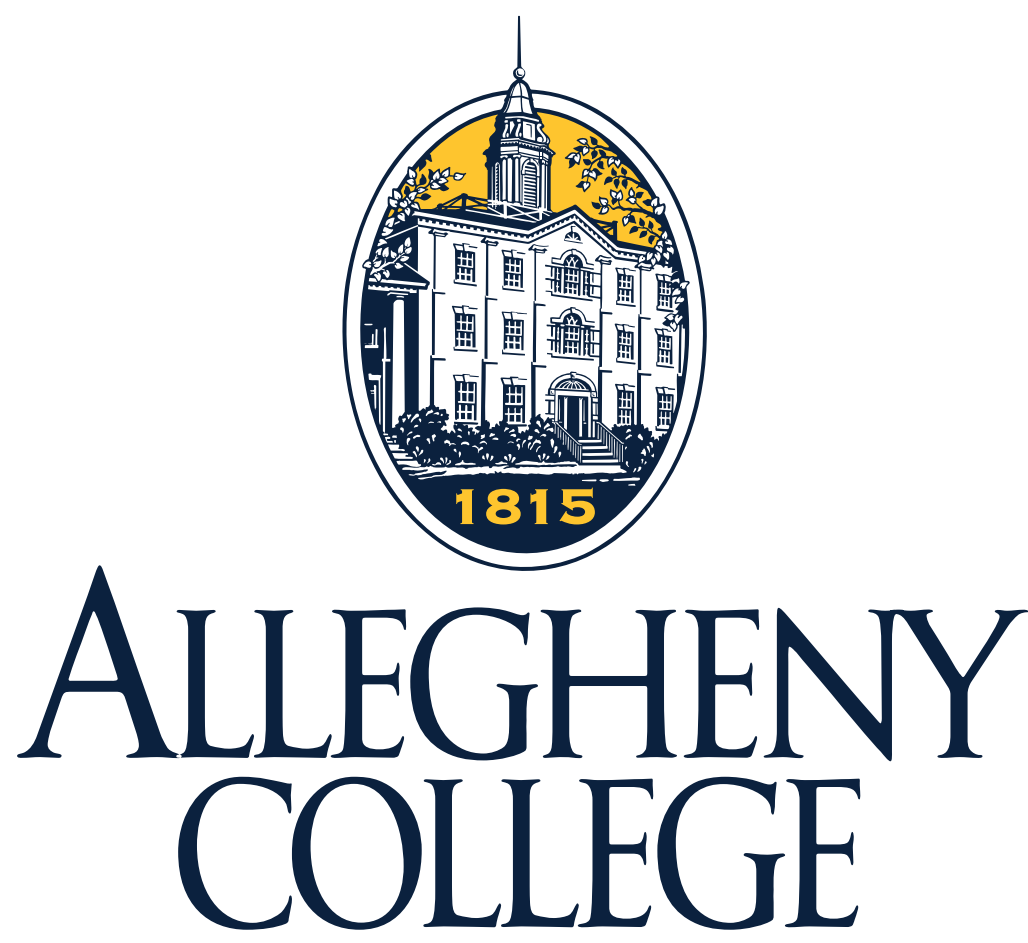
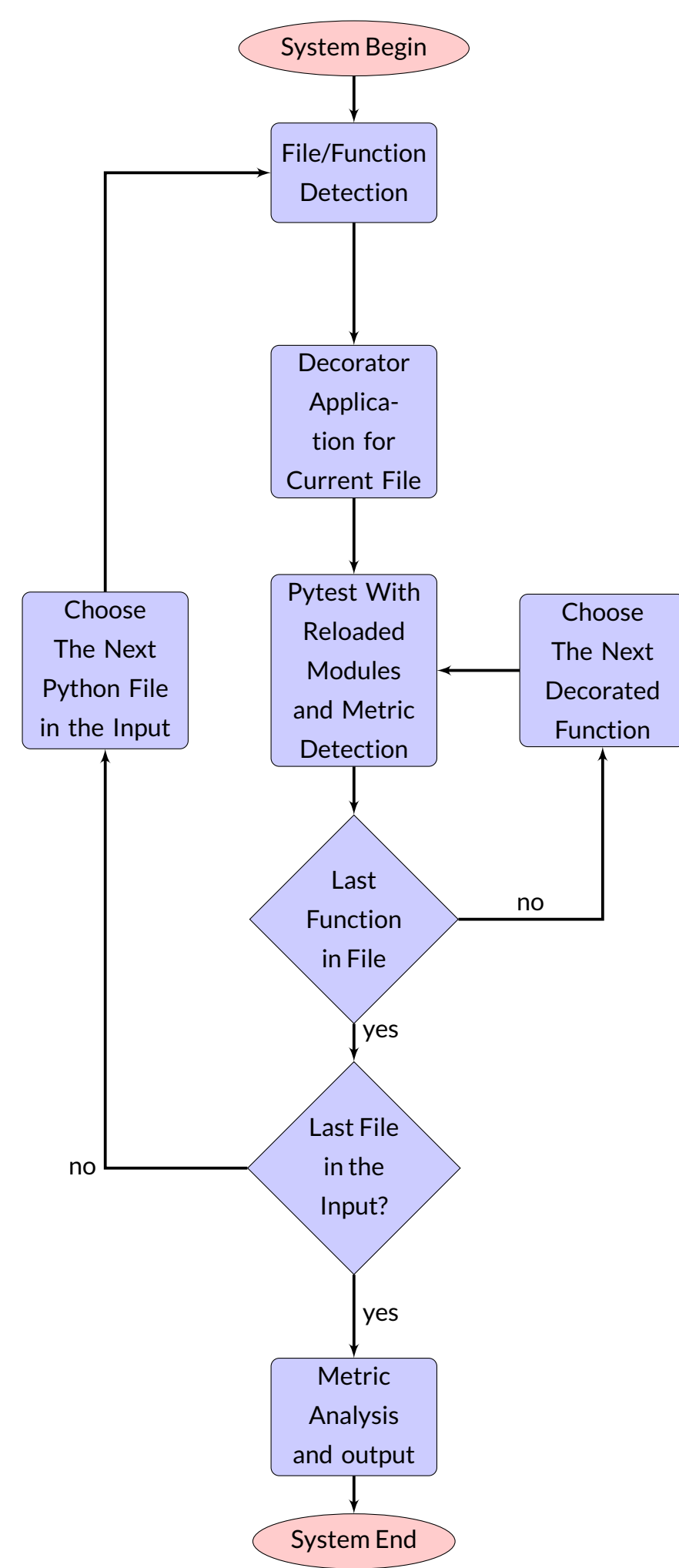


Automatic Detection of Pseudo-tested Methods using Python and Pytest

Nicholas Tocci
Gregory Kapfhammer

Introduction

Software systems are very large and complex. Due to this, modern python programs are difficult to test due to the lack of type safety. Another concern is the possible misleading nature of state-ment coverage since it doesn't factor in branches and iteration, there is no infor-mation on the data state, and the quality of the oracle. Due to this, there is a po-tential chance for psuedo-tested meth-ods to exist in python programs.



Function-Fiasco is an automatic tool that detects pseudo-tested methods in Python progams.

Results

System name	State_Cov	Function_cov	NUMM	NUMTM	Fiascoed	Pseudo	NUMTM	UC	Change
1 Hashids-Python	0.97	0.94	16	15	10	8	7	0.44	0.50
2 Bleach	0.48	0.41	348	152	8	2	150	0.41	0.00
3 Pycco	0.77	0.86	22	19	6	5	14	0.64	0.22
4 Howdoi	0.78	0.95	20	19	2	0	19	0.95	0.00
5 Flashtext	0.81	0.33	42	14	7	4	10	0.24	0.09
6 Honcho	0.85	0.69	38	40	5	5	35	0.60	0.09
7 Mape	0.90	0.50	88	44	13	3	41	0.47	0.03
8 Gator	0.99	0.86	92	79	54	30	49	0.53	0.33
9 Hatch	1.00	0.56	124	75	14	6	69	0.51	0.05
10 Nikola	0.67	0.44	732	319	16	9	310	0.42	0.02

Table 1: List of results of experimentation.

Function-Fiasco can successfully de-tect pseudo-tested methods in Python based systems.

Future Work

Function-Fiasco has many features that will be implemented which include:

- Further type fuzzing capability
- Parameterized test observation
- Further system evaluation

Conclusion

Pseudo-tested methods are an issue that exist in Python based systems. Function-Fiasco has the capability to detect such methods that may lead to unexpected issues. Function-Fiasco can aid in the implementation of Python systems.

Get Involved

If you would like to get involved, please feel free to enter bugs into the issue tracker on our github page, or submit a pull request to aid in the implementa-tion.

Acknowledgements

Made in cooperation with Cory Wiard.



Scan the QR Code to visit our GitHub page