

# Introduction to Python

(Professor Dave)<sup>2</sup>

The University of Austin

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- **What is Python?**

- Python is a versatile, high-level programming language.
- Used in web development, data analysis, machine learning, automation, and more.

- **Why Python?**

- Easy to learn and read.
- Extensive community and resources.
- Powerful libraries for various fields: science, art, business, and more.

# Value-prop for STEM

- **Data Science & Machine Learning:**
  - Libraries: NumPy, Pandas, TensorFlow, SciPy.
  - Used for data manipulation, statistical analysis, and building models.
- **Engineering & Simulations:**
  - Used in simulations, optimization, and algorithmic computations.

# Value-prop for Humanities?

Yes!

- **Text Analysis & Digital Humanities:**
  - Libraries: NLTK, spaCy for natural language processing.
  - Analyze large amounts of text for sentiment, themes, and word frequencies.
- **Creative Arts & Media:**
  - Python is used in image processing, media production, and art installations.
  - Libraries like PIL (Pillow) and Pygame.

# Basic Python Syntax (Quick Overview)

## – Variables & Types:

```
x = 10    # Integer  
name = "Alice"  # String  
is_student = True  # Boolean
```

## – Functions:

```
def greet():  
    print("Hello, world!")
```

## – Loops & Conditionals:

```
for i in range(5):  
    if i % 2 == 0:  
        print(i, "is even")
```

# Installing Python

- **Step 1: Download Python:**

- Go to [python.org](https://python.org).
- Click “Downloads” and select your operating system (Windows, macOS, Linux).

- **Step 2: Install Python:**

- Follow installation instructions on screen.
- Ensure you check the box to “Add Python to PATH.”
- Also be sure to check the box to install `pip`, which is how you download other useful Python tools!

# Using Python via JupyterLab

- **Step 1: Install JupyterLab:**
  - Install with `pip install jupyterlab` in your terminal.
- **Step 2: Using JupyterLab:**
  - Start a notebook by typing `jupyter lab` in your terminal.