat GPT (on Manipur debate in Parliament)
- *Opposition's put up a motion aimed to address Manipur's ethnic violence against PM Modi's government.*
- *PM Modi responded, but Opposition walked out due to motion's rejection by voice vote.*
- *Home Minister Amit Shah detailed government's approach to Manipur conflict and Myanmar refugee influx.*
- *Political discourse marred by partisan bickering, suspended Opposition leader, lack of substantive debate.*
- *Passage emphasizes need for constructive engagement, dialogue, and ending confrontational politics.*
- **Can you please write an editorial for my newspaper on the above in around 200 words**

# News Report

- - **Title: Nurturing Constructive Politics for National Progress**
  - In a recent turn of events, the Opposition's no-confidence motion against Prime Minister Narendra Modi's government shed light on the ongoing ethnic violence in Manipur. While the motion aimed to address this pressing issue, the Opposition's walkout following its rejection via voice vote raises questions about the effectiveness of such actions in promoting genuine discourse.
  - Prime Minister Modi's response, promising peace and reconciliation in Manipur, marked a step towards addressing the situation. However, the Opposition's departure from the proceedings underscored the prevailing trend of partisan bickering and lack of substantive debate in our political landscape.
  - Home Minister Amit Shah's explanation of the government's strategy concerning the Manipur conflict and the refugee influx from Myanmar offered insights into the complexities of the issue. Nevertheless, the discord between political factions remains a barrier to constructive dialogue and progressive policy formulation.
  - This episode serves as a reminder of the urgent need to shift from confrontational politics to a more inclusive and productive approach. The suspension of the Opposition leader further highlights the current state of strained relations within our democracy. To realize meaningful change, all stakeholders must emphasize the value of open dialogue, mutual respect, and collaboration, transcending party lines.
  - As we move forward, the focus should be on fostering an environment where genuine discourse takes precedence over petty point-scoring. Only by embracing constructive political engagement and dismantling the barriers of indifference can we hope to address the nation's challenges and usher in a brighter future for all.

# Use of AI in News Industry

- **News distribution:**
- personalisation
- marketing
- finding audiences
- understanding user behaviour
- monetisation/subscriptions

# Last Line



The hottest programming language today is ENGLISH.....

(Andrej karpathy)

# Thank you

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Government of Kerala

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