How is Python is used in Engineering

Python is known as a great beginner language. Being able to read what the program is doing is a keystone aspect of Python. Created in the late ’80s by Guido van Rossum as a replacement for ABC programming. Instead of being complied like C or C++, or .net, Python is an interpreted language. Meaning there is no binary and can run on any os with minor or no changes to the codebase. Coupled, with its ease of use and a multitude of tutorials and libraries. Python is the third most popular language based on yearly reviews at stack overflow.

The main advantage of learning or knowing Python is that your tool kit will expand as an Engineer. Having a solid foundation of specialized tools will allow anyone to make accurate decisions based on the data. Having first-hand experience in knowing Python has allowed me to create several tools for Kel-Tec CNC. These tools have allowed management to see trends within their firearms as they were happening. This has allowed them to make informed and better decisions.

A key field Python is amazing at is data crunching. With a simple script, you are capable of extracting data on a large scale. Engineers utilize Python on Industrial Automation projects to create SCADA Systems that can disseminate data from the field in real-time (EIT, 2020). Coupled with scientific packages, Python is a contender that can handle whatever is thrown at it.

The technical field is rife with examples of Python from Data Science, Web Development, and many aspects of DevOps. The hot field right now for Python is Machine Learning. Machine learning is a field that develops an AI Artificial Intelligence that will extract patterns out of data using methods or specialized algorithms (Beklemysheva, 2020).

To iterate from above about solving real-world problems at Kel-Tec CNC. As a mature company that failed at communicating within themselves. Roadblocks based on rushed timelines and issues facing end-users are a constant reminder about keeping communication open! My first task was to build a User Interface for Data Aggregation of the 90 CNC Machines we have on-site. The project is named Bullet. The purpose of the interface was to track downtime, preventative maintenance, how many times the machine went down, and the current status. The main UI for all this also allowed for reporting and charting of the health of the machine shop.

The entire backend is written, using Django. Django is a Batteries Included Web Framework. The best part is that it uses Python as the main language. Currently, right now Bullet has some forty different modules. All allow users to aggregate any data that pertains to our firearms in real-time. Recently, my manager informed me that Bullet has saved the company 3 million dollars in the six months it has been active. Data that only could be found within a meeting with all department heads, is now found with the click of a button.

# Bibliography

Beklemysheva, A. (2020, November 20). *Why Use Python for AI and Machine Learning?* Retrieved from Steel Kiwi: https://steelkiwi.com/blog/python-for-ai-and-machine-learning/

EIT. (2020, Novemeber 20). *Learn to code: Why engineers should learn Python*. Retrieved from Engineering Institute of Technology: https://www.eit.edu.au/learn-to-code-why-engineers-should-learn-python/#:~:text=For%20example%2C%20python%20allows%20engineers,they%20require%20for%20their%20setups.