

27 Dec 2025

# PYDANTIC

Problem Solved by Pydantic in python:

1. by default python not have type validation this problem is solved by pydantic
2. By default python not have ~~type~~<sup>data</sup> validation this problem is solved by pydantic

Pydantic works in 3 steps:

1. Define a pydantic model that represents the ideal schema of the data
  - This includes the expected fields, their types and any validation constraints (e.g.,  $gt=0$  for positive numbers).
2. Instantiate the model with raw input data (usually a dictionary or JSON-like structure).
  - pydantic will automatically validate the data and coerce it into correct python types (if possible).
  - if data doesn't meet the model's requirements pydantic raise a `ValidationError`.
3. Pass the validated model object to functions or use it throughout your codebase.
  - This ensures that every part of your program works with clean, type-safe, and logically valid data.

1. Why pydantic

- Solve the type validation in python
- solve the data validation in python



## 2. How Pydantic

### (i) Type validation in pydantic

- use the BaseModel
- use List, Dict and optional in pydantic

### (ii) Data Validation in pydantic

- use EmailStr and AnyUrl (Built-in data validation in pydantic)
- custom data validation using Field  
field function is for custom data validation, attached meta data (Field + Annotated) and for set default values