Applications and Tools of AI (Continued) — Finance, Robotics, and Automation Technologies

🔹 Introduction

Artificial Intelligence (AI) is no longer just a futuristic concept — it is actively reshaping global industries. Two major areas being transformed are Finance and Robotics & Automation. In this lecture, we explore how AI is revolutionizing these sectors, along with the tools that are powering this change.

💰 1. AI in Finance

📉 1. Algorithmic Trading

AI-powered bots analyze market trends and execute trades in real time.

They can make faster, data-driven decisions that outperform traditional traders.

Examples: Kavout, Trade Ideas, Alpaca

🧠 2. Risk Assessment and Fraud Detection

AI analyzes millions of transactions to detect anomalies and predict fraud.

Tools used:

Darktrace

Feedzai

FICO Falcon

📊 3. Credit Scoring

Traditional credit systems use limited criteria.

AI uses alternative data (payment behavior, online activity) for accurate scoring.

Tools: Zest AI, Upstart

🤖 4. Robo-Advisors

Automated investment advisors that manage your portfolio using AI.

Tools: Betterment, Wealthfront, Schwab Intelligent Portfolios

💬 5. Virtual Financial Assistants

AI chatbots help users manage expenses, answer financial questions, and track goals.

Example: Cleo, Erica by Bank of America

🤖 2. AI in Robotics and Automation Technologies

🏭 1. Industrial Automation

AI controls robots in manufacturing lines for assembly, inspection, and packaging.

Benefits: speed, precision, 24/7 operation.

Tools: ABB Robotics, Siemens MindSphere, Fanuc AI Robots

🦾 2. Collaborative Robots (Cobots)

Robots that work safely alongside humans.

Used in warehouses, electronics, and automotive industries.

Example: Universal Robots, Rethink Robotics

🧹 3. Service Robots

AI in home and business robots for cleaning, delivery, and customer service.

Examples: Roomba, Relay Robot, Pepper Robot

🧠 4. Computer Vision & AI Sensors

Enables robots to see, interpret, and react to surroundings in real time.

Used in inspection systems, agriculture, and security.

🚀 5. Autonomous Drones and Vehicles

Drones for delivery, surveillance, agriculture use AI for path planning and navigation.

Tools: DJI AI, Skydio Autonomy

🧰 3. Common AI Tools & Platforms

Tool/Platform Industry Function

Alpaca Finance AI trading API

FICO Finance Fraud detection and risk scoring

Wealthfront Finance AI investment management

ABB Robotics Automation Smart manufacturing robots

Universal Robots Robotics Collaborative robot arms

Amazon AWS RoboMaker Robotics AI-powered robot simulation & deployment

⚖️ 4. Benefits and Challenges

Benefits Challenges

Faster and smarter decisions Data privacy and security concerns

Enhanced customer experience Ethical concerns in financial profiling

Cost efficiency in manufacturing Job displacement in routine tasks

Predictive and proactive maintenance High cost of implementation