

Distance

A New Class of Methods

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AI Assessment

“[Various aspects of] artificial [intelligence] ... have skewed off ... to find specialized niches ...

“Text recognition and document scanning are ... beginning to provide a significant new input medium for computer systems.

“... the original vision of creating a true, humanlike intelligence that started so much of this research remains as unrealized as ever.”

Hogan, *Mind Matters*, p. 199

Distance Assessment

- Overall AI assessment
- FH domain
 - Match / Merge Consolidation
- Non-FH domains
- Contrast FH and classical AI applications
- Contrast machine and human methods
- Corridor methods

Distance Example 1

KELLOGG

Moses

b

b Massachusetts

m Lydia KELLOGG

m about 1748

m

d

d

KELLOGG

Moses

b

b

m Mary SHELDON

m 30 Apr 1740

m

d

d Massachusetts

Distance Example 2

FISHER

William

b

b Devon, England

m Sarah Warren

m 1 Apr 1849

m

d

d Nephi, Utah

FISHER

William

b

b Devon, England

m Sarah Gadd

m 11 Jan 1869

m

d

d probably Idaho

Family History versus Classical AI

- Recorded with intent
- No resampling possible
- Missing / occulted data
- Definitive structure

– complexity in resolving issues

- Back story

... back story

... back story

Three Images



Three Images



Three Images



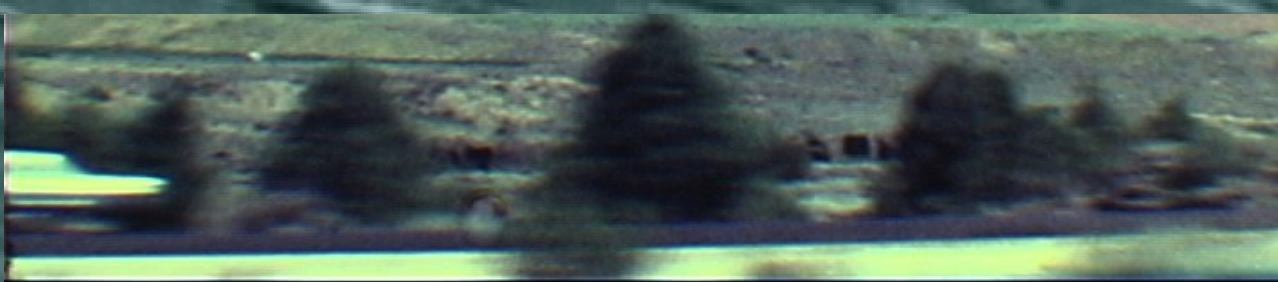
Three Top Strips



Three Middle Strips



Three Bottom Strips



Short Image Sequence



Long Sequence

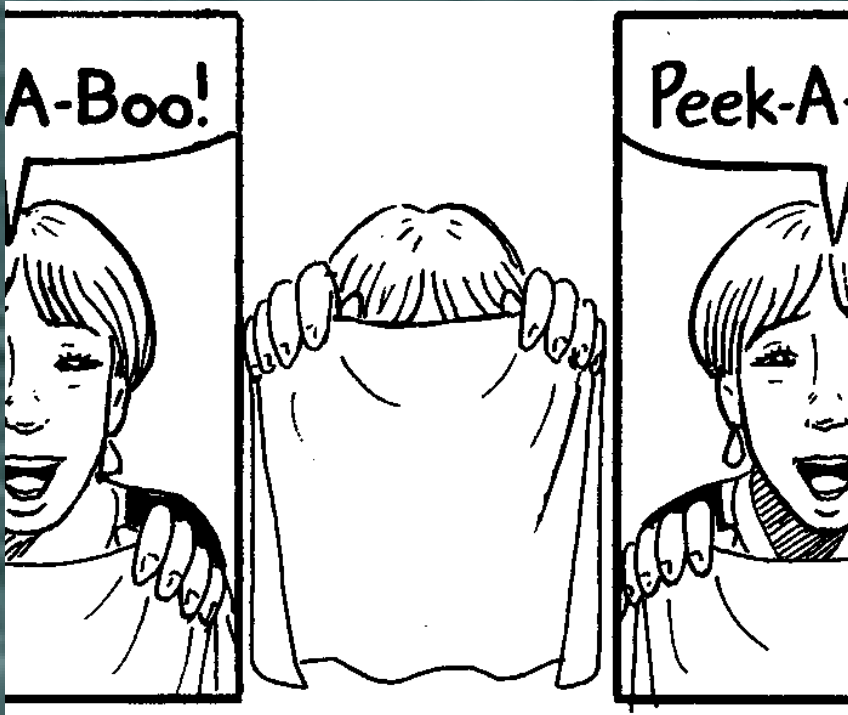


Missing Elements: Occultation

- Human visual field
 - unifying fragments
- McCloud
 - closure
- Restak
 - fill-in
- Hogan
 - emergent properties



Missing Elements: Closure



- Human visual field
 - unifying fragments
- McCloud
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- Restak
 - fill-in
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 - emergent properties

Compare: machine, human

Classical AI

- High Leverage
- Strong Methods
- Very Precise Criteria
- Exacting Evaluation
- Reductivistic
 - simplicity
 - Occam
- Uncertainty
 - handled as defect

Classical Human

- Low Leverage
- “Weak” Methods
- Imprecise Criteria
- Arbitrary Evaluation
- Non-reductivistic
 - complexity
 - Rube Goldberg
- Uncertainty
 - Fill in missing data
 - *Closure*

Contrast: machine, human

Classical AI

- Syntactic methods in pattern recognition
- Statistic methods in pattern recognition
- Self-Organizing systems
- Image processing
- Feature extraction

- Symbol manipulation / LISP / List Processing
- Pattern matching
- Games / Decision Trees / Searches
 - pruning
 - combinatorix
- Chess / Music / Mathematics
- Data mining
- Dualism / Pumps
- Natural languages / Translation
 - Eliza
- Semantic nets / associative nets
- Neural nets
- Self-modifying code / Genetic programming
- Models / Metaphors / Analogies / Parallels
- Distances / Models / Methods / Contexts
- Probabilities
 - Bayes theorem

Classical Human

- Limited by time, money, energy, patience
- Persistence
- Comparison
- Parallels, metaphors, models, analogies
- Negotiation
 - concession ladder
- Tool collectors
- Common sense
- Expectation
 - foresight
- Belief

New Taxonomy within AI

- Handling of Missing / Occulted data
- Concentration / Distribution of Features
- Graphical and symbolic processing
 - Blurring the borderline
- Parallelism / Metaphors
- Limited Reductivism
- Holographic

leads to

- Corridor Methods

Conclusions

- Artificial Intelligence
 - niche applications
 - no generalized solutions
- Unique human “fill-in” ability
 - deal with hidden / occulted data
 - reach closure
- Corridor Methods