### INTELLIGENT CODE HINTS WITH EASY ACCESS

Needs explanation

#### **TEAM "ATTIC ENGINEERS"**



It is 2023 There exist AI-based code completion tools But no Al-based code analysers

### **Our idea**



use language models from Google for static code analysis



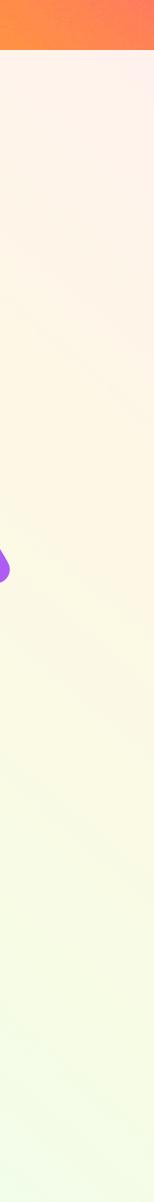
integrate with Visual Studio Code



create a web demo for anyone to try

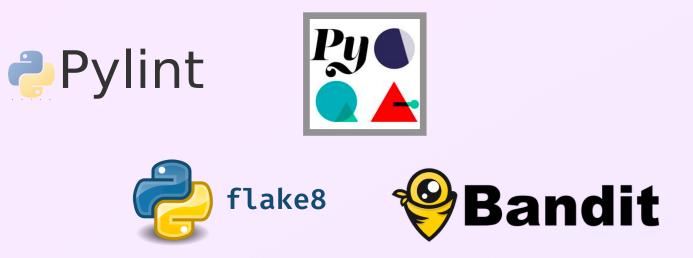
**ATTIC ENGINEERS - JULY 2023** 





#### **BEYOND SIMPLE LINTERS**

- **Conventional code analysis:**
- > style checking
- > type checking
- > security issues (rule-based)



**ATTIC ENGINEERS - JULY 2023** 

**AI-based code analysis:** 

- > find potential bugs, based on syntax and semantics
- > suggest code optimisations
- > promote best coding practices





# See in action — Visual Studio Code

from math import \* 2 def calculate\_area(diameter: str) -> int: 3 radius = diameter / 24 5 area = 3.141592653589793 \* radius \*\* 2 6 return area 7

Calculate circle area.py vertex\_code\_analysis/poor\_code\_examples

What is wrong with this code?

#### AI can tell you that

A def calculate\_area(diameter: float) -> int: # Do not use ``str`` type in parameter type annotations. Use ``float`` or ``int`` instead. [Ln 3, Col 1] A area = math.pi \* radius \*\* 2 # Do not manually calculate 3.141592653589793. Use the built-in function ``math.pi`` instead. [Ln 5, Col 1]



# See in action — Visual Studio Code

Get useful advice even when you don't expect it.

def sum\_product\_with\_for\_loop(array1, array2) -> int: sum = 0 for i, j in zip(array1, array2): sum += i \* j return sum sum = np.sum(array1 \* array2) # You can use a numpy function to calculate the product of two arrays instead of a for loop. View Problem (F2) No quick fixes available array1 = np.random.randint(0, 100, 1000000) array2 = np.random.randint(0, 100, 1000000) print(sum\_product\_with\_for\_loop(array1, array2))

### See in action — web demo

🗡 <u>vertex-code-analysis.streamlit.app</u> 🦯

### Welcome to Vertex Code Analyser! 🌴

This is a static code analysis tool based on Google PaLM.

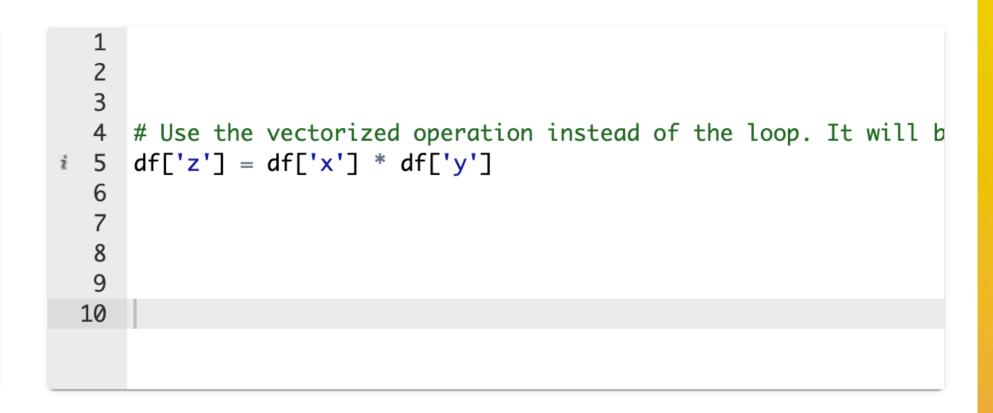
#### Try in the browser

Your code:

```
1 import pandas as pd
2
3 df = pd.DataFrame({'x': [1, 2, 3], 'y': [4, 5, 6]})
4
5 for index, row in df.iterrows():
6     df.loc[index, 'z'] = row['x'] * row['y']
7
8
9
10
```

APPLY (CMD+ENTER)

AI suggestions will apear here



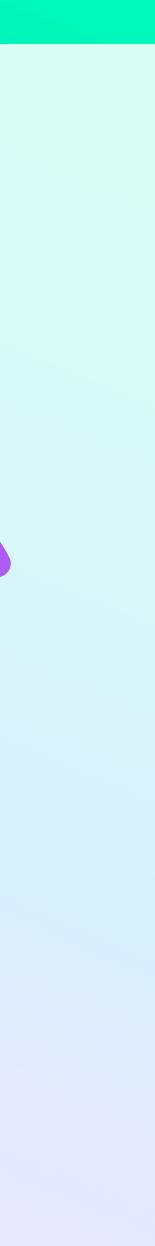
### <u>Why do we believe in this</u>

> Organisations increasingly adopt subscriptionbased productivity apps for developers.

> Individuals are also ready to pay small fees for bigger performance boost.

> Writing code is just part of the job, not smaller than fixing and improving it.





## Thank you for your attention!

Demo: <u>vertex-code-analysis.streamlit.app</u> GitHub: romech/vertex-code-analysis

"Attic Engineers" team: Roman — <u>GitHub</u>, <u>LinkedIn</u> == Dainius — <u>GitHub</u>, <u>LinkedIn</u>

### **TAND STAY TUNED**