**Summary:**

To test variety of patterns and NLP algorithms and their combinations for any task given. Therefore, for comparison tool must allow us to add external plug-ins into the framework. Consequently, system needs to have the supportive data types and structures that allow for the scripting of the recognition tasks for all potential processing. Earlier MARF framework was stand-alone, sequential and had limited support for multithreading. After learning it evolved and made distributed but it was manual so again improvised and made autonomic [MN].

To identify the different features of speaker like their gender, their accent etc. It uses concept of mean clusters and median clusters to find out the best possible combinations of algorithms. Selection of median or mean is completely based on quality of gathered data and chosen algorithms. [MH].

Scripting in required application is difficult task by providing context of all parameters. Therefore we need to make the syntax simpler which overload context operators to accept various types of arguments and return types @ and # which are taken from Generic Intensional Programming Language (GIPL) which in turn helps to achieve this task [MS].

MARF provides great usefulness to researchers to decide different combinations of algorithm. It also provides facility to choose best suited algorithm combination for each task. The estimate of algorithm combination is based on statistical estimators and NLP parsing and many other modules [MK].

NLP techniques are used to analysis of source code with safety to find vulnerabilities and weakness in code. For that we used MARF’s NLP framework and MARCRAFT application. In these experiments unigram alone was used because it has produced good precision and they are the fastest among all other but signal pipelines [MT].

MARFCAT is a MARF-based code analysis tool which is presented at the Static Analysis tool exposition (SATE) workshop 2010 and collocated with the Software Assurance forum. The methodology behind static source code analysis contains two core principles: Machine learning and Spectral and NLP techniques which use signal processing techniques [MC].

To identify speaker’s gender and accent through Machine Learning. MARF uses SpeakerIdentApp as a testbed which can be used as a tool for comparing different algorithms as well as it allows dynamic module selection based on available configuration options[MA].

The writer identification techniques skeletonizing, contouring, line-based and angle-based feature extraction are highly accurate but its time consuming for large volume of digital data of handwritten material. Therefore, by modifying MARF’s Pipeline, WriterIdentApp and Resolution we simulate “quick visual identification” of the hand writing of the writer [MM].

**References:**

[MT]

Serguei A. Mokhov, Joey Paquet, and Mourad Debbabi. The use of NLP techniques in static code analysis to detect weaknesses and vulnerabilities. In Maria Sokolova and Peter van Beek, editors, Proceedings of Canadian Conference on AI'14, volume 8436 of LNAI, pages 326{332. Springer, May 2014. ISBN 978-3-319-06483-3. doi: 10.1007/978-3-319-06483-3 33. Short paper.

[MA]

Serguei A. Mokhov. Choosing best algorithm combinations for speech processing tasks in machine learning using MARF. In Sabine Bergler, editor, Proceedings of the 21st Canadian AI'08, LNAI 5032, pages 216{221, Berlin Heidelberg, May 2008. Springer-Verlag. doi: 10.1007/978-3-540-68825-9 21.

[MM]

Serguei A. Mokhov, Miao Song, and Ching Y. Suen. Writer identi\_cation using inexpensive signal processing techniques. In Tarek Sobh and Khaled Elleithy, editors, Innovations in Computing Sciences and Software Engineering; Proceedings of CISSE'09, pages 437{441. Springer, December 2009. doi: 10.1007/978-90-481-9112-3 74. ISBN: 978-90-481-9111-6, online at: http: //arxiv.org/abs/0912.5502.

[MN]

Serguei A. Mokhov. Combining and comparing multiple algorithms for better learning and classi\_cation: A case study of MARF. In Suraiya Jabin, editor, Robot Learning, chapter 2, pages 17{42. InTech, August 2010. doi: 10.5772/10248. ISBN: 978-953-307-104-6, online at http://www.intechopen.com/download/pdf/pdfs\_id/12131.

[MS]

Serguei A. Mokhov. Towards syntax and semantics of hierarchical contexts in multimedia processing applications using MARFL. In Proceedings of the 32nd Annual IEEE International Computer Soft-ware and Applications Conference (COMPSAC), pages 1288{1294, Turku, Finland, July 2008. IEEE Computer Society. doi: 10.1109/COMPSAC.2008.206.

[MC]

Serguei A. Mokhov. The use of machine learning with signal- and NLP processing of source code to \_ngerprint, detect, and classify vulnerabilities and weaknesses with MARFCAT. Technical Report NIST SP 500-283, NIST, October 2011. Report: <http://www.nist.gov/> manuscript-publication-search.cfm?pub\_id=909407, online e-print at <http://arxiv.org/abs/> 1010.2511.

[MK]

Serguei A. Mokhov. L'approche MARF \_a DEFT 2010: A MARF approach to DEFT 2010. In Proceedings of the 6th DEFT Workshop (DEFT'10), pages 35{49. LIMSI / ATALA, July 2010. DEFT 2010 Workshop at TALN 2010; online at http://deft.limsi.fr/actes/2010/pdf/2\_clac.pdf.

[MH]

Serguei A. Mokhov. Study of best algorithm combinations for speech processing tasks in machine learning using median vs. mean clusters in MARF. In Bipin C. Desai, editor, Proceedings of C3S2E'08, pages 29{43, Montreal, Quebec, Canada, May 2008. ACM. ISBN 978-1-60558-101-9. doi: 10.1145/1370256.1370262.