

Installing FireµSat (version 2.0)

A. The following instructions should assist you to install FireµSat:

1. Double click on the attached .zip file.
2. FireµSat can be installed from where it has been opened. It is unnecessary to save the .zip file in a temporary folder.
3. Double click on the setup.exe icon.
4. The welcome wizard will from here, onwards, guide the process – click next.
5. Accept the agreement and click next.
6. FireµSat will be installed in a subdirectory on the root of C. If this is not desired then you may browse and install FireµSat elsewhere.
7. It is recommended that you select the option that will create a desktop icon as well as the option to create a quick launch icon. Select the appropriate options here and click on next.

The installation process should now be completed.

B. Run FireµSat:

1. If you close everything and you have followed the instructions as described in A a FireµSat icon will appear on your desktop.
2. There are two manners by which FireµSat can be executed. The graphical user interface (GUI) method and the command line method.
3. **FireµSat GUI:** The FireµSat GUI is a Windows interface which allows the user to set Parameters and execute FireMuSat.exe in a shell. If you double click on the FireµSat icon - the FireµSat GUI will appear.

Various text boxes provide the user of different options to enter parameters within specified boundaries. An execute button runs the algorithm when all desired options are filled in. Below follows a brief description of the options (changeable parameters). A more detailed description of the input and output of FireµSat can be found by clicking [here](#).

- a. *Source file:* The complete path name to the file the user wants to process should be entered. Remember the file should be in FASTA format. If the input data constitutes multiple genetic sequences then each of the genetic sequences should be introduced with a “>” as well as the name of the sequence.
- b. *Output file:* The complete path name that indicates where the detected TR’s and the information regarding these TR’s should be output. The source file may be of type .txt but it will be preferable in terms of readability if the user specifies the file as an **excel** file thus of type .csv.

It is preferable that the user copies the input file to the FireMuSat folder. The user should also specify the output file to be in the same FireMuSat folder. Note, the user only indicates the path name and the file type of the output file, FireMuSat creates the file.

- c. *Motif length*: The motif length of the motif to be searched for should be indicated. In this trial version there does NOT exist an option to search for a range of motif lengths.
- d. *Max Motif Error*: Is the number of motif errors the user wants to allow per motif (mutations: deletions, mismatches, insertions).
- e. *Max adjacent ATR elements*: The number of ATRE's that the user allows next to each other.
- f. *Motif Range Options*: The motif range option enables the user to specify a range of motifs FireuSat should search for.
- g. *Min required TR elements*: Indicates the minimum number of TRE's that should occur before a TR is output.
- h. *Max substring error*: Is a threshold value that the user enters. The *substring error* should always be smaller than the *Max substring error*. The *substring error* is calculated by means of the formula as described [here](#).
- i. *Mismatch penalty*: The penalty value allocated to a mismatch.
- j. *Delete penalty*: The penalty value assigned to a deletion.
- k. *Insert penalty*: The penalty value allocated to an insertion.
- l. *Execute*: If the user is satisfied with all the entries the program can be run by clicking the *Execute* button.

After execution the results can be obtained by navigating to the folder where the specified output file resides. This may be achieved by executing the file 'Explorer' or 'My Computer'. The specified path should be followed. Double click on the resultant output file. Note: if the output file extension was specified as .csv then the output file should open in a spreadsheet.

4. **commandline**: Six examples of how to use the command line options for FireuSat are added in the form of batch (.bat) files to the FireuSat directory. These are:

```
check_all_len_3.bat,  
check_bl_len_3.bat,  
check_range_len_3.bat,  
check_range_len_4.bat,  
check_range_len_5.bat, and  
check_swam_len_3.bat
```

You may either run these batch files by double-clicking on them or edit them by right-clicking and selecting edit to see the actual use of the FireMuSat.exe from the command line. Please use these files as guidelines. Parameters introduced in these files should currently be provided in the correct order on the command line. Below is an example from check_swam_len_3.bat on swam.txt:

```
firemusat -source-file=.\data\swam.txt -output-file=tannie_swam.csv -motif-len=3
```