



Advancing Research 2022

by Rosenfeld

@advancingresrch #AR2022
11 March 2022



"To amplify the beauty of humanity with design while avoiding practices that exploit its fragility."

OVETTA SAMPSON
(DESIGN ETHICS PRINCIPLE)

30+ years
WITH DATA & PEOPLE,
MACHINE LEARNING & A.I.

DESIGN [IS A VERB]

- "... IS THE CONSCIOUS AND INTUITIVE EFFORT TO IMPOSE MEANINGFUL ORDER TO CHAOS..."
- "... IS NOT RESEARCH. RESEARCH IS DESIGN." They are two sides of the same coin... I believe RESEARCH is an active form of DESIGN

MACHINE LEARNING (ML)

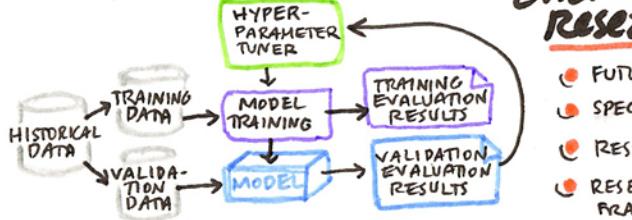
AUTOMATED LEARNING category of AI
Computers "learn" to achieve desired outcomes by applying problem-solving rules "automatically"

REPLICATING THE HUMAN BRAIN ML algorithms, called neural networks, can execute outcomes

PASSIVE OBSERVATIONS ML is limited in that it focuses on problem-solving based upon this

Algorithms are the lifeblood of AI systems
UNAMBIGUOUS RULES THAT SOLVE PROBLEMS

DATA SCIENCE MODEL Development Process



WORKS SIMILARLY

Challenges Using Current Research Methods for AI Design

- FUTURE-ORIENTED INSTEAD OF PRESENT
- SPECULATIVE RESEARCH DIFFICULT w/ CURRENT METHODS
- RESEARCH MUST BE DYNAMIC; AI TECH ISN'T STATIC
- RESEARCH MUST GO BEYOND SINGLE-AGENCY FRAMEWORK and CONSIDER ECOSYSTEM OF MULTI-MODAL AI ENVIRONMENT

Theme 3: Advancing Our Practice curated by Dr. Jamika D. Burge

Research In an Automated Future

The Birth of AI/ML Design Research

OVETTA SAMPSON

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"Increasingly, our role as designers will be to determine what NOT to design in a quest to preserve human culture, values, and rituals in our future world."

OVETTA SAMPSON
"A Lovely Day: An Optimistic Vision for an Automated Future" | INTERACTIONS MAGAZINE

REAL-WORLD "ML MODEL" WITH SILVER THE DOG

- SUPERVISED LEARNING: positive reinforcement for new behaviors ("outcomes")
- UNSUPERVISED LEARNING: letting the dog resume pattern above
- REINFORCEMENT: leave treats in open crate to encourage (RESPOND TO THE) "stay" (RIGHT CUES)

ML IN PRACTICE

- Anomaly detection
- Classification models
- Recommendation models

LIMITATIONS of ML & AI

- NO DATA, NO DICE
 - GARBAGE IN, GARBAGE OUT
 - NO RULES, NO ACTION (not yet)
 - NUANCE IS ITS ENEMY
 - MEANT TO REPLICATE HUMAN RATIONALITY but humans are KEENLY IRRATIONAL
- Natural Language Processing (NLP) is the voice/speech example (Siri, Alexa, etc.)
SEE, HEAR, TASTE, SMELL when combined with cameras + sensors etc
AR/VR AI products can simulate humans

KEY AI TERMS ALGORITHMS

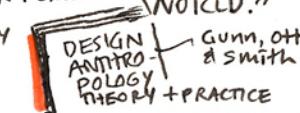
- MACHINE LEARNING • DEEP LEARNING • NARROW AI • GENERATIVE AI • AI SINGULARITY

There is even an ARTIFICIAL NOSE experiment!

DESIGNING for AI is DIFFERENT [see slides/video]

Beyond Usability & desirability beyond desires & behavior

I USE THE FRAMEWORK of DESIGN ANTHROPOLOGY for an AUTOMATED WORLD."



HYBRID MODE of INVESTIGATION HELPS US OVERCOME DIFFICULTIES IN STUDYING Speculative objects

Also
"Designing Ethical AI"
TEACHER at DePaul University's School of Design (Chicago)