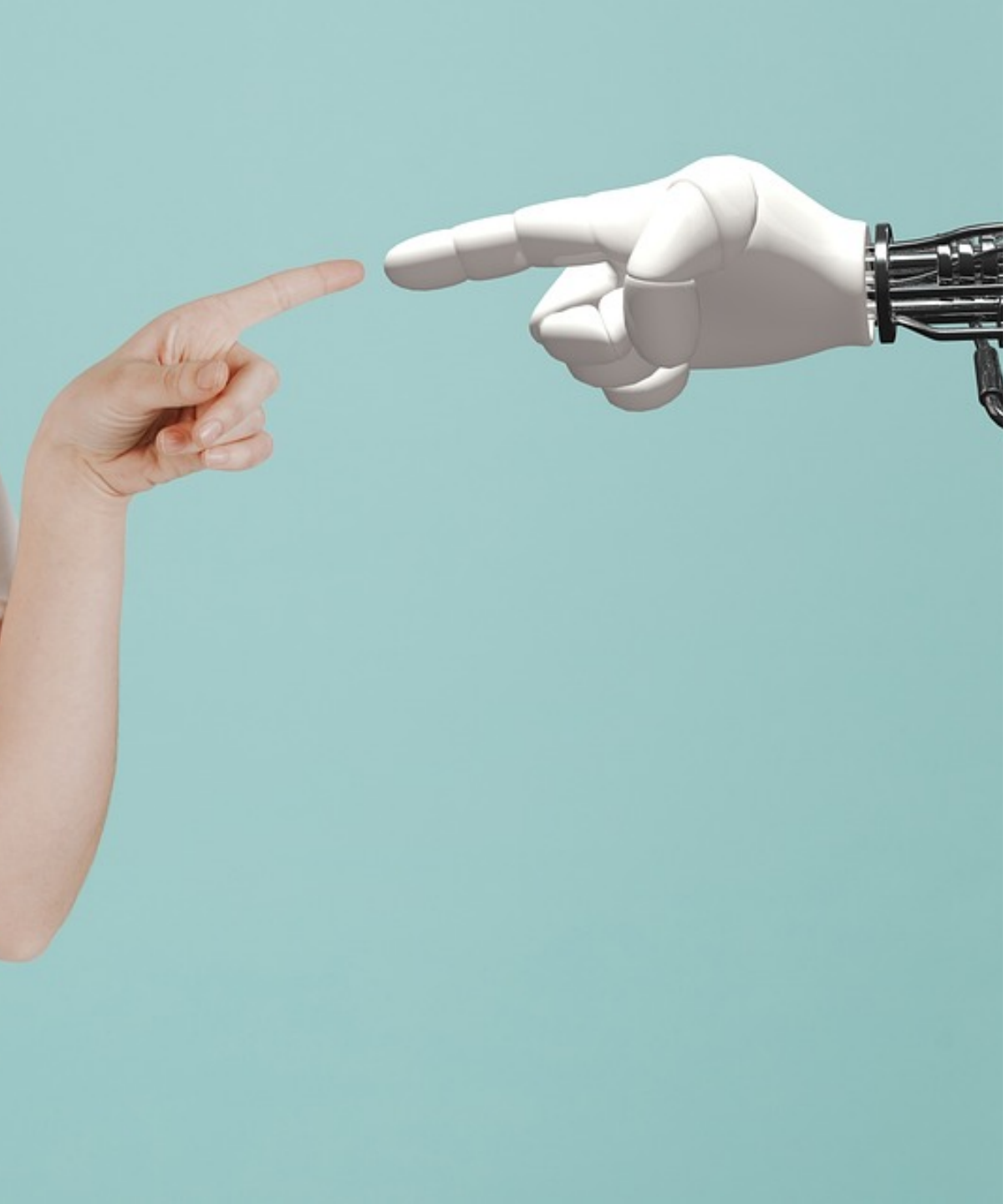


The Centaur Model of Artificial Intelligence

A Cooperative Model for Artificial Intelligence and Human Intelligence

CASE STUDY

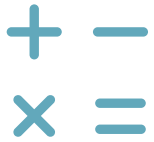
December 2023

Centaur Model Overview

A New Model of Human Machine Cooperation

Combines human and AI

Leverages strengths of both human intelligence and machine intelligence



AI handles computation

AI systems excel at crunching large datasets, executing repetitive tasks, and delivering accurate analyses

Humans provide oversight

Humans set goals, provide common sense reasoning, make judgments, and steer the direction

The centaur model aims to create AI systems that complement and augment human capabilities for the best possible performance. This is the most ethical way to accomplish AI Marvels.

History

1997 - Deep Blue Defeats Chess Master Kasparov

A Human Chess Expert is defeated by computer developed by IBM.

1998 - Centaur Chess

Kasparov partners with a computer to challenge another super computer to play chess.

2011 - IBM Watson on Jeopardy

Watson defeats two human champions of Jeopardy.

2013 - The Centaur Model of Artificial Intelligence.

Speaks, Bouchard, and Nemat-Nasser propose and develop the Centaur Model of AI.

2014 - The First Centaur AI is Deployed.

To audit hospital bills for Kaiser Permanence.

“"The power of human and machine far exceeds the power of human or machine alone."”

GARRY KASPAROV

The Team Behind Centaur Artificial Intelligence

Syrus Nemat-Nasser, PhD

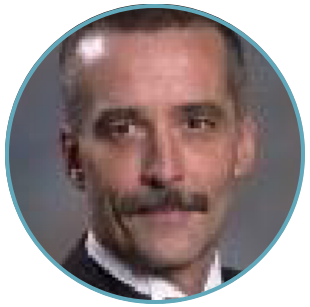
Director of Data Science

Stanford University

Benjamin Speaks

Director of Product

Virginia Tech

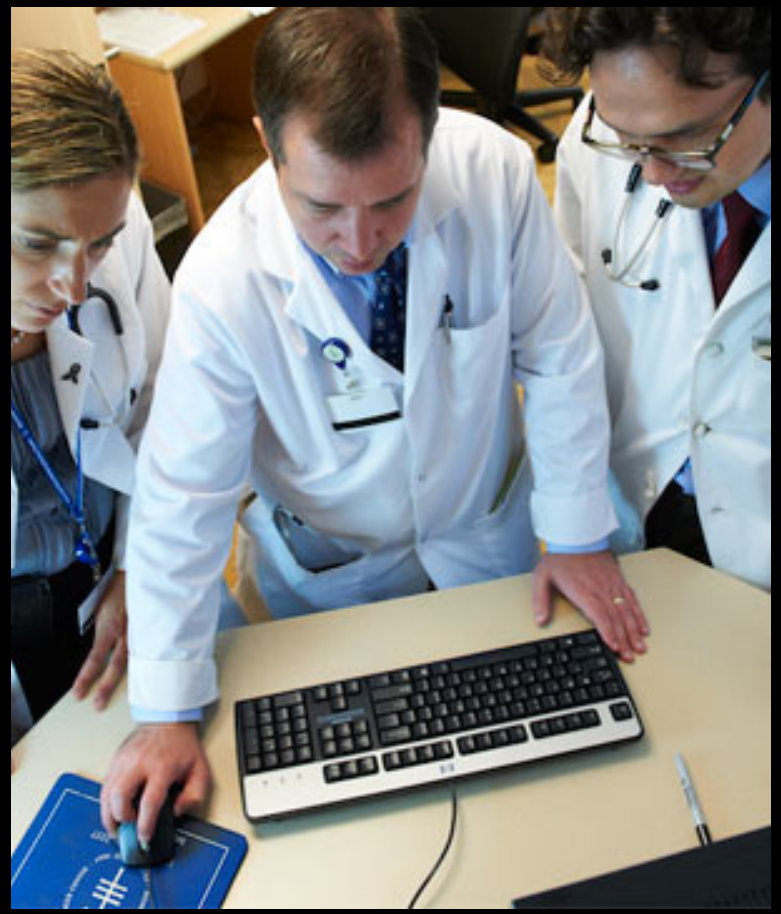


Pete Bouchard

Director of Engineering

Distinguished Engineer of IBM Watson

Practical Use Cases Solved with Centaur AI



Auditing Hospital Bills for Insurance Companies

Analyzing Legal Documentation for Law Firms

Protecting the Power Infrastructure from Enemies of The State

AI+UX Discovery Processes

Clearly identify the problem to be solved and desired outcomes using the centaur model.

Determine which tasks are best suited for the AI component and which require human judgment, expertise or

[redacted]

[redacted]

Create an intuitive interface allowing seamless collaboration between the human and AI.

Connect the AI

[redacted]

Iteratively test the centaur system and refine it based on feedback.

[redacted]

AI/ML + Automation used in the First Centaur

Artificial Neural Networks (ANNs)

[redacted]

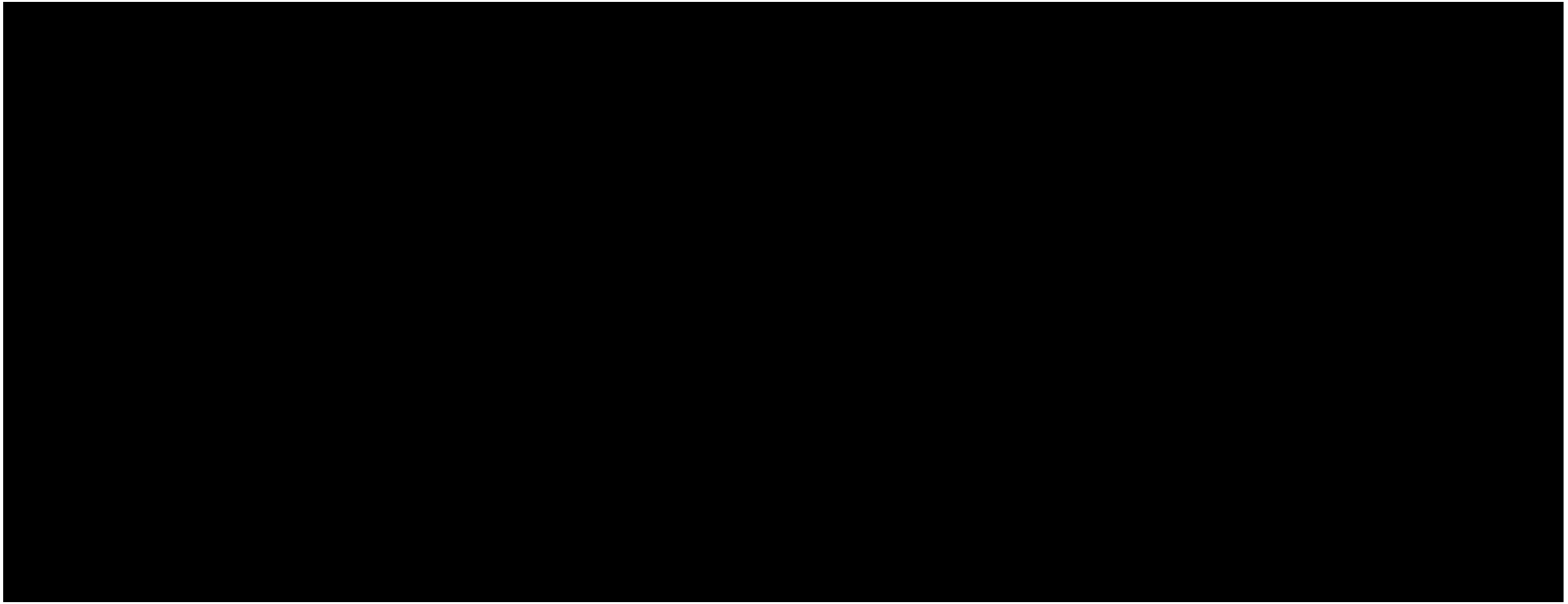
Predictive Artificial Intelligence

Robotic Process Automation (RPA)

Natural Language Processing (NLP)

[redacted]

Centaur Architectural Schematic



Comparisons

Centaur Model of AI	Other AI Approaches
Combines strengths of human and AI	Typically focus on AI only
Seeks to maximize strengths of both	Aim to minimize human involvement
[redacted]	
Meaning full work for Humans	Isn't a consideration
[redacted]	

[redacted]

Challenges and Obstacles

1. ## Line Parsing
   - **What tokens (words/phrase/quantities) are in this line?**
   - **Need to convert to canonical form.**

2. ## Problems with the Data
   - **Data comes in different electronic formats and even on paper printouts.**
   - **Small Data and Limited Data Sets.**

3. ## Lexicon
   - **Standard taxonomies or built from the data set itself.**

1. ## Line Representation
   - **Bag or Words versus Distributed Representation.**

2. 

3. ## Edge Cases with critical data
   - **Application of the Pareto Principle didn't work.**

4. 

Validation of ROI and Market Demand

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Centaur AI vs. Other Models

Model accuracy comparison (in %)

Key Benefits

- ## Human-Level Performance

  The centaur approach combines the strengths of both humans and AI systems to achieve superior results on complex tasks.

- ## Complementary Abilities

  Humans provide intuition, creativity, and common sense while AI excels at computation, analysis, and memorization.

- ## Continuous Improvement

  The centaur model enables ongoing learning between humans and AI, allowing for rapid iteration and enhancement over time.

- ## Hybrid Intelligence

  By combining human and artificial intelligence, centaurs outperform either individually across a variety of domains.