

January 8, 2025 NYCVMA

Christie Cornelius, DVM MBA

# BEYOND THE HYPE: AI BREAKTHROUGHS SHAPING VET MED IN 2025 & BEYOND

INTRODUCTION: IT'S NOT SCIENCE FICTION ANYMORE!

IMAGINE:

A HECTIC MONDAY...

AN INTELLIGENT SYSTEM RUNNING IN THE BACKGROUND

COOPER & SASSY

TWITTER 2023

ENTERED SYMPTOMS INTO CHATGPT-4

GPT SUGGESTED IMHA

HOW DID WE GET HERE?

RAPID INNOVATION

GENERAL AWARENESS AND IMPACT ON VET MED

WHAT'S NEXT? NOBODY KNOWS FOR SURE!

AGENDA

AI BASICS & EVOLUTION OF AI

AI IN HUMAN HEALTHCARE

2024-2025 BREAKTHROUGHS IMPACTING VET MED

BEYOND 2025: AGENTIC AI, ALPHAFOLD3, QUANTUM COMPUTING

YOUR VERY OWN AI GADGET!

AI DEFINED

SIMULATION OF HUMAN COGNITION

PROGRAMMED TO LEARN, REASON, SOLVE PROBLEMS

GOAL: ENABLE MACHINES TO PERFORM TASKS THAT TYPICALLY REQUIRE HUMAN COGNITION

BUILDING BLOCKS OF AI

DATA

ALGORITHMS

COMPUTING POWER

TYPES OF AI

MACHINE LEARNING VS. DEEP LEARNING; LLMs; GEN AI; CHATGPT

BASIC EXAMPLES

VIRTUAL ASSISTANTS (SIRI/ALEXA)

RECOMMENDATION ALGORITHMS (NETFLIX/AMAZON)

SIMPLE CHAT BOTS/E-MAIL SPAM FILTERS

MINDSET ABOUT AI

DENIAL

POSITIVE

PANIC

SLOW REVOLUTIONS

FIRE

AGRICULTURE

STEAM

THE AGE OF AI (80 YEARS)

ARE HUMANS STILL NEEDED?

PROMPTING & CONTEXT

LEGAL & SECURITY

EVALUATION & CORRECTION (HALLUCINATIONS)

HISTORY OF AI (1950-2018)

1950-TURING TEST

1970S AI WINTER

2000S DEEP BLUE, SIRI, WATSON, ALEXA

2017 ALPHAGO & TRANSFORMERS

CHATGPT

2018-2023: 6 VERSIONS OF GPT

CURRENTLY GPT-4, 40, 01, 03

GPT 5?

2023 FOUNDATIONAL MODELS, 2024 SPECIALIZED AI APPS

2025 LLMS

REASONING/MEMORY, COMPUTE POWER (BLACKWELL CHIPS), AI AGENTS

MACHINE LEARNING (SUBSET OF AI)

ML: COMPUTER MODELS "LEARN" BY PROCESSING DATA AND IMPROVING PERFORMANCE

DL: SPECIALIZED TYPE OF ML MODELED LOOSLY ON NEURAL NETWORKS OF THE HUMAN BRAIN

ML & CATS MODEL

AN EXAMPLE OF MACHINE LEARNING

## ML & DL MODEL COMPARISON

ML: ANESTHETIC RISK: YES/NO = CLASSIFICATION

DL: DIAGNOSTIC IMAGING W/HIDDEN LAYERS

DL HANDLES HARDER TASKS AND NOTICE TINY DETAILS

## SUPERVISED & UNSUPERVISED DATA

SUPERVISED: LABELED DATA

UNSUPERVISED: UNLABELED DATA

## GENERATIVE AI

NATURAL LANGUAGE PROCESSING(NLP)

ABLE TO UNDERSTAND & GENERATE HUMAN LANGUAGE

TEXT ANALYSIS & SPEECH RECOGNITION, SEMANTICS

SUMMARIZATION, CLIENT COMMS, DECISION SUPPORT

## LLMS

LEARNS DATA (SCRAPES THE INTERNET, ACQUIRES DATA)

WIDE RANGE OF TASKS

NOT REALLY "THINKING" - RECOGNIZING PATTERNS & MAKING PREDICTIONS

## PROMPT DESIGN

BAD PROMPT

GOOD PROMPT

SIDE EFFECTS

## GENAI VS. ANALYTICAL AI

GENERATE NEW VS. PREDICT, PRESCRIBE, AUTOMATE & OPTIMIZE

UNSTRUCTURED/UNSUPERVISED DATA VS. STRUCTURED/SUPERVISED DATA

SUBJECTIVE VS. QUANTITATIVE

## GENAI VS. ANALYTICAL AI IN VET MED

## GANS: GENERATIVE ADVERSARIAL NETWORKS

ARTIST: CREATES ART

JUDGE: REAL/NOT REAL

BECOME EXPERTS AT ART AND JUDGING = "TRAINED MODEL"

## GANS AND VET MED

SYNTHETIC DATA GENERATION (LIMITATIONS IN VET MED, RARE DISEASES)

## AI IN HUMAN HEALTHCARE: FDA FRAMEWORK

SAFETY

EFFICACY

ROLE OF INSURANCE

## FRAMEWORK DOESN'T WORK WITH GENAI

TOO EXPENSIVE & TIME CONSUMING

TOO MANY POTENTIAL APPS

TOO MANY CHANGES IN LLMS

## THE WAY FORWARD

"NOVEL FORMS OF INTELLIGENCE"

TRAIN LIKE A DOC OR NURSE

PASS LICENSING EXAMS → CE, LICENSE REVOCATION

## TESTING :SCRUTINY IS GOOD !?

ACCEPTABLE NUMBER OF HALLUCINATIONS

CONSISTENCY

TRANSPARENCY

## IDEAS IN MOTION (BCBSM) – AI STRATEGY & EXECUTION

AI AND AUTOMATION HAS SO FAR BEEN MOSTLY THEORY AND LITTLE PRACTICAL ADVICE

HOW DOES THE WORK ACTUALLY GET DONE?

LEADING FIRM EMBARKED ON A MULTI-YEAR JOURNEY TO RENOVATE INFRASTRUCTURE

## ABOUT BCBSM

\$36B PAYOR, 5 M MEMBERS, 37K PROVIDERS

AFFORDABLE CARE ACT 2010S: ACCESS TO CARE WENT FROM 83%-93%

MEDICARE ADVANTAGE + AGING U.S. POPULATION

## BCBM AS A BUSINESS

1-1.5% PROFIT MARGIN

NEEDED TO ENGAGE IN INCREMENTAL UPDATES DUE TO COSTS

4 PB OF UNSTRUCTURED DATA (20 B BOOKS) – SECURITY RISK

## ACTIONS TAKEN

CLOUD COMPUTING

> 20 AI APPS CREATED FOR WORKFLOW OPTIMIZATION AND AUTOMATION

3 GENAI APPS

## HOW?

GOT THE BOARD ON BOARD

CREATED CROSS-FUNCTIONAL COLLABORATION

ENSURED SCALABILITY AND SECURE ACCESS

DISCOVERING THAT ARCHITECTURE MATTERS!

PROVIDED ONGOING EMPLOYEE EDUCATION

BEAT BACK BIAS

PROVIDED A SAFE HAVEN FOR INNOVATION

APPLICATIONS OF AI IN VET MED 2024-25

DIAGNOSTIC IMAGING

DEEP LEARNING, INCREASING ACCURACY OF PREDICTIONS

FASTER TURNAROUND TIME

EARLY DETECTION

REMOTE MONITORING & TELEMEDICINE

WEARABLES – ACTIVITY TRACKING & PREVENTATIVE ALERTS

TELECONSULTATIONS – VIRTUAL EXAMS, AI CHAT BOTS

PERSONALIZED MEDICINE & GENOMICS

DISEASE PREDICTION

TAILORED THERAPEUTICS

DRUG EFFICACY & DOSING

PRACTICE MANAGEMENT (OPS)

WORKFLOW AUTOMATION

CUSTOMER COMMUNICATIONS

PREDICTIVE FINANCIAL MODELING

DRUG RESEARCH & DEVELOPMENT

EPIDEMIOLOGY – EMERGING DISEASE TRENDS

DRUG DISCOVERY – TESTING IN VIRTUAL ENVIRONMENTS & TRIAL  
OPTIMIZATION

CLIENT EDUCATION/ENGAGEMENT

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24/7 SUPPORT

TRIAGE ASSISTANCE

PET HEALTH APPS & AUTO REMINDERS

### ETHICAL/REGULATORY

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DATA SECURITY

BIAS OVERSIGHT

MAINTENANCE OF VCPR

### ENTREPRENEURSHIP IN VET MED

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STRATEGY & PARTNERSHIPS

TEAM BUY-IN & TRAINING

OPTIMIZATION & SCALABILITY

### AGENTIC & MULTIMODAL AI – “PLAN MY NEXT TRIP”

RECENT ADVANCES IN LLM CAPABILITIES BRINGING AUTONOMOUS FUTURE WITHIN REACH

SUPERCHARGED REASONING, MEMORY AND EXECUTION

REAL PROMISE FOR CREATING SIGNIFICANT WORKFLOW EFFICIENCIES, BUT AT HIGHER RISK

### AGENTIC AI “HOW IT WORKS”

ENVIRONMENT – DATA INPUT/OUTPUT

PERCEPTION – APPLYING THE PROPER ALGORITHMS BASED ON DATA INPUT

“BRAIN”

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STORAGE (MEMORY/KNOWLEDGE)

DECISION MAKING (PLANNING/REASONING)



ACTION

TEXT

TOOLS

EMBODIMENT

AI AGENTS IN VET MED – USE CASES GLIMPSE INTO THE FUTURE

AUTONOMOUS WORKFLOW MANAGEMENT

APPOINTMENT SCHEDULING & RESCHEDULING

TASK ALLOCATION FOR TEAMS

INVENTORY MANAGEMENT

PATIENT CARE

REMOTE MONITORING & TELEMEDICINE

AUTOMATED TREATMENT ADHERENCE

CLINICAL SUPPORT & DIAGNOSTICS

ASSISTED DIAGNOSIS W/AUTONOMOUS DECISION SUPPORT

CLIENT COMMUNICATIONS

AUTONOMOUS CLIENT SUPPORT & CHATBOTS

PAYMENTS & FINANCE MANAGEMENT

RESEARCH AND DEVELOPMENT (R&D)

AUTOMATED CLINICAL TRIALS

PRACTICE-LEVEL INNOVATIONS

ETHICAL & OPERATIONAL CONSIDERATIONS )

HUMAN IN THE LOOP (HITL)

ALPHAFOLD3, QUANTUM COMPUTING

## CONCLUSIONS (1:00)

DEEP DIVE INTO THE LANGUAGE OF AI AND RELATED CONCEPTS TO CREATE BETTER UNDERSTANDING OF WHAT'S COMING DOWN THE PIPE

RAISED AWARENESS OF HOW AI HEALTHCARE AGENTS MAY BE REGULATED BY THE FDA

BCBSM CASE STUDY OUTLINING IMPLEMENTATION OF AI STRATEGY FOR WORKFLOW OPTIMIZATION

BREAKTHROUGHS STARTING TO FILTER INTO THE VETERINARY PROFESSION 2024-25

BEYOND 2025 - AGENTS IN VET MED, GOOGLE DEEPMIND'S ALPHAFOLD3, QUANTUM COMPUTING

## Q&A (20 MIN)