Ethics? AI? And the World?
AI and Algorithm Development and New Frontiers of Professional Responsibility

BakerHostetler

James A. Sherer

Outline

- Introduction to AI and related technologies
- Types of Machine Learning Algorithms
- Examples of Datasets Used to Train AI
- Example ML Algorithm – Dimensionality Reduction Algorithm
- Discussion of Proposed Legal and/or Ethical Frameworks
- Application of AI Framework Considerations
- AI Transparency in the General Data Protection Regulation
- AI Use in U.S. Courts and Justice System
- AI Considerations in Caselaw
- Concerns associated with Dimensionality Reduction Algorithm

Objectives

- Define Machine Learning Artificial Intelligence (“AI”) algorithms for attorney understanding
- Define, discuss, and consider proposed legal and/or ethical frameworks applicable to AI
- Examine the use of AI for law practice management
- Address AI in support of the efficient, economical, and competent delivery of legal services
- Consider the implications of AI and its intersection with malpractice, disciplinary complaints, or client dissatisfaction
- Raise issues associated with the education of attorneys, judges, and law students
- Consider current uses of AI in U.S. Courts and the justice system
- Review caselaw considering AI
- Review regulations and governmental action addressing AI

Introduction to AI and Related Technologies

- Artificial Intelligence (AI) – refers to a category of scientific and statistical techniques that enable computers to mimic human behavior
- Machine Learning (ML) – an application of AI techniques that give computers the ability to learn without being explicitly programmed to do so, using human feature extraction
- Deep Learning – a subset of ML that makes the computation of multi-layer neural networks feasible

Types of Algorithms (Including ML)

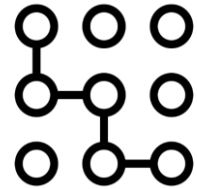
- Commonly-used Algorithms include –

- Linear Regression
- Logistic Regression
- Decision Tree
- SVM
- Naive Bayes
- kNN
- K-Means
- Random Forest
- Dimensionality Reduction Algorithms (PCA)
- Gradient Boosting algorithms
  - GBM
  - XGBoost
  - LightGBM
  - CatBoost

- Machine Learning or ML Algorithm – an application of AI techniques that gives systems the ability to learn and make predictions or decisions that
  - use training data
  - without explicit directed programming
  - identifying new patterns

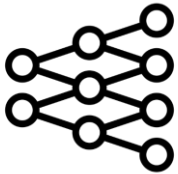
Types of Algorithms (Including ML)

Machine Learning



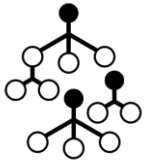
Created by Srinivas Agra
from Noun Project

Decision Tree



Created by Trevor Dsouza
from Noun Project

Random Forest



Created by sachin modgekar
from Noun Project

Linear Regression



Created by Knut M. Synstad
from Noun Project

SVM
(support vector machine)



Created by sachin modgekar
from Noun Project

K-Means



Created by Knut M. Synstad
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Example ML Algorithm – Dimensionality Reduction

The PCA algorithm

1: **Input**: a D-dimensional training set $X = \{\boldsymbol{x}_1, \boldsymbol{x}_2, \ldots, \boldsymbol{x}_N\}$ and the new (lower) dimensionality d (with $d \leq D$)

2: Compute the mean $\bar{\boldsymbol{x}} = \frac{1}{N}\sum_{i=1}^{N} \boldsymbol{x}_i$

3: Compute the covariance matrix $\text{Cov}(\boldsymbol{x}) = \frac{1}{N}\sum_{i=1}^{N} (\boldsymbol{x}_i - \bar{\boldsymbol{x}}_i)(\boldsymbol{x}_i - \bar{\boldsymbol{x}}_i)^T$

4: Find the spectral decomposition of $\text{Cov}(\boldsymbol{x})$, obtaining the eigenvectors $\boldsymbol{\xi}_1, \boldsymbol{\xi}_2, \ldots, \boldsymbol{\xi}_D$ and their corresponding eigenvalues $\lambda_1, \lambda_2, \ldots, \lambda_D$. Note that the eigenvalues are sorted, such that $\lambda_1 \geq \lambda_2 \geq \cdots \geq \lambda_D \geq 0$

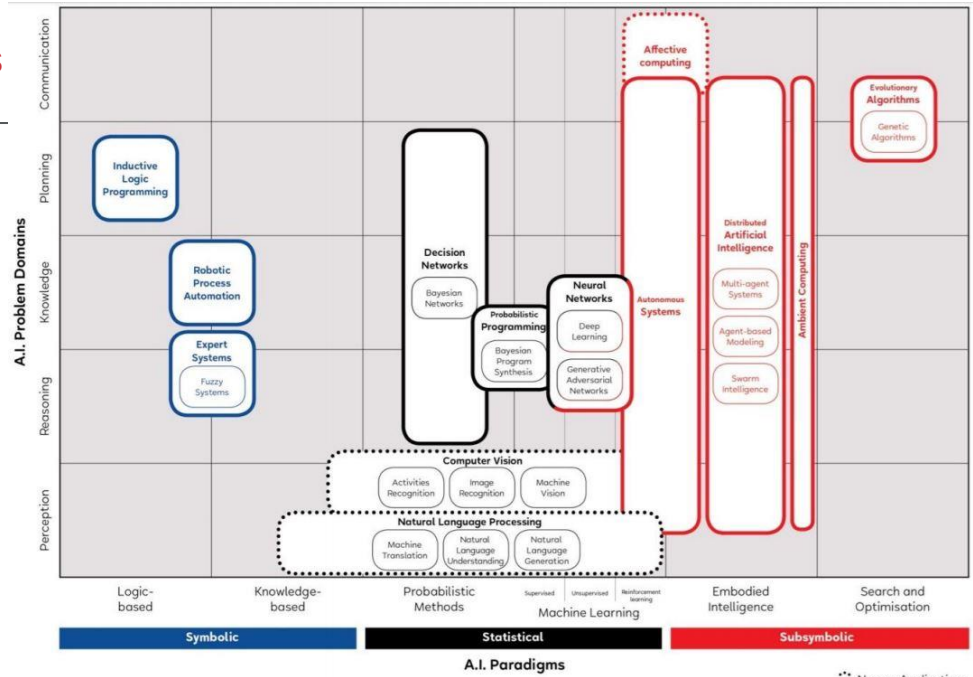
5: For any $\boldsymbol{x} \in \mathbb{R}^D$, its new lower dimensional representation is:

$$\boldsymbol{y} = \left(\boldsymbol{\xi}_1^T(\boldsymbol{x} - \bar{\boldsymbol{x}}), \boldsymbol{\xi}_2^T(\boldsymbol{x} - \bar{\boldsymbol{x}}), \ldots, \boldsymbol{\xi}_d^T(\boldsymbol{x} - \bar{\boldsymbol{x}})\right)^T \in \mathbb{R}^d, \tag{29}$$

and the original $\boldsymbol{x}$ can be approximated as

$$\boldsymbol{x} \approx \bar{\boldsymbol{x}} + (\boldsymbol{\xi}_1^T(\boldsymbol{x} - \bar{\boldsymbol{x}}))\boldsymbol{\xi}_1 + (\boldsymbol{\xi}_2^T(\boldsymbol{x} - \bar{\boldsymbol{x}}))\boldsymbol{\xi}_2 + \cdots + (\boldsymbol{\xi}_d^T(\boldsymbol{x} - \bar{\boldsymbol{x}}))\boldsymbol{\xi}_d \tag{30}$$

AI Paradigms



Examples of Datasets Used to Train AI

Data + Credit Bureau Scores

- Transaction Data
- Telecom / Utility / Rental Data
- Social Profile Data
- Social Network Analysis
- Clickstream Data
- Audio and Text Data
- Survey / Questionnaire Data

Data + Hedge Fund Decisions

- Social Media Data
- Private Company Data
- Credit Card Data
- Supply Chain Analysis
- Web Traffic
- Search Trends
- Bank Loan Credit Data
- Digital Footprint Data
- Point-of-Sale Data
- Application Installation Data
- Crowd-Sourced Data
- Sensor/IoT Data

Proposed AI Ethical Frameworks

- Future of Life Institute – Asilomar AI Principles
  January 8, 2017

  6. Safety
  7. Failure Transparency
  8. Judicial Transparency
  9. Responsibility
  11. Human Values
  12. Personal Privacy
  3. Liberty and Privacy

- Tenets of the Partnership on AI
  Sometime in 2017

  2. AI Scientists will educate and listen to the public and actively engage stakeholders to seek their feedback on the focus of the work, inform them of the work, and address their questions.

Proposed AI Ethical Frameworks

- House of Lords Select Committee on AI – AI in the UK: ready, willing and able?
  April 16, 2018
  - Artificial intelligence should be developed for the common good and benefit of humanity
  - Artificial intelligence should not be used to diminish the data rights or privacy of individuals, families or communities
  - The autonomous power to hurt, destroy or deceive human beings should never be vested in artificial intelligence
- Montreal Declaration for the Responsible Development of AI
  December 4, 2018
  1. Well-being (AI use for well-being of all sentient life)
  2. Respect for autonomy
  3. Protection of privacy and intimacy
  5. Democratic participation
  7. Diversity inclusion

Proposed AI Ethical Frameworks

- Personal Data Protection Commission of Singapore – Model Artificial Intelligence Governance Framework
  January 1, 2019

  2.5 a. Decision-making process is explainable, transparent, and fair
  3.17 Consider measures to enhance the transparency through explainability, repeatability, and traceability

- IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems
  March 25, 2019

  1. Human Rights
  3. Data Agency (individuals can access and share data)
  4. Effectiveness
  5. Transparency
  6. Accountability
  7. Awareness of Misuse

Proposed AI Ethical Frameworks

- Australia's Ethics Framework on Artificial Intelligence
  April 1, 2019
  1. Generates net-benefits
  2. Do no harm
  3. Regulatory and legal compliance
  4. Privacy protection
  5. Fairness
  6. Transparency & Explainability
  7. Contestability
  8. Accountability
- European Commission (EC) Expert Group – Ethics Guidelines for Trustworthy AI
  April 8, 2019
  1. The principle of respect for human autonomy
  2. The principle of prevention of harm
  3. The principle of fairness
  4. The principle of explicability

Proposed AI Ethical Frameworks

- OECD Recommendation of the Council on AI
  May 22, 2019

  1.1. Inclusive growth, sustainable development and well-being
  1.2. Human-centered values and fairness
  1.3. Transparency and explainability
  1.4. Robustness, security and safety
  1.5. Accountability

- G20 Ministerial Statement on Trade and Digital Economy
  June 8, 2019

  - A human-centered approach to AI
  - The protection of privacy and personal data consistent with applicable frameworks

Proposed AI Ethical Frameworks

- ITechLaw (ILTA) Principles of Responsible AI
  August 1, 2019

  1. Ethical Purpose and Societal Benefit
  2. Accountability
  3. Transparency and Explainability
  4. Fairness and Non-Discrimination
  5. Safety and Reliability
  6. Open Data and Fair Competition
  7. Privacy
  8. AI and Intellectual Property
- ABA Resolution 112 on the Usage of AI
  August 12, 2019

  1. Duty of Competence
  2. Duty to Communicate
  3. Duty of Confidentiality
  4. Duty to Supervise

Proposed AI Ethical Frameworks

- European Parliament – Ethical Framework for AI
  September 1, 2020

  1. Algorithmic transparency
  2. Unfairness, bias and discrimination
  4. Legal personhood of AI
  5. Vulnerability and cybersecurity
  7. Privacy and data protection
  8. Liability
  9. Accountability for harm

- U.S. Office of Management and Budget (“OMB”) – Final guidance on Regulation of AI
  November 17, 2020

  3. Scientific Integrity and Information Quality
  4. Flexibility
  7. Fairness and Non-Discrimination
  8. Disclosure and Transparency
  9. Safety and Security

European Parliament – Ethical Framework for AI

September 1, 2020

Table 1 – AI legal issues and examples of relevant EU legislation

Main legal issue/area	EU legislation applicable
Algorithmic transparency	Regulation 2016/679; Directive 206/680
Unfairness, bias and discrimination	Article 2, 3(3), 9 TEU; Article 10 TFEU; Article 20-26 EU Charter on Fundamental Rights; Council Directive 200/78/EC; Council Directive 2000/43/EC; Council Directive 2004/113/EC; Directive 2006/54/EC, Council Directive 79/7/EEC, Directive 2010/41/EU, Council Directive 2010/18/EU, Regulation (EU) 2016/679, Directive (EU) 2016/680, Directive (EU) 2016/681.
Intellectual property issues	Article 118 TFEU, Article 17 (2) EU Charter on Fundamental Rights; Directive 2001/29/EC; Directive 2006/115/EC; Directive 2001/84/EC; Directive 2009/24/EC; Directive 2004/48/EC; Directive 96/9/EC; Directive 2012/28/EU; Directive 98/71/EC; Regulation (EU) No 1257/2012; Regulation (EU) 2017/1001; Directive (EU) 2016/943;
Legal personhood of AI	Not covered.
Vulnerability and cybersecurity	Directive (EU) 2016/1148; Regulation (EU) No 910/2014; Directive 2013/40/EU; Regulation (EU) No 526/2013; Directive 2002/58/EC
Impact of AI on workers	Article 3(1)(3) TEU; Article 9, 107(3)(a), Articles 145-166 TFEU; Articles 14-15, 27-32 EU Charter of Fundamental Rights; Regulation (EU) No 1304/2013
Privacy and data protection	Articles 7-8 EU Charter of Fundamental Rights; Regulation (EU) 2016/679; Directive (EU) 2016/680; Directive (EU) 2016/681; Directive 2002/58/EC
Liability	Articles 4(2)(f), 12, 114 and 169 TFEU; Articles 38, 47 EU Charter of Fundamental Rights; Council Directive 85/374/EEC
Accountability for harm	Regulation (EU) 2016/679

Source: Table 5: AI Legal issues and examples of relevant EU legislation, SIENNA project.[18]

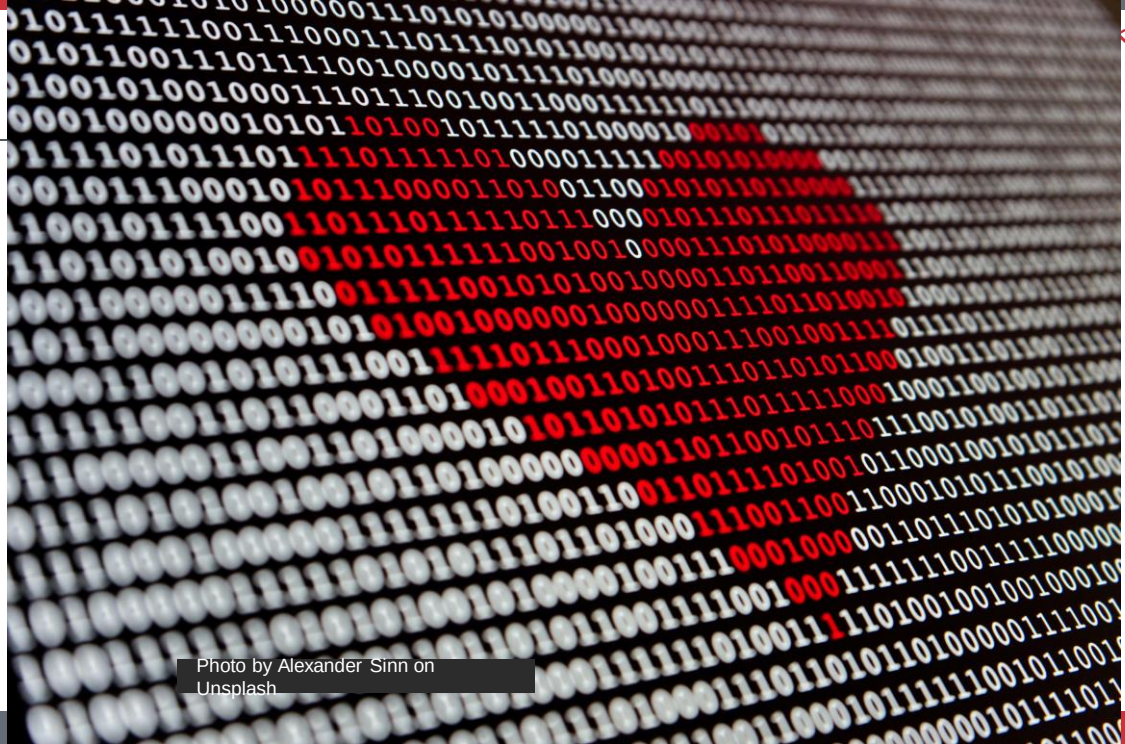


Photo by Alexander Sinn on Unsplash

Application of AI Framework Considerations

- Luciano Floridi & Josh Cowls, *A Unified Framework of Five Principles for AI in Society*, Harvard Data Science Review (2019)
  - AI academic research dates to 1950's
  - Ethical debate began in 1960's
- Compared *Asilomar AI Principles*, *Montreal Declaration*, *Ethically Aligned Design Principles*, *EC Expert Group*, *UK House of Lords AI Committee Report*, and *Tenets of Partnership on AI*
- Determined 47 Principles distilled into 5 categories:
  3.1. **Beneficence**: promoting well-being, preserving dignity, and sustaining the planet
  3.2. **Non-maleficence**: privacy, security and 'capability caution'
  3.3. **Autonomy**: the power to decide (to decide)
  3.4. **Justice**: promoting prosperity, preserving solidarity, avoiding unfairness
  3.5. **Explicability**: enabling the other principles through intelligibility and accountability

Application of AI Framework Considerations

- Also add **Transparency** (for at least 8/12) and other regulations
  - Personal Data Protection Commission of Singapore
  - EC Letter to European Parliament
  - ITechLaw Eight Principles
  - Australia's Ethics Framework
  - IEEE Ethically Aligned Design
  - EC European Group on Ethics
  - Future of Life Institute – Asilomar AI Principles
  - OECD Recommendation on Council on AI
  - The Equal Credit Opportunity Act (ECOA), as implemented by Regulation B
  - The Fair Credit Reporting Act (FCRA)

AI Transparency in the GDPR

- *EU General Data Protection Regulation*
  - July 24, 2019 EC Letter to European Parliament regarding the GDPR
    - The GDPR includes specific transparency requirements on the use of automated decision-making
    - The GDPR includes the obligation to inform about the existence of such decisions and to provide meaningful information and explain its significance and the envisaged consequences of the processing for the individual
    - The GDPR includes the right not to be subject to solely automated decision-making except in certain situations

AI **Use** in U.S. Courts and Justice System

- *State v. Loomis*, 881 N.W.2d 749, 767 (Wis. 2016)
  - Proprietary Tool COMPAS originally developed for parole board assessment of recidivism risk
  - Using COMPAS at sentencing did not violate Defendant's due process rights to be sentenced (a) individually and (b) using accurate information
- *Entrata, Inc. v. Yardi Systems, Inc.*, 2018 WL 5470454 (D. Utah Oct. 29, 2018)
  - Magistrate Judge did not compel production of TAR metrics and statistics
- August 12, 2019 *ABA Resolution 112* on the Usage of AI
  - Duties of Competence, Communication, Confidentiality, and Supervision

AI **Considerations** in Caselaw

- *Vehicle Intelligence and Safety*, 2014 WL 4652563 (N.D. Ill. Sept. 18, 2014)
  - Discussing expert systems and definition in field of Artificial Intelligence as part of case term construction
- *Hendricks*, 140 Fed. Cl. 496 (Fed. Cl. Oct. 26, 2018)
  - Plaintiff claimed that U.S. Government AI Computer "Eagles Wrath" had stolen arrestee's thoughts and suffered breach of top-secret information
- *Force*, 2019 WL 3432818 (2nd Cir. July 31, 2019)
  - Plaintiffs claimed that social media platform enabled Hamas "to disseminate its messages directly to its intended audiences," and to "carry out the essential communication components of [its] terror attacks," partly through use of Facebook's friend-suggestion algorithms

Appendix

Presenter Biography



James A. Sherer
Partner
jsherer@bakerlaw.com

James Sherer is co-chair of the Emerging Technology Team and leads BakerHostetlers' Information Governance and AI practice efforts. His work focuses on litigation; discovery management processes; enterprise risk management; records and information governance; data privacy, security and bank secrecy; artificial intelligence and algorithmic transparency; technology integration issues; and related merger and acquisition diligence.

Prior to joining BakerHostetler, James worked as in-house litigator with a Fortune 500 company and previously practiced litigation in New York. He maintains the CIPP/US, CIPP/E, CIPM, FIP, and PLS data privacy professional credentials, the CIP and IGP information governance designations, the UCLA Extension Global Cyber Institute's Cybersecurity Certification, and the CEDS and eDPC eDiscovery specialist credentials. James is also a member of The Sedona Conference® Working Groups One, Six, and Eleven; and writes and presents on e-discovery, information governance, privacy, investigation, and merger and acquisition issues.

James holds an A.B. from the University of Michigan, an M.B.A. in Finance from Central Michigan University, and a J.D. from the Columbia University School of Law.

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