How Artificial Intelligence Can Improve LegalTech

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1. Artificial Intelligence
"There’s nothing artificial about AI. It’s inspired by people, it’s created by people, and—most importantly—it impacts people."

— Fei-Fei Li

Machine Learning

Process to derive rules from data to gain insights or make predictions.
Automate Insights
Sample Data → Computer → Correlation

Expected Result → Computer

New Data → Computer → Result

Model

Source: Virginia Dignum https://drive.google.com/file/d/15gcKlQj0Ev_LeqsEB3IdzhRXeNEMeiZI/view
Building AI Systems

1. Appropriate data
2. Data preparation
3. Suitable algorithms
4. Meaningful correlations
5. Evaluate model regularly
6. Audit results regularly
7. Handle edge cases
8. Maintain system
9. Provide alternatives
System
Human + AI
Diabetic blindness in India

Source: The New York Times
70 million are diabetic and at risk of diabetic blindness in India


Source: The New York Times
Only 11 eye doctors for every 1 million people

Source: The New York Times
"...there is a bottleneck when it comes to screening patients."

Dr. R. Kim, Aravind Eye Hospital
Automate eye screening using AI

Source: The New York Times
Researchers using AI to detect illness and disease

Detect cancer, stroke, heart disease by automated analysis of X-rays, M.R.I. and CT scans
Challenges

1. Data
2. Safety
3. Regulations
4. Ethics
Potential Benefits

1. Reduce cost of service
2. Provide faster service
3. Provide better service
4. Serve more people
How can AI help to improve access to justice?
- Simplify court processes
- Provide self-help info
- Connect SRLs with providers
- Language/literacy assistance
- Remote access
- Accessibility
2. AI in Legal Services
Rethinking Intake Data Acquisition

Automated Intelligence
1. Questions
2. Technology
$1 Billion
The Gartner Product Cycle
Application Programming Interface
Two Examples
2 Examples

1. SMS

2. Address
3. Systems
Current Justice System
Legal Aid
Systems / Process
Systems / Process

What Computers Do

Input device(s) → Processor (CPU) → Output device(s)

Receive input → Process Information → Produce Output
Consumers & Producers

- Data
  - Raw: Red, 192.234.235.245.678, v2.0

- Information
  - Meaning: South facing traffic light on corner of Pitt and George Streets has turned red

- Knowledge
  - Context: The traffic light I am driving towards has turned red

- Wisdom
  - Applied: I better stop the car!
Applied Wisdom = Action
Anatomy of a Task
Artificial Intelligence is: Understanding
Legal Issue Spotting

API Demo

Classifier API
Personality Insights
Tone Analyzer
Language Translation
Speech-to-text
Conversation
Conversation #2
OCR

Your description:
The person I pay my rent to told me that I have to move out of my apartment

Our analysis:
We are 79% certain you are experiencing the following issue: Private Landlord/Tenant
This is the distribution of other possibilities:

- 7.608% Bankruptcy/Debtor Relief
- 3.030% Collect/Repo/Def/Garnish
- 2.939% Wills and Estates
- 2.870% SSI
- 2.198% Homeownership/Real Property (Not Foreclosure)
- 1.627% Medicaid
- 0.552% Contract/Warranties
- 0.070% Advanced Directives/Powers of Attorney

Is this classification correct?
- Yes
- No

API Response:
```
{
  "code": {
    "code": "63",
    "label": "Private Landlord/Tenant"
  },
  "geo": {
    "address": "3830 W 21st Pl, Chicago, IL 60623, USA",
    "censusBlock": {
      "FIPS": "170318417881886"
    }
  }
}
```
Natural Language Understanding

Classification

Example 1  Example 2
### Entity Extraction

- Define the word “Bank”
- Entity Extraction from Documents
  - [https://houston.ai/ocr/](https://houston.ai/ocr/)

<table>
<thead>
<tr>
<th>Noun</th>
<th># Occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Jones</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># Text</th>
<th>Lemma</th>
<th>Pos</th>
<th>PPOS</th>
<th>PFeat</th>
<th>Head</th>
<th>Stanford typed dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mr.</td>
<td>_</td>
<td>NOUN</td>
<td>NNP</td>
<td>_</td>
<td>2 nn</td>
<td></td>
</tr>
<tr>
<td>2 Jones</td>
<td>_</td>
<td>NOUN</td>
<td>NNP</td>
<td>_</td>
<td>3 nsubj</td>
<td></td>
</tr>
<tr>
<td>3 pays</td>
<td>_</td>
<td>VERB</td>
<td>VBZ</td>
<td>_</td>
<td>0 ROOT</td>
<td></td>
</tr>
<tr>
<td>4 his</td>
<td>_</td>
<td>PRON</td>
<td>PRP$</td>
<td>_</td>
<td>5 poss</td>
<td></td>
</tr>
<tr>
<td>5 rent</td>
<td>_</td>
<td>NOUN</td>
<td>NN</td>
<td>_</td>
<td>3 dobj</td>
<td></td>
</tr>
<tr>
<td>6 to</td>
<td>_</td>
<td>ADP</td>
<td>IN</td>
<td>_</td>
<td>3 prep</td>
<td></td>
</tr>
<tr>
<td>7 Ms.</td>
<td>_</td>
<td>NOUN</td>
<td>NNP</td>
<td>_</td>
<td>8 nn</td>
<td></td>
</tr>
<tr>
<td>8 Smith</td>
<td>_</td>
<td>NOUN</td>
<td>NNP</td>
<td>_</td>
<td>6 pobj</td>
<td></td>
</tr>
</tbody>
</table>
Artificial Intelligence is: Speech
Speech Recognition

Houston.AI
Alexa

Speech to Text / Text to Speech

- Siri, Alexa, etc.
Artificial Intelligence is: Language
Language is an old technology
Waverly Labs
Pilot Translating Earpiece $249
Waverly Labs

Pilot Translating Earpiece
Intake Systems

Data Acquisition & Transfer
1. Purpose?
2. Location?
3. Accuracy?
Linear Systems

Point A to Point Z

- **Pros**
  - Accurate/Predictable
  - Transparent
  - Easy to Document

- **Cons**
  - Rigid (Not very Flexible)
  - Limited Intelligence
  - Manual Maintenance
Nonlinear Systems

Guided Navigation

- **Pros**
  - Accurate/Predictable
  - Transparent
  - Easy to Document
  - More Intelligent (Evaluation)

- **Cons**
  - Cannot easily pivot
  - Some Intelligence
  - Manual Maintenance
Responsive Systems

Conversational

● Pros
  ○ Flexible
  ○ Easy to Pivot
  ○ Less Manual Maintenance
  ○ Intelligent (Machine Learning)

● Cons
  ○ Less Accurate
  ○ Less Transparent
  ○ Not Easy to Document
3. Barriers

1. Location
2. Time of Day
3. Language
1. Provide Relevant Information
2. Make Referral
3. Make an Appointment
4. Draft a document
Linear Systems

Point A to Point Z

- In Person Intake
- Telephone Intake
- Online Intake
- Provide Relevant Information
- Make Referral
- Make an Appointment
- Draft a document
Nonlinear Systems

Guided Navigation

- In Person Intake
- Telephone Intake
- Online Intake
- Provide Relevant Information
- Make Referral
- Make an Appointment
- Draft a document
Responsive Systems

Conversational

- In Person Intake
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3. Preparing for AI
1 Engage our community and educate ourselves about new data-driven, algorithm-powered technology that is transforming our profession.
Discuss and identify the impact of new technology on due process and ethics.
Develop a set of community principles and guidelines to protect and promote our professional values.
Guide and encourage use of principles and guidelines among courts, governmental agencies, legal aid programs, bars, and others in the justice community.
Principles & Guidelines
Ethics Concerns

- Duties of Competence and Diligence
- Duty of Supervision
- Client Confidentiality and Privilege
- UPL
- Diversity and Inclusion
1 - Transparency

- All people impacted by automated data-driven decision-making should be informed.
- End-users should be informed of rights they are giving up by voluntarily engaging in a new system or when a mandatory system is put in place or changes.
- Decisions influenced by automated processes and data sets should be explained in plain language, including what factors were a part of the decision.
- All new innovations must be equally accessible to all who will be impacted by it.
2 - Accountability

- Automated data-driven decisions should be logged and auditable.
- All automated processes should provide a neutral human review of reported problems and challenges to the results.
- Systems utilizing automated decision making should include a clearly defined process for challenging outcomes.
- Data/algorithm-driven systems/processes should have human oversight to the extent needed to ensure it meets project objectives.
3 - Reliability

- Innovations should promote consistency across a jurisdiction.
- Innovations should include mechanisms for evaluation and improvement, testing validity, and should be required to demonstrate reliability based on feedback loops.
4 - By Design

- Algorithms must not codify human biases or structural racism and other biases.
- Representatives of all groups impacted should be involved in planning new systems.
- When considering improvements to legal processes, prioritize access to justice and due process at same level as efficiency/profits.
- People have a right to recourse and the ability to contest and correct information used to make an automated data driven decision.
So What/Now What?

- Ensure these concerns are built into tools
- Ensure varied stakeholders are at the table before tools are implemented and during review
- Ensure actual user testing, with end-users, is part of the development/review process
- Institutionalize the concept that reviews need to be done of new technologies
- Build agile structures for this review
Implementation

- Institutional buy-in - starts with individuals?
- Institutional support - who are the leaders?
- Communication - what are the best routes?
- Collaboration - what else is being tried?
- Practical Steps - what are they?
  - Change existing decision-making practices
  - Bring together committees within orgs
  - Who has authority to demand use?
  - What about systems already in place that don’t meet the guidelines?
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