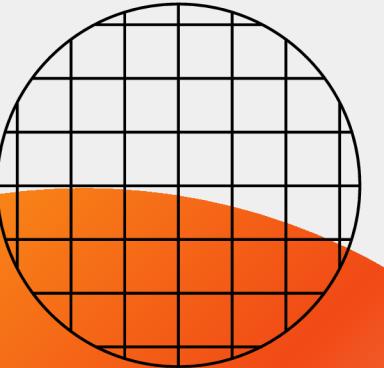


Let's Start

# Python for Mathematics

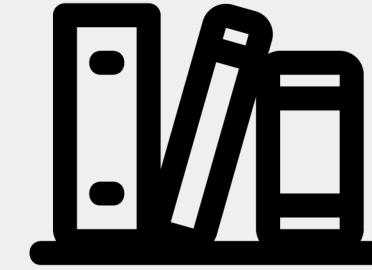
Aaina Batool



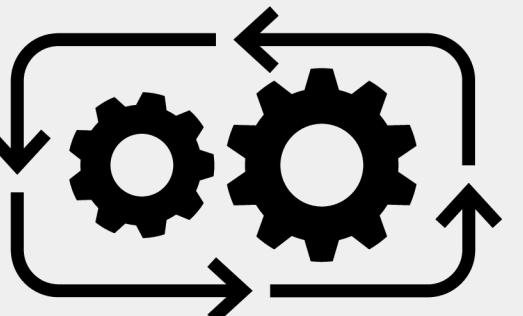
# Why Python is Important in Mathematics



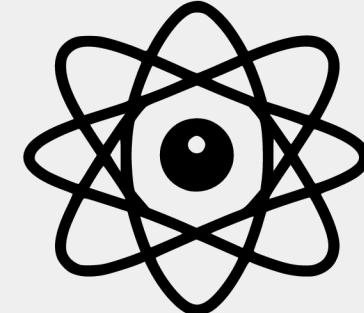
Ease of Learning



Powerful Libraries

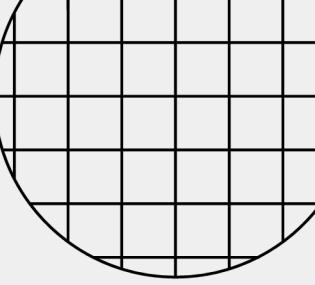


Automation



Versatility

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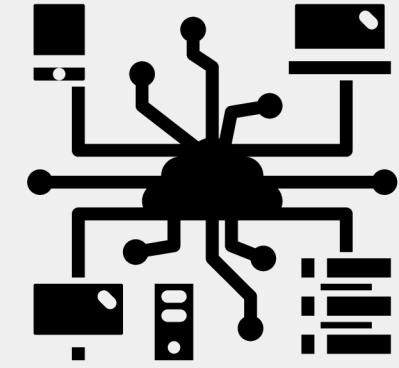
# Applications in Mathematics



Matplotlib and Plotly help visualize functions, data, and mathematical models.

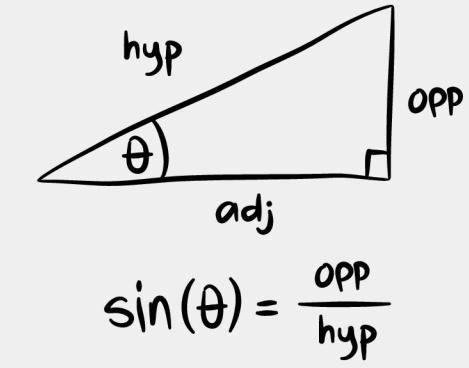
## Visualization

• • • •  
• • • •



Using NumPy for matrix operations, linear algebra, and calculus.

## Numerical Computations



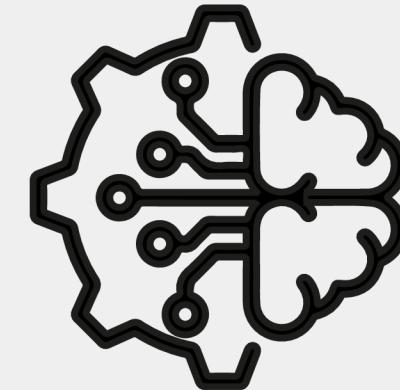
Using SymPy for solving equations, differentiation, and integration.

## Symbolic Mathematics



Pandas and SciPy.stats for analyzing data sets and probability distributions.

## Statistics & Probability



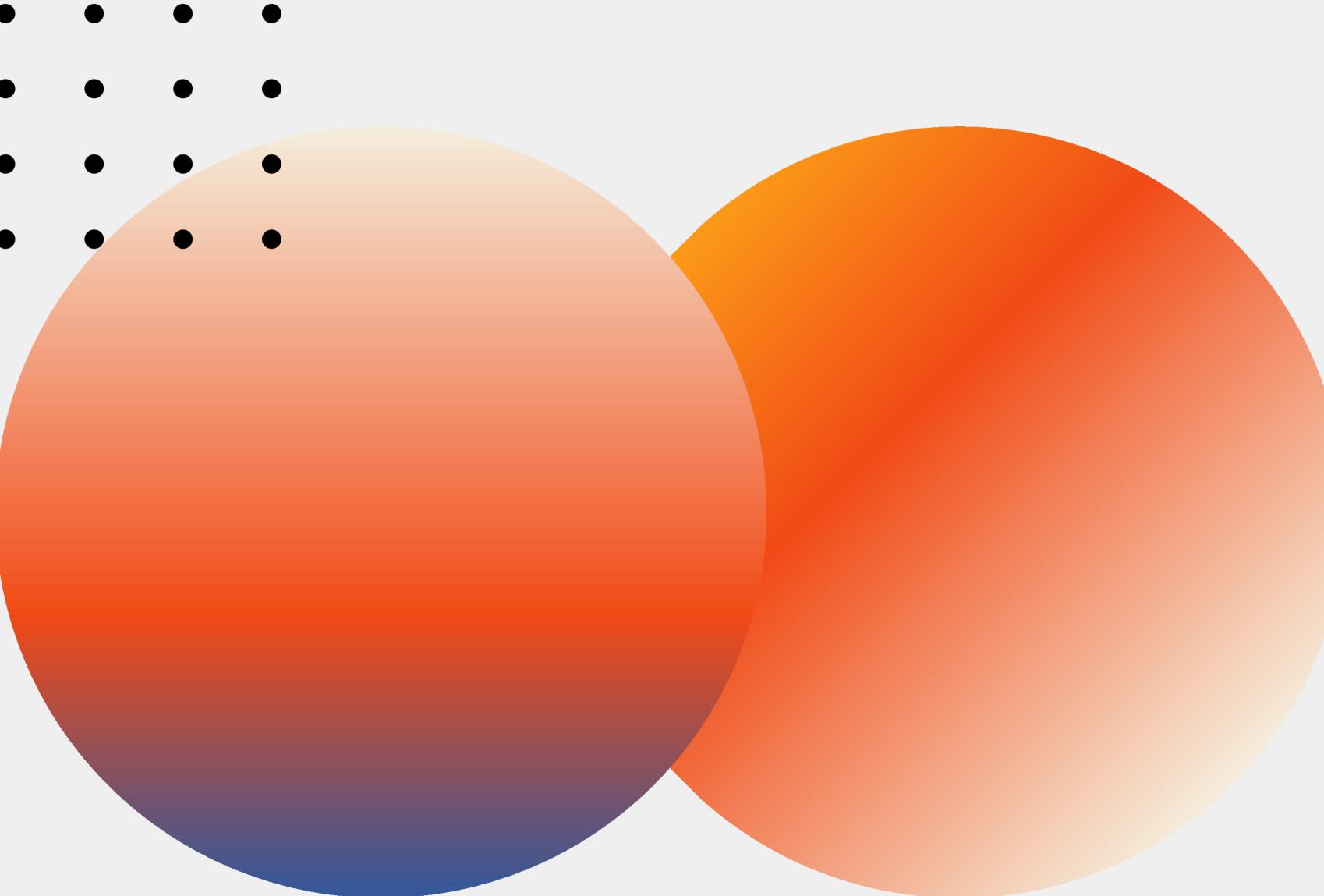
Extends math into real-world applications with Scikit-learn and TensorFlow.

## Machine Learning & Optimization

# Example

```
import sympy as sp  
x = sp.Symbol('x')  
expr = sp.sin(x) + x**2  
sp.diff(expr, x)
```

```
2x + cos (x)
```



# Conclusion

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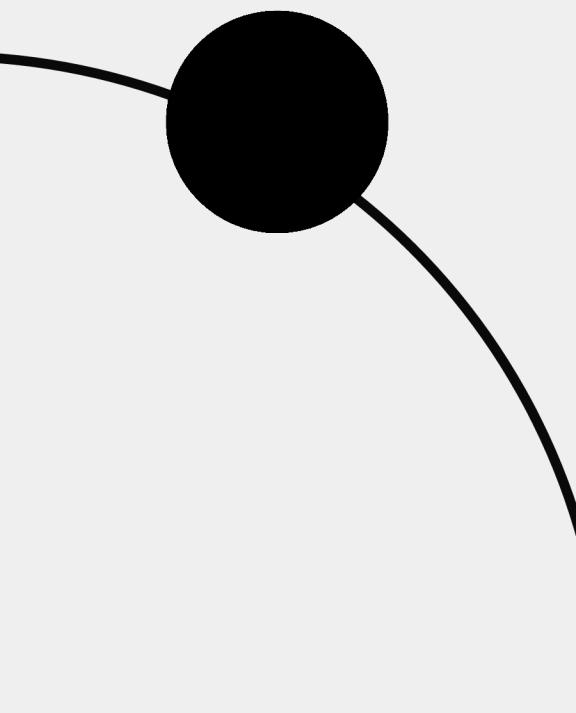
- 1** Python transforms mathematics from theory to computation.
- 2** Enables students, researchers, and engineers to model, analyze, and visualize mathematical ideas easily.
- 3** It bridges the gap between conceptual understanding and real-world problem solving.

# TO CONCLUDE

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**“The essence of mathematics is not to make simple things complicated, but to make complicated things simple.”**

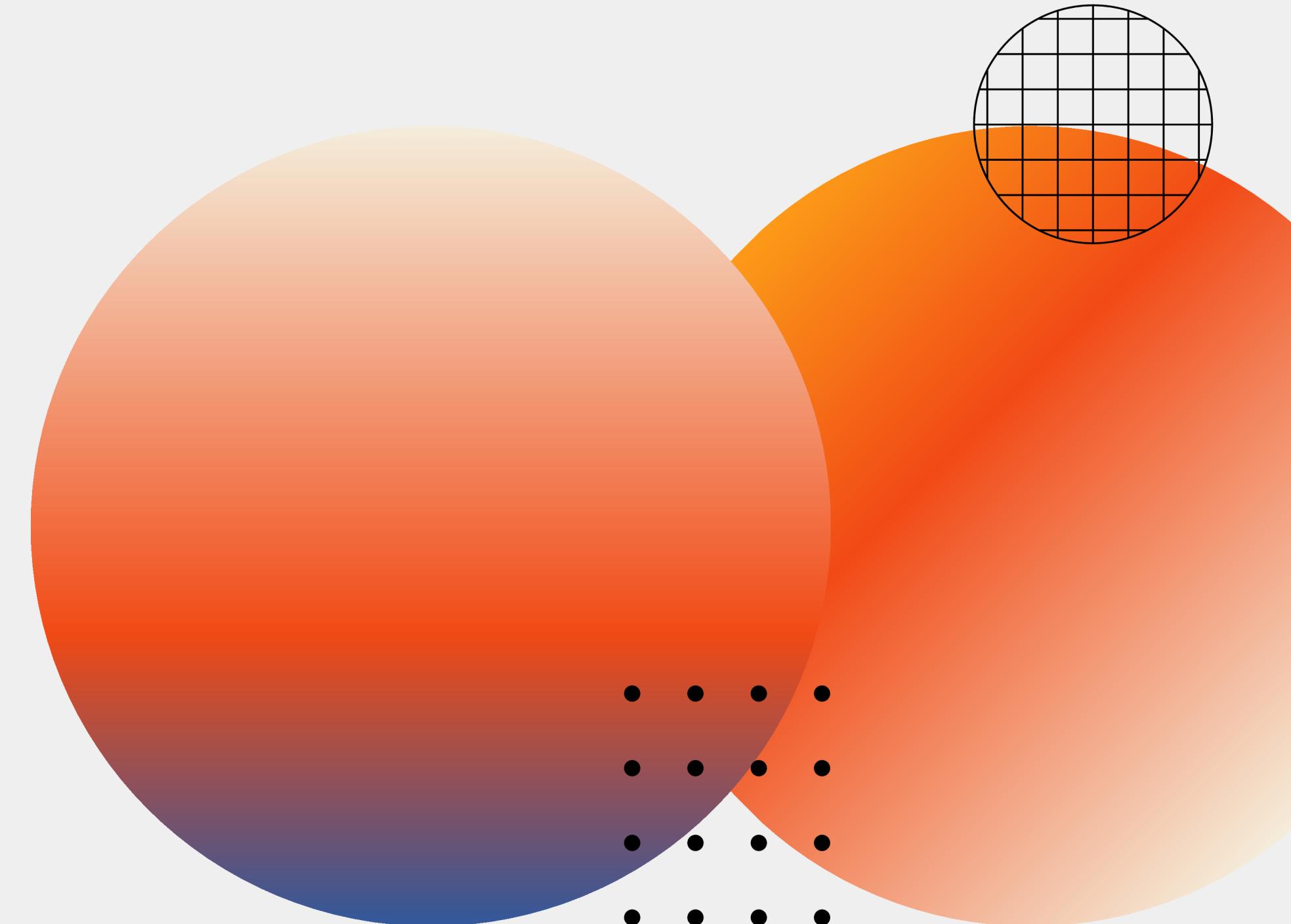
— S. Gudder

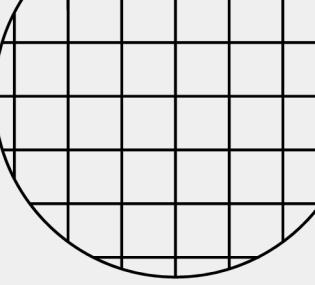


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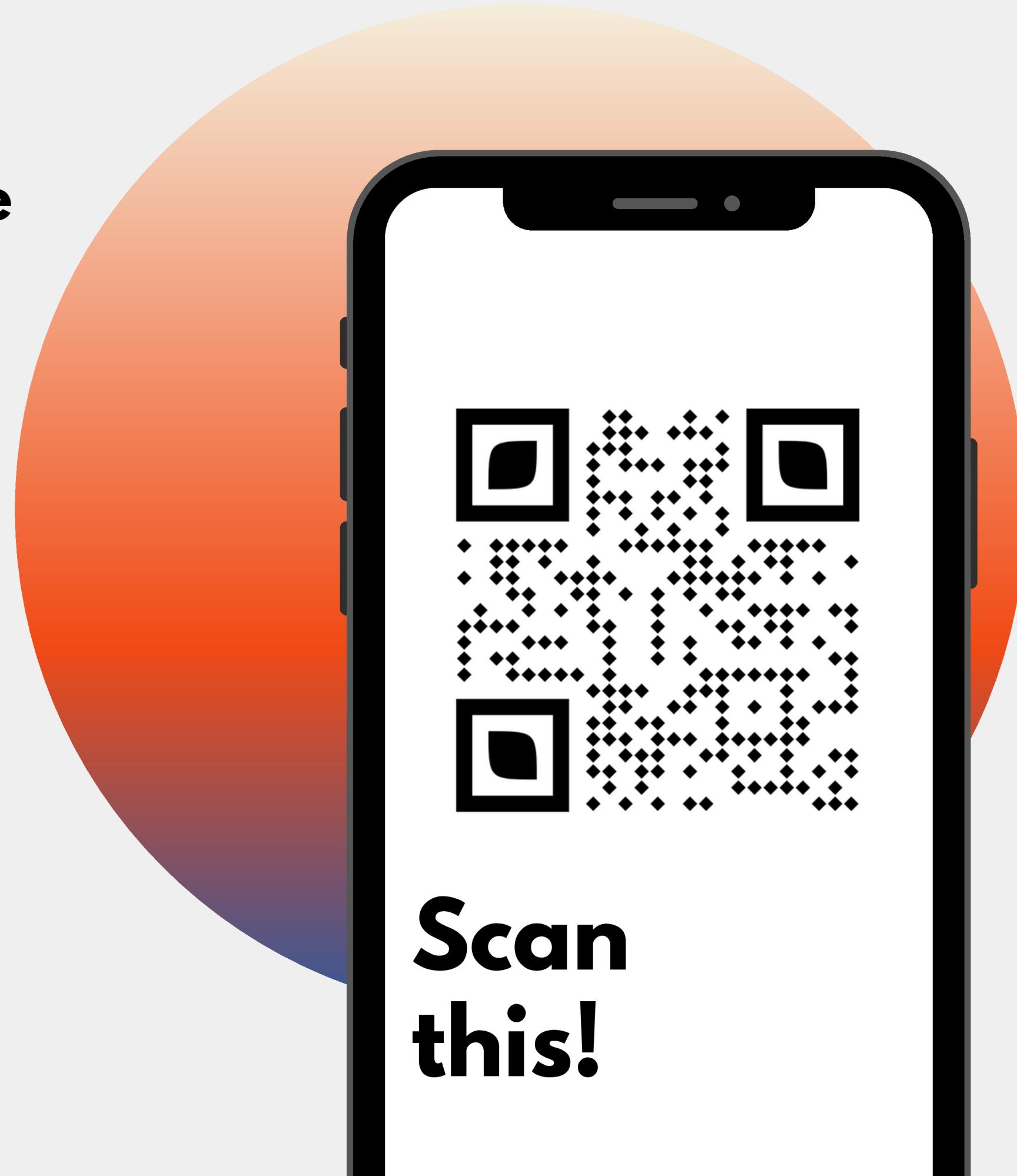
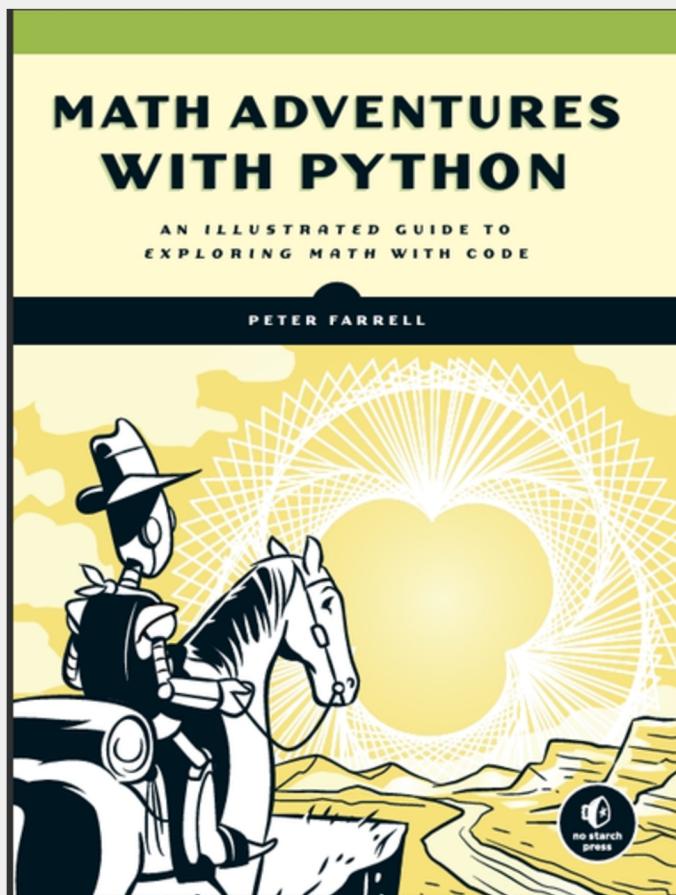
# Thank you

Do you have any questions?





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