AI Glossary for Pharmacy & Healthcare

Core AI Concepts

- **Artificial Intelligence (AI):** Computer systems designed to perform tasks that normally require human intelligence, such as reasoning, learning, and decision-making.
- **Machine Learning (ML):** A branch of AI where algorithms learn patterns from data and improve performance without being explicitly programmed.
- **Deep Learning:** An advanced ML technique using multi-layered neural networks with hidden layers to model complex relationships in data.

Learning Approaches

- **Supervised Learning:** Training models on labeled datasets (where the correct answers are known) to predict outcomes.
- **Unsupervised Learning:** Discovering hidden patterns or groupings in unlabeled data.
- **Reinforcement Learning:** Teaching an AI agent through trial and error, using rewards and penalties to guide behavior.

Key Technical Terms

- **AI Agent:** A software entity that perceives its environment and takes actions to achieve defined goals (e.g., chatbots, virtual assistants).
- **Training Data:** The dataset used to teach an AI model during development.
- **Overfitting:** When a model learns training data too precisely, including noise—leading to poor performance on new data.
- **Underfitting:** When a model is too simple and fails to capture important patterns in the data.

Language Models

- **Large Language Model (LLM):** AI trained on massive text datasets to understand and generate human-like language.
- **Small Language Model (SLM):** A scaled-down version of LLMs, optimized for efficiency and specialized tasks.

Healthcare AI Applications

- **Clinical Decision Support:** AI tools that assist clinicians with evidence-based recommendations.
- **Smart Adherence Tools:** AI-driven reminders and interventions to improve medication compliance.
- **AI Inventory Forecasting:** Predictive analytics for optimizing medication stock levels.
- **Patient Chatbot:** AI-powered assistants that answer patient questions and provide guidance.
- **Workflow Automation:** Automating repetitive administrative or clinical processes (e.g., billing, scheduling).

Security & Compliance

- **Data Encryption:** Converting data into a secure format to prevent unauthorized access.
- **Role-Based Access Control (RBAC):** Limiting system access based on user roles.
- **Data Loss Prevention (DLP):** Tools and strategies to detect and prevent unauthorized sharing or leakage of sensitive data.
- **Monitoring and Auditing:** Tracking AI system activity for compliance and security.
- **Data Privacy:** Safeguarding personal and organizational data from exposure.

AI Implementation

- **AI Adoption Roadmap:** A structured plan for integrating AI, typically in phases: foundation, expansion, optimization.
- **Data Maturity:** The readiness of organizational data for advanced analytics and AI use.
- **Beta Program:** Controlled testing of new AI tools with a limited user group before full deployment.

Ethics & Performance

- **Bias:** Systematic errors in AI outputs caused by skewed data or algorithms.
- **Transparency:** The ability to explain how AI makes decisions.
- **Accountability:** Assigning responsibility for AI-driven outcomes.
- **Automation:** Using technology to perform tasks with minimal human input.
- **Personalized Recommendations:** AI-generated suggestions tailored to individual needs.
- **Real-World Evidence:** Data from actual patient experiences used to inform AI models.
- **Inference:** Applying a trained model to make predictions or decisions.
- **Latency:** The time an AI system takes to respond to a request.
- **Model Drift:** Gradual decline in model accuracy due to changing data patterns.
- **Prompt Engineering:** Designing effective inputs to guide AI outputs.
- **Hallucination:** When AI produces incorrect or fabricated information with confidence.