TAMIL NADU SAFE & ETHICAL ARTIFICIAL INTELLIGENCE POLICY

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INVENTIONS

- *"Anything that gets invented after you're thirty is against the natural order of things and the beginning of the end of civilization as we know it until it's been around for about ten years when it gradually turns out to be alright really."*

   — Douglas Adams

Introduction

- Hon'ble Chief Minister of Tamil Nadu, Thiru Edappadi K. Palaniswami released the Tamil Nadu Safe & Ethical Artificial Intelligence Policy on 19th September 2020.
- Policy indicates that Tamil Nadu Government
    - has made massive investments in creating IT infrastructure and in developing end-to-end application software for efficient delivery of government services to its residents.
    - has made substantial investments to make the State a destination of choice for IT/ITeS Investors from across the world.
- Advantage Tamil Nadu
    - Vibrant ecosystem of technology leaders,
    - Startups, incubators and accelerators,
    - Excellent academic institutions,
    - Network of mentors
    - Venture capital funds.

CEET

- Center of Excellence in Emerging Technologies (CEET)" under the aegis of Tamil Nadu e-Governance Agency (TNeGA).

  - CEET is mandated to work with government departments and help them solve their key governance problems with help of emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT), Blockchain, Drones, Augmented Reality (AR) / Virtual Reality (VR) and others.

  - **CEET has started conceptualizing and developing solutions for problems from health, education, rural development department, agriculture and land registration departments.**

  - CEET also extensively engages with Startups and provides them with opportunities, resources and mentoring to help them solve problems with high social impact and big scale.

Need for Safe and Ethical Artificial Intelligence Policy

- AI is here to stay
- It is touching multiple spheres such as medical diagnostics, transportation, drug discoveries, law enforcement, military, space exploration, education, governance and elderly care.
- AI based technology has evolved in a different manner.
- Some of the factors that make AI-based technology different are:
  - **Discreetness** – codes are freely available; difficult to pin responsibility of a particular AI module onto an identifiable individual organization. Inclusion of other players such as buyers, sellers, etc. – problem makes it immensely complex to analyze.
  - **Diffusiveness** – algorithms get diffused across geographies.
  - **Opacity – Inner workings of an AI policy is usually kept unknown for competitive purposes; this difficulty to understand it hinders policy makers from coming up with an effective solution.**

Need for Safe and Ethical Artificial Intelligence Policy

- Government has conflicting roles in adoption of AI
  - As a <u>user of AI</u> - to better deliver services to citizens, to improve efficiency, to cut down waste and to optimally allocate resources.
  - As a <u>regulator of AI</u> - keeping the technology benign and oriented towards improving the lives of its citizens.
- Imperative on the Government to lay down policies and framework to ensure that
  - all usage of AI is fully compatible with human values and;
  - **the use of this technology is inclusive and does not leave anyone behind.**
- The goal of the Safe and Ethical Policy is to allow harnessing the power of AI for the public good while keeping it safe and ethically compatible with human values.

Goals of the Policy

- Make AI inclusive, free of bias, fair, equitable, ethical and transparent.
- Encourage fast, efficient, secure and transparent public service delivery with help of Artificial Intelligence.
- Augment and improve existing Governance workflow and processes with help of Artificial Intelligence.
- Encourage research and development in Artificial Intelligence by the academia, start-ups, private and public enterprises.
- Nurture an ecosystem of easy and open data access to foster innovation in AI.

Objectives of the Policy

- Provide framework for inclusive, safe and ethical use of AI in Govt. domain and to build fairness, equity, transparency and trust and in AI assisted decision making systems.
- **Establish guidelines for the evaluation of an AI Systems before it's rolled out for Public use.**
- Build a mature and self-sustaining AI community to aid the growth of AI in Tamil Nadu and to train and skill people in Tamil Nadu in AI.
- **Provide access to Open Data, Data Models, and Computing Resources.**
- Build a regulatory sandbox that can be used for researching, building and deploying Artificial Intelligence based applications by Start-ups, Private and Public Enterprises, Academia.
- **Promote investments in AI R&D in Tamil Nadu.**

Applicability of the Policy

- Any authority or body established in Tamil Nadu established or constituted under any Central or State law and owned or controlled by the Government of Tamil Nadu, or which receives any aid directly or indirectly from the Government of Tamil Nadu.
- Any organizational body such as cooperatives, trusts, societies, public sector undertakings and boards, whose composition and administration is controlled by the Government of Tamil Nadu or whose officers or office bearers are appointed by the Government of Tamil Nadu.
- Partnerships and Joint Venture Companies of the Government of Tamil Nadu

Challenges to AI Implementation – TAM-DEF

- **Transparency (T)**
  - Use of AI means regular interaction with human fields such as healthcare, transportation, law enforcement, etc.
  - Technology providers to explain the decision-making process to these stakeholders, especially the Government w.r.t. the decision making process of the AI device.
  - Audit trail of the decision is needed to explain decision making process.
- **Accountability & Legal Issues (A)**
  - AI making autonomous decisions – accountability is an issue.
- **Misuse Protection (M)**
  - Potential of AI is not apparent – possibility of the technology being misused
  - Legislation required with twin objectives – encouraging innovation without excessive regulation along with minimization of misuse.

Challenges to AI Implementation – TAM-DEF

- **Digital Divide & Data deficit (D)**
  - Low resource communities in the society with inadequate access to technology may lose out on the revolution, being unable to participate in a scale equivalent to the informed citizens.
  - Skewed power distribution between digital haves and have nots.
- **Ethics (E)**
  - Privacy and data protection
  - Human and Environmental values
- **Fairness & Equity (F)**
  - Risk of commoditization of labour
  - Human dignity
  - Gender and Racial bias – especially in the cases of law enforcement.

The DEEP-MAX - Scorecard

DEEP – MAX - Introduction

- Transparent point based rating system for AI Systems.
- <u>Seven Parameters</u>
  - <u>Diversity Score (D)</u> – how well the AI system is trained for diversity in race, gender, religion, language, color, features, food habits, accent, etc.?
  - <u>Equity Score (E)</u> – Does the system promote equity and treats everyone fairly?
  - <u>Ethics Score (E)</u> – how well the AI System preserves the human values of dignity, fairness, respect, compassion and kindness for a fellow human being
  - <u>Privacy and Data Score (P)</u> – how well the AI system protects the privacy of individuals? Does it have data protection features built in?
  - <u>Misuse Prevention Score (M)</u> – Has the system been designed to incorporate features that inhibit or discourage the possible misuse?

DEEP – MAX - Introduction

- Audit & Transparency (A) – Auditability Score – How good in auditability of decisions made by the autonomous system?

- Cross Geography & Cross Society Score (X) – How well the AI System works across geographies and across societies especially for the disadvantaged societies?

- There will be a periodic update of the DEEP-MAX scorecard based on the nature of the AI use case class.

Use of Blockchain for Safe & Ethical AI

- Creation of AI Certification, Transparency & Scorecard Blockchain (ACTS – Blockchain)
  - Integrate information about the dataset used for training AI system
  - Ensure whether the training dataset met essential criteria such as Diversity and Equity.
  - <u>Carry seven scores from the DEEP-MAX scorecard for any given AI system</u>.
  - Transparent mechanism for rating and understanding of all Government procured AI solutions before and after putting it to use.

Use of Blockchain for Safe & Ethical AI

- Training Data Certification - Trusted mechanism to certify the quality of training data for an AI System Module.

- Tamperproof DEEP-MAX Scores – the AI model developed would be tested on a set of standardized data sets, each measuring one of the seven DEEP-MAX scores. These scores would be put on the ACTS- Blockchain and each AI module would be shipped with this trusted scoreboard along with its training data certificate.

- Built-in Misuse Prevention using Blockchain – a blockchain-based record keeping for any substitution or changes in the criminal image database to help safeguard the system from possible misuse. The blockchain will contain a tamperproof record of the changes made along with the authorization details, making all changes traceable.

Guidelines for Procuring AI Systems in Tamil Nadu: Implementing Ethics Score 'DEEP-MAX' for AI Solutions

Guidelines to be followed before procuring AI Solution/ System

- Consult Center of Excellence in Emergence Technologies (CEET) at Tamil Nadu e-Governance Agency (TNeGA) before making AI Procurement
- AI Solution must be carefully evaluated along the lines prescribed and must have a satisfactory DEEP-MAX score.
- Departments are encouraged to periodically update the DEEP-MAX scores of the AI solutions once deployed. The periodicity suggested is 6 months.
- TNeGA would create the ACTS-Blockchain and the departments are encouraged to use it for safe and ethical use of AI once the ACTS-Blockchain is made available.
- Government of Tamil Nadu or agencies acting on its behalf, shall have the right to determine, and revise periodically, acceptability criteria for AI Systems based on DEEP-MAX Scores for their use cases and to reject/recall any application that does not meet the set criteria.

Guidelines to be followed before procuring AI Solution/ System

- Ethics Score for AI – DEEP MAX
  - To begin with – binary score on the DEEP-MAX Scorecard may be given and depending upon the intended usage of the AI system any inconsequential parameters can be ignored.
  - TNeGA to bring out a continuous scale 0-10 score for each of the DEEP-MAX parameters and would seek partnerships with research institutions, academicians, experts, volunteers, standard setting organizations, other governments (State, National and International) and Non-Profits organizations within and outside India, in designing, maintaining and updating suitable test data sets for generating objective scores.

Oversight Mechanism and Implementation of TN Policy for Safe and Ethical AI

- Implementation of the guidelines to be monitored by Safe and Ethical AI Monitoring Committee headed by chief secretary with members consisting of Secretary and Senior Officers of select departments (including law department) and AI/ policy Experts representing leading Academic/ Research Institutions.

- The Department of Information Technology of the Government of Tamil Nadu shall coordinate the overall implementation of the policy and shall issue necessary guidelines and revisions to the Policy from time to time.

AI Awareness, Mechanism and Training

- **AI to be implemented in transport, assisted medical diagnosis, education, agriculture, law enforcement, public service delivery, Governance, autonomous decision making.**
- Sufficient capacity to be built
- Need to create awareness about AI technology and its capabilities amongst citizens.
- TN Govt. to work with leading academic institutions and training arm of Government of Tamil Nadu. To evolve and roll out an AI education and awareness program.

AI Awareness, Mechanism and Training

- For the Citizens
  - **Updating the school/ college curriculum**
  - Supporting large scale AI training and skill building for growth
  - Awareness of public
- For the executive
  - Officials to be aware of the possibilities, potential for misuse, actions that need to be taken to ensure safe and ethical application of AI based solutions for delivering citizen services.
  - The government would organize AI awareness sessions, workshops and live demonstration of Ai applications for officers.
  - Government employees would be encouraged to undergo short term orientation/ awareness sessions leveraging digital media and mobile technologies for widest possible reach.

AI Awareness, Mechanism and Training

- ## The legislature
  - They are to have a good understanding of fundamentals of AI in order for it to make/ amend laws which are effective and relevant in the era of AI.
  - The Government would explore opportunities for short durations primer courses in AI in Institutes of repute in the world.
  - Examine possibilities of International exposure and exchange programs to enable the law makers in adopting the AI practices of the world.

- ## The Judiciary
  - With AI systems becoming increasingly pervasive, the judiciary must Interpret the laws to factor in AI.
  - Promote beneficial use of AI
  - Prevent misuse of AI and ensure equity, fairness and justice for all
  - Govt. to work closely with judiciary in analyzing the legal implications of AI- based systems and measures needed to mitigate any negative impacts.
  - Govt. with consultation of Hon'ble High Court, draw up a program for educating the Judicial Officers in AI and its implications, explore opportunities for short duration AI training courses for Judicial Officers at National and International Institutes of repute.

Promotion and Encouragement for the Use of AI
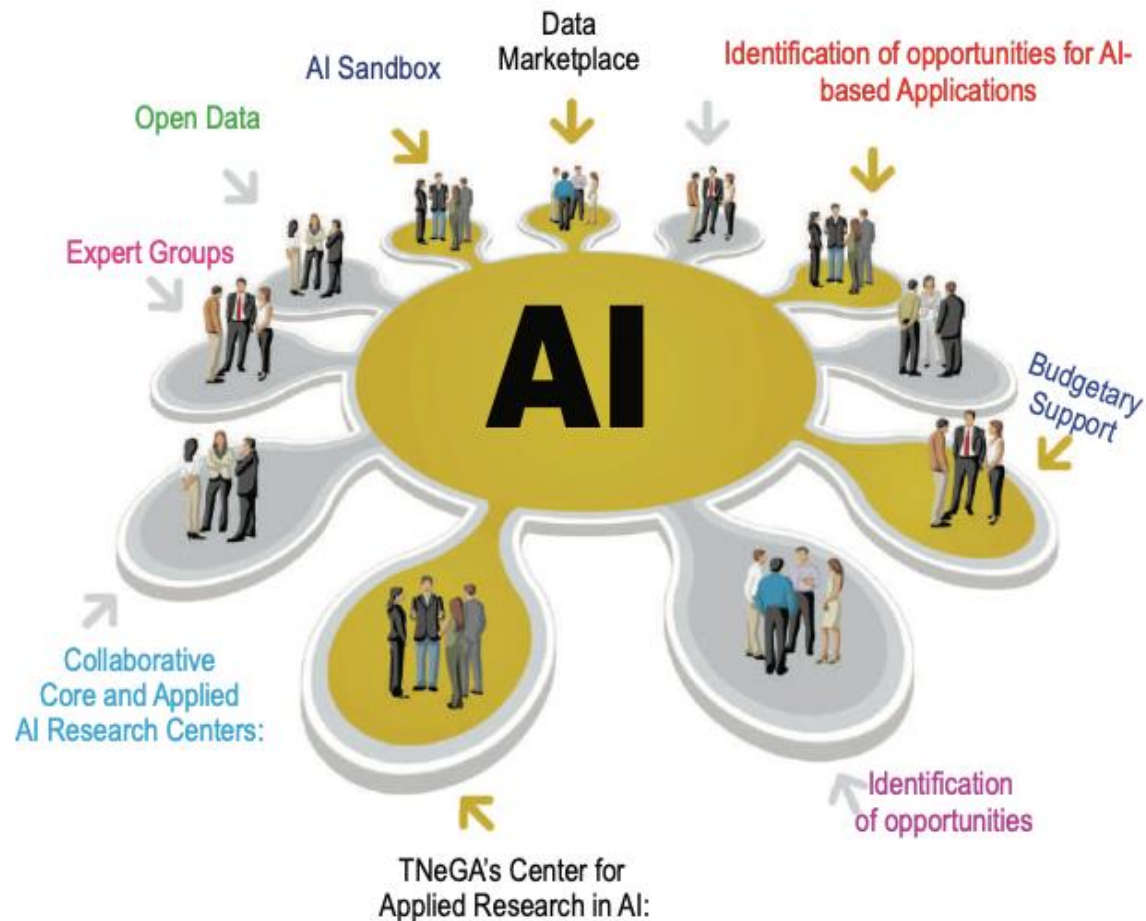
Promotion and Encouragement for the Use of AI

- Expert Groups to identify application opportunities for AI and related solutions
  - Constitution: academicians, practitioners and other subject matter experts.
  - Use: domain knowledge, appropriate subject matter experts from departments should also be involved.
  - To organize conclaves, workshops and other networking events to:
    - knowledge sharing among stakeholders;
    - identify sectors and use cases benefitting most from immediate AI intervention;
    - develop sector specific policies/ guidelines/ procedures;
    - disseminate best practices towards procurement, design, development of AI solutions
    - Study user experience and real- world impact of AI based systems and recommend changes to systems/ policy.
    - Recognise and celebrate data providers, systems developers, teachers, regulators and others who significantly contribute to the objectives of this policy.
    - Problem elicitation.

Promotion and Encouragement for the Use of AI

- Open AI Challenges to the AI enthusiasts, students, teachers and startups to find a solution.

- Once found, the TNeGA to market the innovation and provide necessary support to commercialize the technology in a joint ownership of Intellectual Property rights mode.

- Government to set up AI for governance research centre in collaboration with leading industry players and academic institutions for developing a better understanding of existing core research problems and pushing technology frontiers through the creation of new knowledge, for solving Governance problems, developing/evolving appropriate policies in consultation with all stakeholders and share best practices towards procurement, design, development & deployment of solutions from application-based research.

Promotion and Encouragement for the Use of AI

- **Open Data**
  - Departments to be encouraged to embrace the idea of Open Data.
  - Each Department to identify datasets that can be shared under the open data policy and regularly publish catalogs and resources on an open platform.
  - Access to data made available under this policy would take into consideration privacy and confidentiality concerns and shall not be in violation of any Acts and Rules of the Government of India or the Government of Tamil Nadu in force.
  - Open data task force to be setup
    - Define and implement standardize processes for classifying different types of data, for the identification and release of shareable datasets, consent mechanisms, tools and platforms for data sharing, licensing considerations as well as overall governance to ensure data sharing is in line with Government objectives and applicable laws, rules and regulations in place.
    - They would handle requests coming from expert groups research centers, startups, departments and work with respective departments to publish such datasets on open data platform.
    - The open data taskforce would be headed by the CEO of TNeGA and include Senior Officers representing various Departments / Agencies of Government of Tamil Nadu.

Promotion and Encouragement for the Use of AI

- Data Platform
  - Government to create an online platform for hosting data and facilitate its access, to encourage
    - Data acquisition, sharing and inoperability
    - Secure data management practices and governance adhering to applicable laws, rules and regulations in place
    - Researchers and Scientists to work on and find solutions to problems faced by society
    - Start-ups to work in collaboration with the Government and create products that they can sell to other customers on a revenue sharing basis.
    - Enable crowd sourcing of AI/ ML solutions
- AI sandbox
  - Govt. to create AI sandbox for startups and individuals for encouraging innovation at the grass-root levels in Tamil Nadu.
  - This helps startups for experimentation with new and innovative ideas without the risk of failure.

Challenges

- While the Policy is quite comprehensive, there are issues such as
    - wide coverage
    - many goals
    - no specific time lines
    - absence of data protection law in India
    - security of data collected by Government
    - testing and evaluation can result in choking of innovation
    - challenges in identifying grading parameters
    - the factors of measurement such as ethics and fairness are non-empirical.

Legal Questions

- What are the types of contract clauses that would govern AI and IoT businesses?
- Who is liable for acts of robots that result in death/ injury/ loss?
- Should AI robots be considered plant or machinery?
- Should they be considered employees?
- Whether laws would be created for punishing robots?
- Will there be an international agency in the context of robotic weaponry?
- How will law deal with creator bias?

Social Questions

- What is the impact on privacy?
- Who owns the data?
- Unemployment or new jobs?
- What is 'Right to be forgotten'?

"Driven by ego, humans would invent things that are absolutely relevant to humanity and also invent things which have the potential to destroy humanity."

....K.Vaitheeswaran.

THANK YOU

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