LEGAL DIMENSION OF NEW TECHNOLOGY: A FRAMEWORK FOR CLASSIFICATION

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ABSTRACT:
The paper highlights the challenges of new Technology law usage and cannot position of Legal domain with respect to service providers. The paper was the concept of Activity Theory and it relation with the Law and new Technology Domain. A mathematical correlation is proposed in this paper encompassing various dimensions of Technology Law.

Keywords: Technology Law, AI, Activity Theory

1-INTRODUCTION:
New Technology with the use and support of Artificial Intelligence has grown tremendously. AI encompasses a collection of related techniques and decision making which includes Machine learning Applications in various Internet trending activities. There are various marked and unmarked activities and Domain in which Artificial Intelligence Tools are being used, more- over their classification is divided into two parts : Weak AI and Strong AI. Weak AI can perform only a specific task while Strong AI has human level of intelligence and can work in Autonomic mode.

Most AI that we experience today is defined as "Narrow", which signifies embedding Knowledge in particular over only, while with the advancement of new technologies, the diversification on Artificial Intelligence has been significant, there is a new focus nowadays known as " Artificial General Intelligence" AGI which refers to a level of Intelligence across Multiple fields. Nick describes AI as“An Intelligent That is much smarter than the best human in brains in practically every field, Including scientific creativity, general wisdom and social skills".

There are various debates in this regard on whether to provide Artificial Intelligence Personhood or not, till now only corporates are granted as Personhood.
1.1 AI Categorization in Current services:

Big Data offers AI an immense and rich content based source of Data which is fed for processing, both Data and AI are intermingled with each other: Artificial Intelligence is frequently used to process the data for government made e-governance as we can see the Adhaar data processing besides that Internet of Things (IOT) data generated created during Online shopping, Public health system and Online Public platform automatically able to track once private information.

Machine Learning is also another of computer science where Artificial Intelligence[7,9,10] have been always Hand in Gloves with each other. There are number of companies and financial institutions which are exclusively using customer data to predict their future customer purchases thereby challenging the issue of privacy.

Deep Learning is a sub part of Machine learning which exploits Neural Network i.e. using Multi large Architecture which works as a Black Box, It is extremely powerful tool which can interconnect complex databases to provide necessary inferences. The faster and multiple layer processing has been extensively used for predicting future behaviour and prospective clientage by the companies. Even Alexa and Google Home is taking commands based on what we speak to them for searches.

The above emerging technologies are extensively using human interface, which means that there are chances of misuses of Technology, the lack of such Law[12] for such technology is still in vagueness stage their need to be an efficient enactment of Legal provisions and regulatory systems that compromises the current legal system.

1.2 A.I Characterization in terms of Law:

General characterization of Artificial Intelligence is Tort, where various types of liabilities are classified under vicarious and strict liability, but the AI generally can't be held liable as it is not a Legal person. There could be a situation in which AI could be held for breach of duty where AI application accidentally share highly confidential information of some set of customers to public domain. The owner of the data set will be held for strict liability for the damage caused due to loss of information.

AI is now considered as me of big word in today's scenario with electric vehicles on road with latest features and high end Technologies as interface making them SMART and eventually creating a Humanoid who will make things more complex to encompass in the law domain.
2.0 LITERATURE REVIEW ON TECHNOLOGY LAW, USAGE AND POLICY IMPLICATION

The initial work by Willing M.S[3] on Constitutional Law and AI has sparked a new way of a direct relationship which needs to be explored. Paper by Vincent[2], I discusses the issue exhaustively debating the issue of citizenship to Robots. Authors are motivated by the work of Kemp,R[1] which highlights the points of Legal Aspect of Artificial Intelligence usage, Vincent also broadly classified information privacy law with civet where way with OECD guidelines on protection of Privacy and Trans border flows[5,6,8] of Personal Data is disused which data added on to PDP Act (2014). OECD[11] guidelines are way exhaustive relating to privacy legislation around the world. The manual of UK Information Commissioner Office (ICO) on Big data, AI, ML and Data Protection also sets various guideline on Data Breach. Even Donaldson and Dundee, 1994 has highlighted that information can only be used of customers only if they give explicit “Yes” otherwise it is to be considered as breach as described by Culana and Williams 2009.

3.0 PROPOSED DUSTMEN MODEL OF IMPACT OF ARTIFICIAL INTELLIGENCE IN LAW DOMAIN

The paper proposes the amalgamation of Artificial Intelligence Technologies and Law. The cognitive side of the Artificial Intelligence is analyzed in this paper along with the concept of Activity Theory.

Fig 1 : Artificial Intelligence Capabilities

Artificial Intelligence has tremendously provided help (figure 2) are day life as well are corporate which are certainly able to entrance their business value but at the same time there are various types of Risk Associated with it.

Fig 2 : Various Associated of A.I application in Business
The above figure (figure 2) shows the various risk associated if we what to go with Artificial Intelligence as Base of our Business and Life Activity.

In order to gate the risk of AI and associate it with Law we have used the concept of Activity Theory as the main Domain to analyze the real problem and ways to overcome it.

### 3.1 Concept of Activity Theory :

Activity Theory identifies the concept model element and relate them together. It provides a standard form for describing Human Activity by incorporating strong Notion of Tool mediation and social setting which are important in Ubiquitous Computing. Basically it maps the relationship amongst each element of a Human Activity Model.

If Consists of the following submissions

- **Subject** : The Individual subgroups chosen as the point of view in the Analysis.
- **Tools** : Physical and Psychological
- **Community** : Individuals subgroups who share the same general object.
- **Divisions of Labor** : Division of Tasks between members of community.
- **Rules** : Explicit, Implicit regulations, Norms, Conventions that contained action, interaction.
- **Object** : The "Raw Material" or "Problem space" at which the Activity is diverted and which is muddled transformed into "outcomes".

### 3.1 Basic Structure of Activity Theory

The basic structure of Activity Theory model consist of theme Main Components: Tools, Subject ; object. It was the first connectivity model of Activity Theory being introduced.

![Fig 3 : Basic Structure of Activity Theory](image)

An Activity is composed of a subject an object mediated by a Tool and the basic meditational triangle from cultural-historical psychological Tools are both Physical/ Technical Tools and Psychological/ Mental Tools as described by Vygotsky. The model as given by Leontiev, a sociological who worked on people dynamics synthesizes basic components as:
<table>
<thead>
<tr>
<th>S.No</th>
<th>Entity</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Activity</td>
<td>Motives</td>
</tr>
<tr>
<td>2.</td>
<td>Action</td>
<td>Goal</td>
</tr>
<tr>
<td>3.</td>
<td>Operation</td>
<td>Conditions</td>
</tr>
</tbody>
</table>

**Table 1: Leontiev’s Model**

![Fig 4: Mediation between Community & Object](image)

He also suggested mediation between Community and Object further the relation between the community and the object is regulated / medicated by a Division of Labour.

Finally this model was upgraded an combined to develop perfect correlation between various Artifacts was developed by Engestron.

We have analyzed this model for a problem domain of AI Tools and law by commentary the as shown in Table- II.

**Table- II: Conversion of Activity Theory into Legal Terminology**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activity Theory National</th>
<th>Developed Terminology</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Subject</td>
<td>Plaintiff/Defendant</td>
</tr>
<tr>
<td>2.</td>
<td>Community</td>
<td>Organization intoning AI</td>
</tr>
<tr>
<td>3.</td>
<td>Tools</td>
<td>AI Based Systems</td>
</tr>
<tr>
<td>4.</td>
<td>Object</td>
<td>Artificial Intelligence Capability</td>
</tr>
<tr>
<td>5.</td>
<td>Rules</td>
<td>Law as Defined</td>
</tr>
<tr>
<td>6.</td>
<td>Division Of Labor</td>
<td>Decomposition</td>
</tr>
<tr>
<td>7.</td>
<td>Outcome</td>
<td>Technology Based Crime</td>
</tr>
</tbody>
</table>

The Table - II above shows the link of various Artefacts of Activity Theory Notation and the Legal Terminology which is suitable when we are deriving relationship between Artificial Intelligence and Law.

The main problem is to find the exact point where we are lacking this and use of AI has privileged into over personal life/ user’s life. In order to find out the basis of change of information usage generated through using...
Artificial Intelligence as a toll we use base connectivity Notational Diagram (fig 5) which gives clear picture of row the information it done and remedial secures that is required.

![Diagram](image)

**Fig 5 : Conversion of Activity Theory principles in crimes possible through AI usages.**

From the above figure we analyse that there exists a direct relationship between Activity (USAGE) Of AI Technology and other factor in Engstrom Triangle as shame in figure 6.
Engestron’s Triangle shown in Fig 6 converts the Technology Law categorization in Activity Theory Domain. It helps in finding out the exact characterization of usage Technology and its relationship in social setting.

Based on the above, a model is developed which highlights the perfect correlation for Trust which can be compromised using advanced Technologies and the Law related to it and the strength of Law to overcome it. Fig. 7 shows the Correlation matrix of Technology (AI) & the Law enforcement effectiveness.
High

Low

USER'S UNRELIABILITY OF BREACH

Low Technology Level ———> High Technology Level

Correlation Classification of Breach

Complexity

Fig 7: Relationship between Breach and Technology Level

On the basis, Vulnerability Level existing Law needs to be main force, the higher the latest Technology and Ease of use, the higher the Lack of Awareness of the user to safeguard it leading to a breach.

A conflict resolution of Breach of Data or collecting of Personal information by tools/community achieved by Division of Labor to remodify the object in problem space is achieved by rules (Existing Laws), finally a vulnerability model is created using OECD guidelines.

Let: $LC = \frac{\text{Level of Conflict}}{\text{Total of Information Gathered using AI}}$

$DD = \frac{\text{Number of Dissenting Issues}}{\text{Total Number of Issues}}$

$DD$ is postulated to be proportionate to $LC$ if the conflict strength, $CS$, is a region in which two sets of Numerical Variables $LC = [LC_1, LC_2, \ldots, LC_n]$ and $DD = [DD_1, DD_2, \ldots, DD_n]$

The total conflicts of the information gathered and Dissenting Issues relating to law enforcement is given as:

$$W = \#(LC + DD)$$

Where $\mu$ is a function that defines the value of probability of 'LC' and 'DD'.

Ultimately, we have to foils of Dissenting Issues which has a sub set developed earlier as a function Activity Theory Domain given as:

$$f(DD) = \{\text{Tools, Subject, Rule, community, Division of Labour, object}\}$$

The above relation can be significantly conformed by enforcement genies then by mitigating the risk of Information Breach using High-end Technologies.
4.0 CONCLUSION:

We are living in Digital world where technology has certainly made our life easier, but at the same time it has changed the face of Information privacy, with more and more advancement in technologies we have to think various means to regulate them. Number of mediation models needs to be developed that will finally answer the privacy questions raised by use of high end technologies.

The paper highlights the use of such model to enumerate the compromise of information by whom and whose information. The Activity Theory model strengthen the Social setting and Technology usage linkage by developing some Privacy econometrics with Legal Domain. In the current social setting Government has to play very social role in developing the confidence amongst the end user's as well as service provider for a safe and fair environment.

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