

PREVENTING A REPEAT
OF THE PAST: ETHICAL
CONSIDERATIONS IN
DATA COLLECTION & USE
IN THE AGE OF
ARTIFICIAL
INTELLIGENCE &
MACHINE LEARNING
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&

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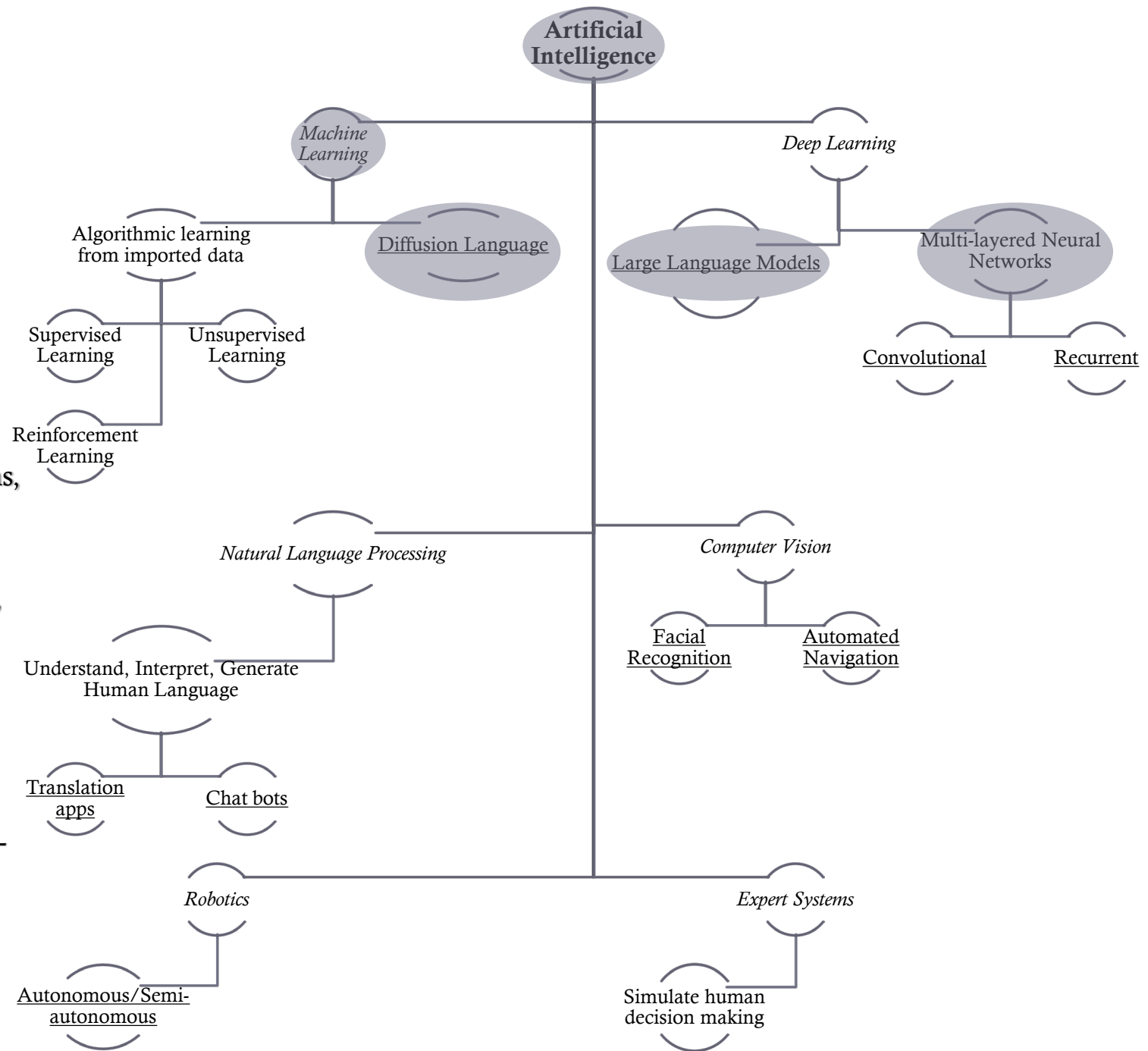
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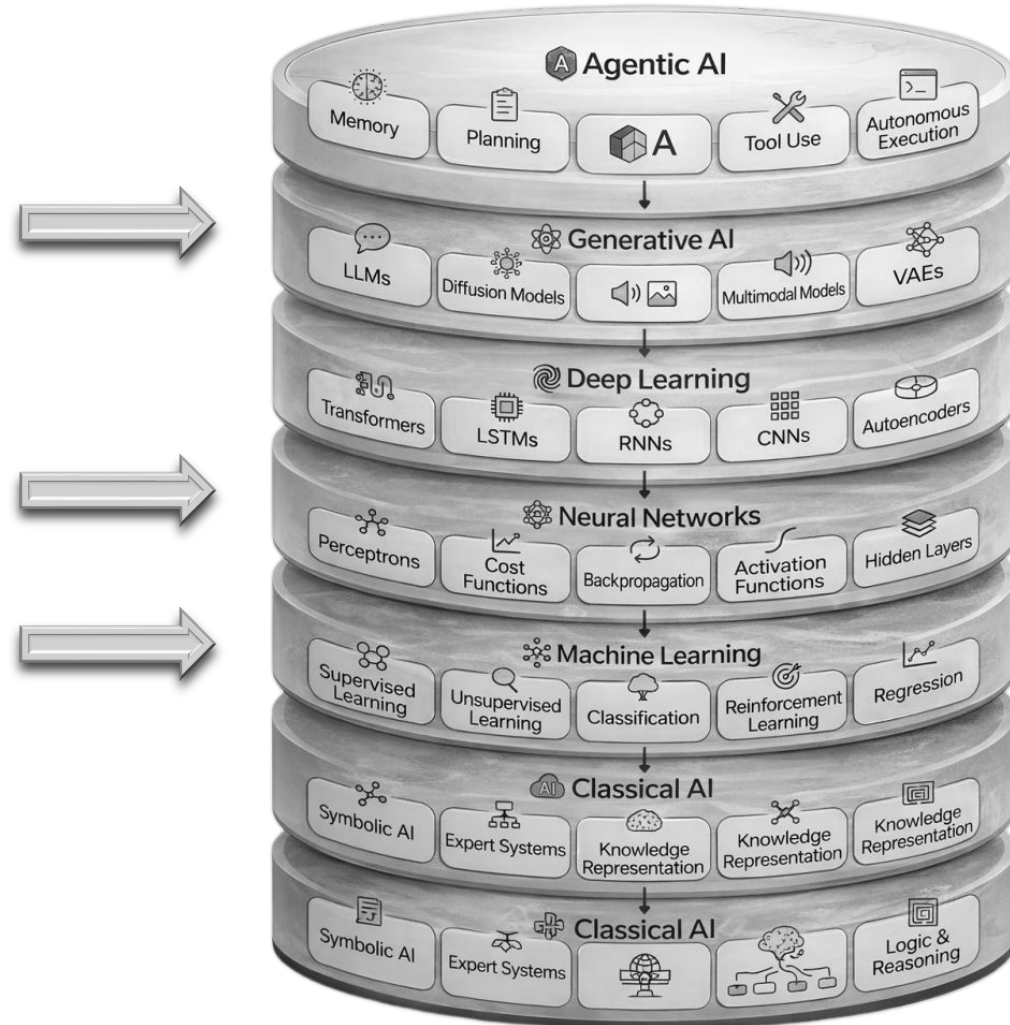
Definitions

- ◆ Artificial Intelligence
 - ◆ Computational model & structure designed to perform tasks that typically require human intelligence
 - ◆ Learning, reasoning, perception, problem-solving
 - ◆ Perform output
- ◆ Machine Learning
 - ◆ Uses algorithms & data sets to generate predictions, classifications, & trends
- ◆ Neural Networks
 - ◆ Model training based on human brain w/ layered, interconnected structure
- ◆ Diffusion Language Models
 - ◆ Generative AI model that produce results by iteratively denoising a sequence
- ◆ Large Language Models
 - ◆ Deep learning model that utilizes pre-trained datasets to analyze billions of parameters
 - ◆ Enables the model to understand, summarize, translate, and (importantly) generate human-like language



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Ethical Models

The logo for the American Association of Biological Anthropologists (AABA) consists of the letters 'AABA' in a bold, black, sans-serif font. The letters are slightly overlapping, with the 'A's on the left and the 'B's on the right. A thick black horizontal line is positioned directly beneath the letters.

American Association of
Biological Anthropologists



- ◇ American Association for Biological Anthropology
 - ◇ Ad hoc committee, developing white paper on skeletal collection curation & use
- ◇ Canadian Association for Biological Anthropologists
 - ◇ Use of human remains listed in Code of Ethics (Article A of Constitution)
 - ◇ Respects individuality of remains
- ◇ British Association of Biological Anthropology & Osteoarchaeology
 - ◇ Statement on use of human remains
 - ◇ Excavation when absolutely necessary
 - ◇ Encouraged reburial after study
- ◇ Australian Anthropological Society
 - ◇ Codified in CoE, respects individuality
- ◇ **None have positions on ethics related digital data collection & curation**

Some Issues with Past Skeletal Collections

- ◇ Curated using remains from ethically questionable assemblages
 - ◇ Limited or lacking documentation of provenance
 - ◇ Developed from indigenous, enslaved, and impoverished communities
 - ◇ Questions can be raised regarding the legality of the remains in some collections
- ◇ Lacked respect, input, or guidance from descendent communities with regards to exhumation and curation
- ◇ Often lacked informed consent from decedents or family regarding use of remains
- ◇ Lacks/ed proper documentation regarding the contents and history of the collection from accession to present
- ◇ **Most of these collections are no longer in use for research or teaching**
 - ◇ **Being returned to descendent communities**

Positives with More Modern Collections

- ◇ Documented informed consent from decedents regarding donation & use
- ◇ Documented life history of the decedent
- ◇ Documented history of the remains from accession to final disposition/present
- ◇ Multiple forms of documentation and verification to prevent ethical & legal failures
- ◇ **Allows for wide-ranging research conducted in a more ethical manner**

Issues with Digital Data Collections

- ◇ Follows legal requirements, but often are ethically malleable
- ◇ Created from legally sourced data
 - ◇ Often lack informed consent of decedents, families, & communities
- ◇ Curated from casework data
 - ◇ Can lack same permissions
- ◇ Many, less reputable, datasets lack proper documentation regarding the data within
 - ◇ Accuracy, history, permissions (outside of informed consent), provenance
- ◇ **Improved technology, but falling on old errors in curation**

Proposed Ethical Principles

Overarching Principles

- ◇ Recognize the humanity of the individual
 - ◇ Remains
 - ◇ Data
- ◇ Recognize the ownership of the individual
- ◇ Balance with the needs of society
- ◇ Balance with the needs of the nature of research
- ◇ Move from an archaeological/museum framework to healthcare/biomedical framework
- ◇ Curators and Researchers must know
 - ◇ Data
 - ◇ Models
 - ◇ Outcomes
 - ◇ Avoid over-reliance
- ◇ Situational Ethics preferred model
 - ◇ Each situation is unique
 - ◇ Ethical decisions based on unique needs & situations
 - ◇ No “one size fits all”

Informed Consent

- ◇ Primary Ethical Principle
- ◇ Decedents & families should:
 - ◇ 1°: Opt-in to data being used for forensic research
 - ◇ Know & note what research they are consenting to
 - ◇ The time frame data will be used for (limited or infinite)
 - ◇ 2°: Allowed to opt-out data being used for research
 - ◇ Curators cannot rest on “data is public record/legally accessible”
- ◇ Rectification: Continue use but with consent of families & attempt to obtain releases from those already in databases

Open Access to Data Provenance

- ◆ Provenance of all data within dataset should be available to researchers
- ◆ This includes:
 - ◆ Data origins
 - ◆ Informed consent releases
 - ◆ Data histories/modifications
 - ◆ Curators & managers of data
 - ◆ Ideally data input as well
 - ◆ Goes beyond whole datasets to individual data within the set



Open Access to Data

- ◇ All data should be open & free for use to qualified researchers
 - ◇ Data managers should maintain right to determine requirements for “qualified”
- ◇ Selling access to data limits scientific viability & reliability
 - ◇ Limits access to select researchers & institutions
- ◇ Includes algorithmic models
 - ◇ Researchers should have understanding of algorithm in use
- ◇ This principle is largely standard practice in field
 - ◇ Rising reliance & commodification of technology could raise this as an issue in future

Researchers Detailing Use of All Data

- ◆ Researchers developing or utilizing any of the AI models should detail use of all data
- ◆ Includes:
 - ◆ What specific data was included
 - ◆ How it was used
 - ◆ What data was excluded
 - ◆ Parameters for inclusion/exclusion
 - ◆ Modifications to data
 - ◆ Algorithmic developments and modifications
 - ◆ Recording & securing of consent data (if available)
- ◆ Like *Open Access to Data*, this is largely done in field today, but may change in future as technology and commodification changes

Better Record Keeping in Digital Datasets

- ◆ Database histories including:
 - ◆ Management
 - ◆ Technical participants
 - ◆ Software & hardware used
- ◆ Record of any data modifications
 - ◆ Segmented data from larger sets
- ◆ Life history of decedent & data
 - ◆ Important to return the individual to anonymized data
- ◆ Publication record from those who used datasets
 - ◆ Honors individuals within data
 - ◆ Ensures accountability & validation of datasets & researchers

Better Training & Understanding of Technology

- ◆ Researchers & Analysts need a firm understanding of AI models and technology
 - ◆ Possibilities
 - ◆ Limitations
 - ◆ Errors & Hallucinations
- ◆ Rely on technology as an assistive tool
- ◆ Rely on experience as primary assessment
- ◆ Analysts & researchers are more than prompt engineers
 - ◆ Must have a core concept of the biology and science behind the analyses *beyond* AI use
- ◆ **If Informed Consent is primary for data input, Training & Understanding must be primary for Data Output**

“

Be careful that your use of AI does not limit your true human growth. Use it in such a way that, if it disappeared tomorrow, you would still know how to think, create, and act on your own.

”

— Leo XIV, NCYC 2025

Conclusions

- ◆ AI (& family) here to stay
- ◆ Field needs to develop affirmative ethical codes & policies
 - ◆ Data Collection, Curation, & Use
 - ◆ Model Applications
 - ◆ Applied to Developers, Curators, & End-Users
- ◆ Ethical policies should recognize the Individual within the data
- ◆ Policies should balance:
 - ◆ Rights & Protections of the Individual
 - ◆ Needs of Society in Research
 - ◆ Understanding of how Research is Conducted
- ◆ Development should include input from whole field, not limited few

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In Memory of Carl E. King

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