



# Practical Applications of AI


Mike Oakes  
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## Speakers



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**Sean Lazarian**  
CFO  
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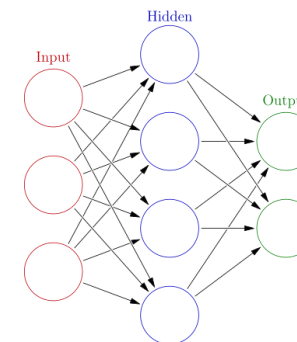
## The Basics

- Introduction to AI
- Neural Network / Large Language Model
- Brief Example of a Simple Use Case



## (Artificial) Neural Network

- Modeled after the human brain
- Nodes connected with lines (neurons and synapses in the brain)
- Input and out, with nodes in between. Movement from one node to another is done via math / numbers / weights

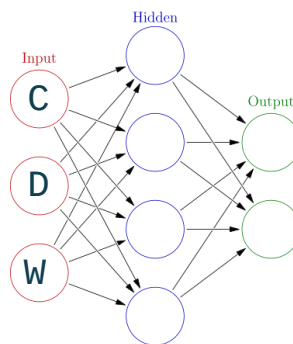


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## Example: Will I Eat Cookies Today?

- Inputs (node):
  - Cost
  - Desire
  - Current Waist Size

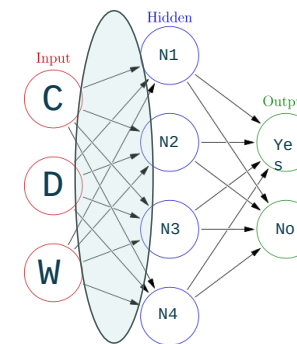


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## Example: Will I Eat Cookies Today?

- Inputs (node):
  - Cost (9)
  - Desire (7)
  - Current Waist Size (1)
- Weights (Connections)
  - 0.1, 0.2, 0.5, 0.9?

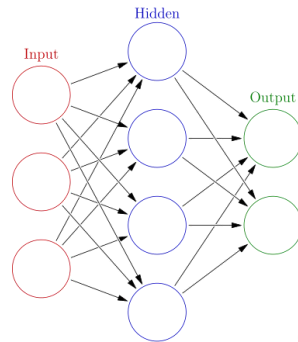


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## Training a Neural Network

- Adjusting weights to get the desired output.
- Ultimately\* a human has to train a model by decided what a “correct” output is.
- The more feedback the system gets, the more accurate it is in the future.



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## Snowflakes and Finger Prints

- Outputs are not always a simple true/false. The difficult problems are where an output is a preference.
- In this case, the system has to be customized to one's tastes.



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## Large Language Model (LLM)

- A Neural Network that has been trained on a language with vast amounts of data
- Needs to both understand the language itself and also have knowledge of topics
- The massive amounts of data that it needs to understand and process requires a beast of a computer. This is why they are typically in the cloud.

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## Starting Out

- Pick an AI (we'll use ChatGPT)
- Ask it a simple question:

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What wire gauge is needed for a 40 amp circuit?

...

For a 40-amp circuit, the appropriate wire gauge depends on the type of wire used and the length of the run. Here's a general guideline:

Copper Wire: Use 8 AWG (American Wire Gauge) copper wire.

Aluminum Wire: Use 6 AWG aluminum wire

Give me an excel formula that multiplies column B by column C but only if column A is not blank.

...

You can use the following Excel formula to multiply values in Column B by Column C only if Column A is not blank:

=IF(A1<>"", B1\*C1, "")

## Getting Stronger

- More advanced AI questions are aided by “training” the AI to be what you want it to be.

## Getting Stronger – Step 1

- Choose the best training montage music, which is clearly the music from the movie...

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Which movie had the best training montage music?

...

The movie with the best training montage music is often considered to be **Rocky IV**. This film features two iconic training montages with powerful music tracks: "Training Montage" by Vince DiCola and "Hearts on Fire" by John Cafferty.

## Getting Stronger – Step 2

- Describe who/what the AI should be and it's purpose.
  - You are going to help me create a 10 minute presentation on AI for an electrical contractors association convention.
  - You are a lover of 80's action movies.
  - You will be on a kiosk at a solar convention and will help people find which booth they want to visit along with directions to find said booth.
  - You are Ivan Drago from Rocky IV and we are going to verbally spar using insults. Be sure to use "I will break you" at least once every 5 sentences.

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## Initial Prompt / Questions

- The initial prompt / initial question is the first skill to learn. It sets the stage for everything that comes after it. Like we all had to learn how to search the Internet (aka, developing Google skills), we all will need to learn how to use AI. This will change depending on the AI.

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## Last Tips

- It's a computer, not a person.
  - Add in oddly specific but important details.
  - Don't worry about long sentences.
  - Expect it to be wrong. Sometimes epically wrong.
  - When it's wrong, tell it so. You don't need to be compassionate.
  - It will handle data better than opinion.
  - It's opinions will likely line up with a typically computer programmer in Silicon Valley.

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Founder/CEO  
First Choice Electrical  
Solutions

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## Introduction to Human Analytics

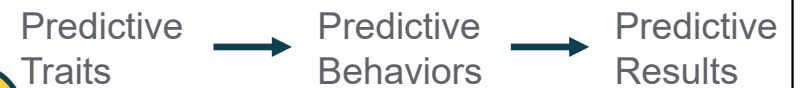
### Goal of Human Analytics:

Use objective data, rather than trusting our “gut” to take the “guesswork” out of the people part of the organizational puzzle.

“The idea that I should trust my eyes more than the stats, I don’t buy that because I’ve seen magicians pull rabbits out of hats and I know that the rabbit’s not in there.”

- Billy Beane

Executive Vice President of Baseball Operations, Oakland Athletics

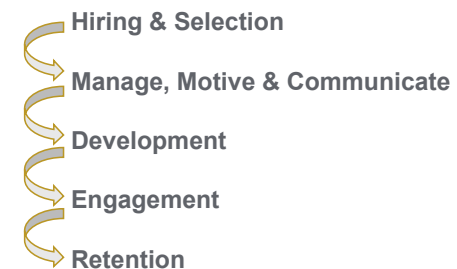


- Designing better teams (higher-performing)
- Winning the "War on Talent" (use predictive analytics to get more, and higher-quality, candidates)
- Hiring the "right person" the first time (90%+ probability)
- Getting more out of your Managers (by teaching them to be “people smart”)

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## When to use Human Analytics

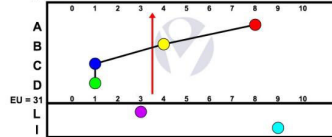


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## What is Measured: Traits & Behaviors

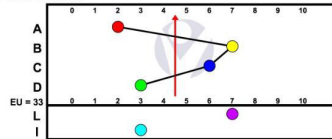
Survey Traits



### Survey Traits

- ✓ Intrinsic
- ✓ "Who"
- ✓ Traits stay constant
- ✓ Hard wired by 12
- ✓ "Personality Thumb Print"
- ✓ Environmental and hereditary (Nature vs Nurture)

Job Behaviors



### Job Behaviors

- ✓ Learned, can be modified
- ✓ Based on observations & perceptions
- ✓ Fluid and changing at will
- ✓ A response to external demands & inputs
- ✓ "Snapshot" in time
- ✓ Valid for 90-120 days

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## Four Primary Traits

### Lowest Trait

#### A - Autonomy

Tactical, Team Player, Task-Oriented, Cautious/Rules

#### B - Social Ability

Reserved/Think, Factual, Independent, Internal

#### C - Pace (Patience)

Impatient, Fast-Paced, Multi-Task, Disruptive

#### D - Conformity

Creative/Flexible, Results, Less Structured, Present

### Highest Trait

#### A - Autonomy (Gas Pedal)

Strategic, Independent, Project-Oriented, Risk

#### B - Social Ability (People

"Glue")  
Outgoing/Talk, Story-Telling, with People, External

#### C - Pace (Patience)

Patient, Methodical Pace, Single-Focus, Routine

#### D - Conformity (Brake Pedal)

Detailed/Specifics, Accurate, Black/White, Historical

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## Attracting Talent

- ❖ The number of **Millennials** in workforce is 56 million (**the largest working generation**)
- ❖ 67% would leave their job for **better retirement**
- ❖ 88% want to work for a **stable organization** (**fear uncertainty**)
- ❖ 60% consider **career advancement planning** an **essential** perk
- ❖ 57% would **leave a company that doesn't value them**
- ❖ 38% would move to another country for **better parental leave**

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## Applications of Human Analytics

Benchmarking Talent  
Recruitment  
Candidate Filtering  
Behavioral-Based Selection  
Reducing Interview Time  
Behavioral-Based Interviewing

Team Strategy & Design  
Executive Team Building  
Change Management  
Conflict Resolution  
Key Employee Retention  
Reducing Turnover

Strategic Planning  
Increasing Sales  
Customer Retention  
Motivation and Coaching  
Leadership Training

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**Joe Barnard**  
Senior VP-ArchKey Solutions,  
COO-ArchKey/Sachs  
ArchKey Solutions

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## What is AI being used for in our industry?

- Generative design
- Workflow, Estimating, Procurement, Project Management
- Document Analysis
- Data gathering

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## Advantages of AI?

- Accuracy
- Machine learning
- Decision making
- Unbiased decisions
- Available 24/7/365
- Automates daily tasks
- Increased efficiency and productivity
- Cost effective
- Is personalized

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## Example of AI Used Practically, Document Analysis, Contracts

- Searches, organizes and highlights specific topics
  - ✓ AI native...does NOT work without AI
  - ✓ Proprietary language models
  - ✓ Patterns, semantics using data from 1000's of contracts
  - ✓ Very helpful during pandemic (material escalation clauses)
  - ✓ Organizes by text classification (buckets in Table of Contents)
  - ✓ Generative AI...fills in the blanks, semantic search
  - ✓ Text to answers, text to action
  - ✓ Document agnostic

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## Example of AI Used Practically, Document Analysis, Contracts cont.

- Tracks contract review progress
- Educates on the meaning of contract terms
- Provides alternate language
- Has a "chat" feature that allows you to ask specific questions
- Captures changes and comments
- Will help generate correspondence

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### DOCUMENT CRUNCH

Dashboard 302572.200\_DeanSnyder\_KraftNiagara\_BJ.pdf ArchKey

11 / 28

Chat with your contract

what are liquidated damages?

Liquidated damages are a predetermined amount of money that must be paid as compensation for failure to perform under a contract. In the context of this construction contract, liquidated damages are addressed in Section 9.2.5 on Page 14. It states that liquidated damages will be assessed against the Subcontractor for each day after the Substantial Completion Date that the Subcontractor's work is not substantially completed. The amount is either provided in the Contract Documents between Owner and Contractor or is \$N/A per day whichever is greater. The parties agree that these liquidated damages are not a penalty but are a reasonable estimate of the damages suffered by the Contractor due to the Subcontractor's failure to meet the Substantial Completion Date.

what's your question?

Chat can make mistakes. Refer to our disclaimer

ArchKey Repeat Customer Checklist

Assess your contract for common and high-risk issues

30/59

Contract Manager Review 7/8

NOTES: For Contract Manager

AGREEMENT: Complete Agreement

AGREEMENT: Flow Down Language Required

CRUNCH SHARED: Finance

CRUNCH SHARED: Safety

## A look at the Software, Checklist

- A checklist
- Tabulation of review
- Workflow activities

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## Table of Contents

- Shows items that have been found in the "crunch" with page numbers
- When you click on each blue box it takes you to and highlights the respective contract section
- Tremendous document reference tool
- Goes above and beyond traditional "search" and "find" functions

### Table of Contents

Navigate the contract and explore all the provisions

Search for provisions...

#### A. Business Terms

Allowances

14

Attorneys' Fees & Costs - Prevailing Party

Not found

Audit Rights - Project Financials

Not found

Changes in the Work

7 8

Choice of Law/Venue

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## Downloadable .pdf with Hyperlinks

TABLE OF CONTENTS	
A. Business Terms	
Contract Price, Contract Sum, GMP	Not found
Duration for Performance/Contract Time	Not found
Attorney's Fees & Costs - Prevailing Party	Not found
Choice of Law/Venue	Not found
Dispute Resolution Mechanism	Not found
Jury Trial Waiver	Not found
Confidentiality Requirements	Not found
Parties	Not found
Contingency	Not found
Savings	Not found
Audit Rights - Project Financials	Not found
<b>Liens, Rights, Indemnity and Limitations</b>	<b>Not found</b>
Warranty Obligations	Not found
Notices - Where and How to send	Not found
Order of Precedence	Not found
Notice of Claims - when must they be sent	Not found
Designated Representatives	Not found
Mandatory Subcontract Flowdowns	Not found
Allowances	Not found
Performance/Payment Bonds	Not found
Owner Directed Acceleration	Not found
Initial/Technical Scheduling Requirements	Not found
Changes in the Work	Not found
Wage Requirements (Prevailing, Davis-Bacon etc.)	Not found
MVBE Requirements	Not found

**§ 4.6 Warranty**  
**§ 4.6.1** The Subcontractor warrants to the Owner, Architect, and Contractor that materials and equipment furnished under this Subcontract will be of the highest quality and new unless the Subcontract Documents require or permit otherwise. The Subcontractor further warrants that the Work will conform to the requirements of the Subcontract Documents and will be free from defects, except for those inherent in the quality of the Work. The Subcontract Documents require or permit: Work, materials, or equipment not conforming to these requirements may be considered defective. Subcontractor shall also provide Owner and Contractor with warranty (warranty) as provided in the Contract Documents between Owner and Contractor. The Subcontractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Subcontractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect or Contractor, the Subcontractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. In respect to any claims, demands, actions, losses, judgments, or causes of actions obtained, raised or brought in respect to any warranty, Subcontractor shall hold harmless, pay, defend and indemnify Contractor against them, including but not limited to all costs. Costs shall include but not be limited to attorney fees, expert fees, and other expenses.

**§ 4.6.2** All material, equipment, or other special warranties required by the Subcontract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with the Subcontract Documents.

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## Contract Language Suggestions

- Provides specific contract references
- Provides suggested language on a particular contract subject

Liquidated Damages

In contract references

DC Page 14: § 9.2.4 If the Subcontractor fails to achieve su...

Insights

Sample Language

Liquidated Damages SUBSTANTIAL COMPLETION

Liquidated damages based on Substantial Completion date ?shall/ ?shall not apply. Owner will suffer damages which are difficult to determine and accurately specify if the Substantial Completion date, which may be amended by Change Order, is not attained. Constructor shall pay Owner [ ] dollars (\$[ ]) as liquidated damages and not as a penalty for each Day that Substantial Completion extends beyond the Substantial Completion date. These liquidated damages are in lieu of all liability for all extra costs, losses, expenses, claims, penalties, and any other damages of any nature incurred by Owner resulting from not attaining the Substantial Completion date. FINAL COMPLETION Liquidated damages based on the Final Completion date ? shall/ ? shall not apply. Owner will suffer damages which are difficult to determine and accurately specify if the Final Completion date,

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## Insights and Education

- Provides specific contract references
- Provides insights to what this provision of the contract means

Changes in the Work

In contract references

DC Page 7: ARTICLE 5 CHANGES IN THE WORK § 5.1 The Own...

DC Page 8: § 5.2 The Subcontractor may be ordered in wrt...

Insights

Sample Language

This Crunch Field will identify those provisions relating to procedures for modifications and/or changes in the work whether mutually agreed to, or directed by a party. Also including is the methodology for adjusting the contract price and/or schedule for change events. Change Management is critically important to the success of a project. The basic underlying delivery obligations of contractors relate to providing the Project on time and on budget. Construction is inherently risky and involves unknowns: it is inevitable that circumstances will occur which cause the costs or time for performance to increase. The risk is around who will bear costs of those changes, and whether the contract is equitable with regard to that risk. Often times, disagreements will arise between parties relating to whether an event rises to the level to justify

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## Notes and Markups

- Documents notes, markups, who made them and when
- Changes are made in the excerpt

the extent caused by the Subcontractor or any person or entity for whose acts the Subcontractor may be liable.

(Paragraphs deleted)

**§ 3.5 Contractor's Remedies**

If the Subcontractor defaults or neglects to carry out the Work in accordance with this Agreement and fails within 24 hours after receipt of written notice from the Contractor to fully remedy and cure default or neglect, the Contractor may, by appropriate Modification, and without prejudice to any other remedy the Contractor may have under the Subcontract Document or law, make good such deficiencies and may deduct the reasonable cost thereof from the payments then or thereafter due the Subcontractor. Contractor is also entitled to recover from Subcontractor all costs incurred by Contractor relating to or arising out of Subcontractor's default or neglect to carry out the Work. Costs shall include but not be limited to attorney fees, expert fees, and other expenses.

Notes & Markups

All notes and markups. Find items you need to focus on and collaborate with your team.

Strikeout

Kris Musson | July 25, 2024 04:55 PM

Page 4

"three (3) business days"

Kris Musson | July 25, 2024 04:57 PM

Arrow

Kris Musson | July 25, 2024 04:56 PM

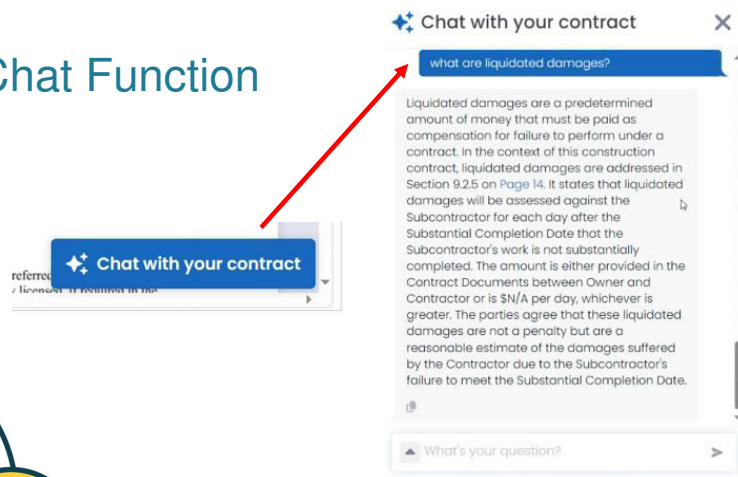
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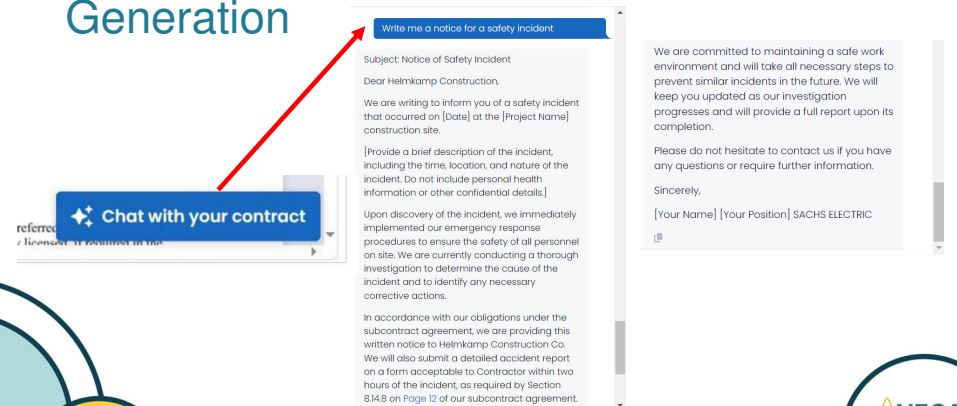
## Chat Function



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## Correspondence Generation



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## What's next for this type software

- Plans and specifications
- Documents incorporated by reference, not just the contract
- Litigation discovery platform?
- Comparing company contract requirements against details of a contract
- Looking at ALL active contracts in an organization (pandemic...force majeure, escalation)
- Automating the review checklist

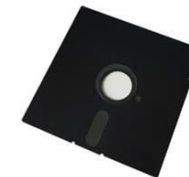
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## Perspective...my first computer, 1983



- Apple IIe Professional System, 64kb RAM
- 5 1/4" floppy disk, 360kb



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# Questions?

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## For Questions On How Human Analytics Changed Everything We Knew About Hiring, Communicating and Culture

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## Please complete the Online Evaluation



<https://www.surveymonkey.com/r/NECA2024SanDiegoConvention>

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