

CS-121:

Unit 2 Introduction



Course progress so far...

- **Week 1:** Basic output and program flow
- **Week 2:** Inputs, variables, and data types
- **Week 3:** Simple functions
- **Week 4:** Expressions and Conditionals
- **Week 5:** Loops and Lists
- **Week 6:** Exam and Review
- **👉 Week 7:** Unit 2: Real-world applications

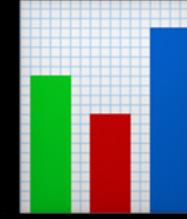


DO-ing Things with Code

- Practical Applications
- Real-World Simulations
- Program design and implementation

What Can You *Do* with Code?

-  Information
-  Communication
-  Entertainment
-  Commerce
-  Education
-  Creativity
-  Productivity & Automation



Information

Turns data into actionable insights.

- Data Analysis
- Statistical Modeling
- Machine Learning



Communication

Facilitates information exchange

- Messaging Apps
- Email Clients
- Social Media Platforms



Entertainment

Provides engaging experiences

- Video Games
- Interactive Media
- Virtual Reality



Commerce

Enable online transactions and business operations

- E-commerce Platforms
- Payment Systems
- Inventory Management



Education

Enhance learning and teaching

- E-learning Platforms
- Educational Software
- Simulations



Creativity

Provide tools for artistic expression

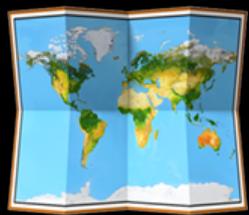
- Graphic Design Software
- Music Production Tools
- 3D Modeling



Productivity & Automation

Enhance efficiency through automation

- Task Management Tools
- Automation Scripts
- Workflow Optimization



Mapping Career Paths



Frontend Developer

Frontend developers make applications look and feel great.

- **Focus:** User interfaces and experiences (UI/UX)
- **Skills:** HTML, CSS, JavaScript, React, etc.
- **Salary Range:** \$60,000 – \$130,000 per year



Backend Developer

Backend developers power the functionality behind the scenes.

- **Focus:** Server-side logic and databases
- **Skills:** Python, SQL, APIs, Node.js, etc.
- **Salary Range:** \$70,000 – \$140,000 per year



Full-Stack Developer

Full-stack developers have a holistic view of applications.

- **Focus:** Both frontend and backend
- **Skills:** Versatile in multiple technologies
- **Salary Range:** \$75,000 – \$150,000 per year



Data Scientist

Data scientists extract meaning from data.

- **Focus:** Analyzing and interpreting data
- **Skills:** Python, R, Statistics, Machine Learning
- **Salary Range:** \$80,000 – \$160,000 per year



Artificial Intelligence

AI developers push the boundaries of technology.

- **Focus:** Creating intelligent systems
- **Skills:** Python, Machine Learning, Neural Networks
- **Salary Range:** \$90,000 – \$180,000 per year



Game Developer

Game developers bring virtual worlds to life.

- **Focus:** Designing and building games
- **Skills:** Programming, Graphics, Physics
- **Salary Range:** \$50,000 – \$120,000 per year

Security (Cybersecurity)

Security professionals safeguard our digital world.

- **Focus:** Protecting systems and data
- **Skills:** Security protocols, Encryption, Ethical Hacking
- **Salary Range:** \$70,000 – \$150,000 per year

Personality & Roles

Personality Trait

Creative & Visual

Analytical Thinker

Detail-Oriented

Problem Solver

Potential Roles

Frontend Dev, Game Dev

Data Science, AI

Security, QA Testing

Automation Engineer

"Know yourself."

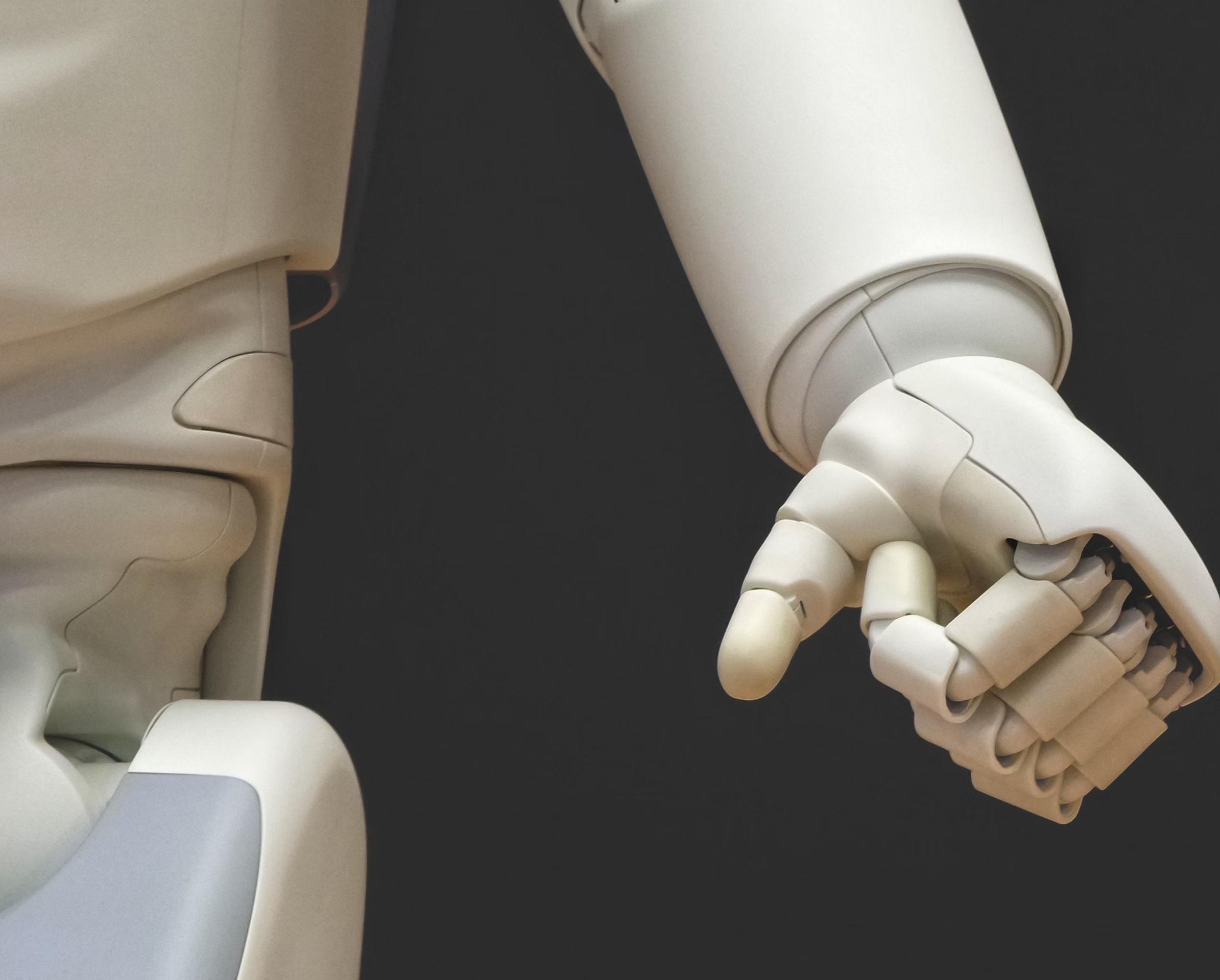
— Sun Tzu



Pursuing Your Passion

- Your work is going to fill a large part of your life.
- The only way to be truly satisfied is to do what you believe is great work.
- The only way to do great work is to love what you do.
- If you haven't found it yet, keep looking. Don't settle.

Unit 2: Project Simulations



OMNICO

Welcome to the future.

Welcome home.

Welcome to OmniCo.



Your role

- You are a newly-hired junior developer at OmniCo
- You will receive assignments from different departments
- You design solutions using Python



Project 1

- Read data from a file
- Analyze and process the data
- Generate a report
- Communicate your findings professionally

Training wheels still on

