Introduction Computer Systems

Lecture 11&12

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Computers Related Jobs

- Computer-related jobs span software development, IT support, cybersecurity, data science, and network administration, involving roles like Software Engineer, Cybersecurity Analyst, Data Scientist, Network Architect, and IT Technician, all focused on building, securing, maintaining, or analyzing computer systems and applications for businesses or end-users. Key areas include AI/ML, cloud computing, web/mobile development, and requiring skills from coding and system design to problem-solving and data analysis.

Popular Computer Job Roles:

- Software Developer/Engineer: Designs, codes, tests, and maintains software, apps, and platforms.
- IT Technician/Support Specialist: Sets up, troubleshoots, and repairs hardware and software for users.
- Cybersecurity Specialist: Protects systems and data from threats, breaches, and attacks.
- Data Scientist/Analyst: Analyzes large datasets to find insights and guide decisions.
- Network/Systems Administrator: Installs, configures, and maintains an organization's computer networks and systems.

- Web/Mobile Developer: Builds user-facing websites and applications for different devices.
- Database Administrator (DBA): Creates and manages systems for storing and securing data.
- Cloud Engineer: Manages cloud infrastructure and services.
- AI/Machine Learning Engineer: Develops and trains intelligent systems.
- UX/UI Designer: Focuses on user interaction and interface design for apps and websites.

Artificial intelligence in our daily life

- Artificial intelligence (AI) is deeply integrated into daily life, powering smart assistants (Siri, Alexa), personalized recommendations (Netflix, Amazon), navigation (Google Maps), spam filters, social media feeds, and security (facial recognition). It enhances efficiency by automating tasks, providing instant information, translating languages, managing smart homes, and detecting fraud, making our digital and physical worlds more convenient, personalized, and secure, often without us realizing it.

Common AI Applications in Your Day

- Smartphones & Assistants: Voice commands, predictive text, facial unlock.
- Entertainment: Personalized movie, music, and product suggestions.
- Navigation: Real-time traffic analysis and fastest route calculation (Waze, Google Maps).
- Communication: Spam filters in email and real-time language translation.
- Shopping: Tailored ads and product recommendations.
- Home: Smart thermostats learning your habits, robot vacuums.

- Finance: Banks using AI to flag fraudulent transactions.

- **How AI Works in These Areas:**
- Machine Learning: AI algorithms learn from vast amounts of data (your clicks, purchases, location) to recognize patterns and make predictions or decisions.

- Natural Language Processing (NLP): Allows devices to understand and respond to human language (voice assistants, translation).

- Computer Vision: Powers facial recognition and image analysis.

- **Cybersecurity:** Detecting threats and unusual network activity.
- **Healthcare:** Assisting with diagnostics and personalized treatment plans.
- **Education:** Creating adaptive learning experiences for students.
- AI's role is expanding, streamlining routine tasks and creating more personalized experiences across nearly every aspect of modern life.