AI IN 12 MINUTES FOR PHARMA

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MOTIVATION - WHY AI?

Accelerating drug discovery
Personalized medicine development
Enhancing clinical trial efficiency
Predictive analytics in patient outcomes
AI in pharmaceutical manufacturing

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INDUSTRY

Drug Discovery and Development
Clinical Trials
Pharmaceutical Manufacturing
Biotechnology
Regulatory Compliance

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STRATEGIC TRENDS

AI-driven drug discovery
Machine learning in clinical trial design
AI for personalized medicine
Data analytics in pharmacovigilance
AI in biotech research
Predictive modeling for treatment outcomes
Blockchain for drug traceability
Robotics in pharmaceutical manufacturing
AI in regulatory compliance
Digital therapeutics and AI

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WHY CHANGE?

Speeding up drug discovery
Tailoring treatments to individual needs
Improving clinical trial success rates
Enhancing pharmaceutical production efficiency
Adapting to digital transformation in healthcare

5/24
LEADING
THE CHANGE

Pfizer (Incorporating AI in drug development)
Roche (AI in diagnostics and pharma)
Novartis (AI-driven research and development)
Johnson & Johnson (AI in personalized healthcare)
Merck (Leveraging AI in pharmaceutical innovation)

6/24

DIGITAL TRANSFORMATION

AI algorithms for molecular drug design
Machine learning in patient data analysis
Robotics and automation in manufacturing
AI for real-time monitoring of clinical trials
Data analytics in market and consumer insights
Natural Language Processing for medical literature
AI-driven predictive maintenance in facilities
Cloud computing for data management
AI in quality control processes
Virtual reality for molecular modeling

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AI DISRUPTION

Accelerated identification of drug candidates
AI in optimizing clinical trial protocols
Personalized drug dosing algorithms
Predictive models for adverse drug reactions
AI for efficient scale-up in manufacturing
Machine learning in biopharmaceutical research
Enhanced patient recruitment for trials
AI in genomic data analysis for drug development
Automation in packaging and distribution
AI-driven compliance and regulatory reporting

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GREAT EXAMPLES OF AI

DeepMind’s AI in protein folding research
Pfizer’s AI in drug discovery
Novartis’s AI-driven clinical trial design
IBM Watson in drug development research
AstraZeneca’s AI in oncology research
Bayer’s AI partnership in drug discovery
GSK’s AI in identifying novel drug targets
Merck’s AI in pharmaceutical manufacturing
Roche’s AI for cancer treatment development
Sanofi’s AI in drug efficacy analysis

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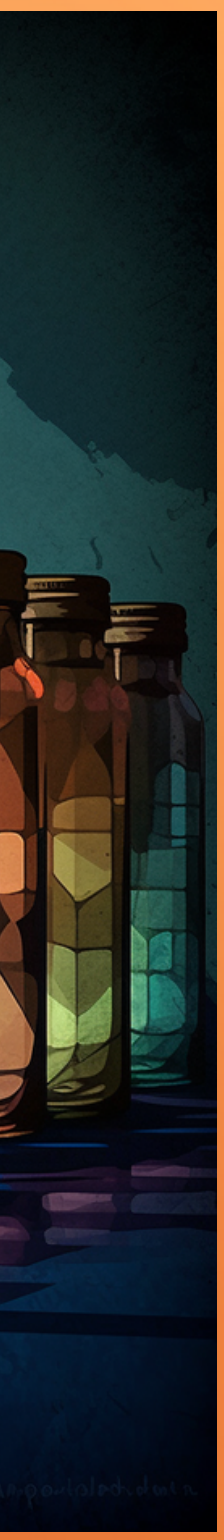

9/24 ECOSYSTEM REQUIREMENTS

Advanced computing infrastructure
Collaboration between AI experts, biologists, and chemists
Investment in AI training for pharma professionals
Ethical considerations and regulatory compliance
Strong data management and security systems

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AI ⏩ SUSTAINABILITY

Reduced environmental impact in drug development

AI for sustainable manufacturing processes

Efficient resource use in pharmaceutical production

AI-driven waste reduction in R&D

Sustainable practices in clinical trials

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NEW RISKS - ETHICAL, LEGAL, SOCIAL

Ethical concerns in AI-driven drug development
Data privacy issues in patient data analysis
AI reliability and accuracy in clinical decisions
Cybersecurity threats in pharma data
AI biases in drug research and trials

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AI MISUSE EXAMPLES

Misinterpretation of AI-driven clinical data

Unauthorized use of patient data

AI biases in drug development decisions

Over-reliance on AI without human oversight

Manipulation of AI results for market advantage

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THREE AI DILEMMAS

Balancing AI innovation with ethical considerations?

AI's role in replacing human judgment in pharma?

Managing data privacy in AI-driven healthcare research?

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14/24 ORGANIZATIONAL REQUIREMENTS

Strategic vision for AI integration in pharma
Continuous investment in AI and digital technologies
Collaboration between industry and regulatory bodies
Training in AI, data science, and pharmacology
Emphasis on ethical AI use and data privacy

15/24
STEP BY STEP APPLICATION

Identify AI opportunities in pharmaceutical R&D
Implement AI for drug discovery and clinical trials
Train staff in AI, data analysis, and pharmacology
Integrate AI in manufacturing and quality control
Continuously assess AI effectiveness and compliance

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BEST PRACTICES

Prioritize patient safety in AI applications

Maintain transparency in AI-driven research

Focus on AI for efficient and ethical practices

Foster innovation in AI-driven drug discovery

Adapt AI strategies to evolving healthcare needs

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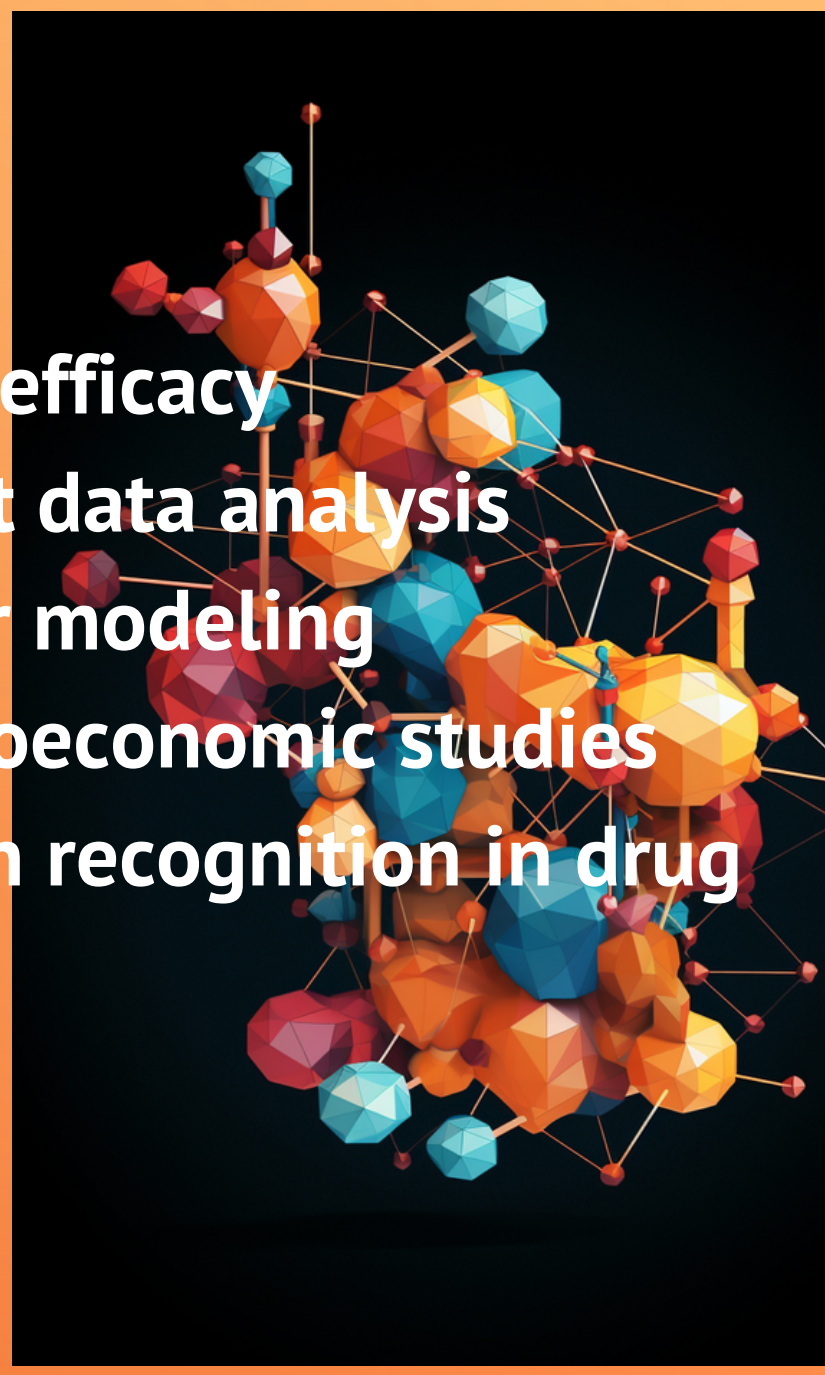
AI TOOLS & MODELS



Predictive models for drug efficacy
Machine learning in patient data analysis
AI algorithms for molecular modeling
Data analytics for pharmacoeconomic studies
Neural networks for pattern recognition in drug design

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USEFUL
DIGITAL TWINS

Digital twins of pharmaceutical production processes

Virtual models of clinical trial simulations

AI simulations for drug interaction studies

Digital replicas of biopharmaceutical environments

Virtual reality for molecular and cellular research

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COOL
NORWEGIAN CASES

Vaccibody (Vaccine development)
Ultimovacs (Cancer vaccine innovations)
Picterus (Medical diagnostics with AI)
Nisonic AS (Medical imaging technology)
Zelluna Immunotherapy (Cell-based cancer treatments)

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GLOBAL LEADERS

United States (Innovation in biopharmaceuticals)
Germany (Strong pharmaceutical industry)
Switzerland (Home to global pharma giants)
United Kingdom (Research and development)
China (Growing in pharmaceutical R&D)

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FUTURE JOBS

AI research scientists in pharma
Clinical data analysts
AI-driven drug design specialists
Pharmacovigilance experts with AI skills
AI ethics and compliance officers

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THE FUTURE OF AI

Revolutionizing drug discovery with AI
AI in personalized and precision medicine
Advanced AI in clinical trial design
AI-driven patient-centric drug development
Integrating AI in all aspects of pharmaceutical R&D

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23/24 RECOMMENDED READING

"The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care" by Eric Topol

"Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again" by Eric Topol

"AI in Health: A Leader's Guide to Winning in the New Age of Intelligent Health Systems" by Tom Lawry

"Pharmaceutical Data Analytics and AI" by Adam Bohr and Kaveh Memarzadeh

"The Book of Why: The New Science of Cause and Effect" by Judea Pearl and Dana Mackenzie

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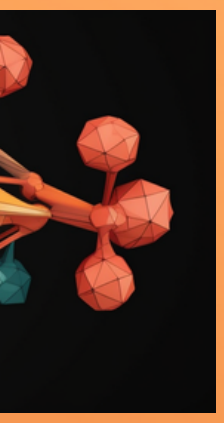

24/24
GOOD TED TALKS

"Can we create the "perfect" farm?" by Bren Smith (Relevant to biotechnology in pharma)
"The pharmacy of the future? Personalized pills, 3D printed at home" by Daniel Kraft
"The incredible inventions of intuitive AI" by Maurice Conti (Relevance to AI innovation)
"What the discovery of gravitational waves means" by Allan Adams (Parallel to pharma discoveries)
"A new way to heal hearts without surgery" by Phillippe Menasché (Innovative medical approaches)

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WHAT WOULD YOU ADD?

LET ME KNOW!

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