# User Manual

This section describes how to use the provided software package in order to study a set of DGA methods applied to one input point or multiple input points and review the result of the study in tabular or graphical form.

## User Interface

### <<Screenshots of GUI>>

* Main Screen
* Choose Multipoint Input File
* Tabular Results of Analysis
* Graph Results of Analysis

### <<Use Cases>>

* Choose Methods
* Enter Single Point Input
* Choose Multiple Point Input
* Save Tabular Results
* Save Graph Results)

## Input and Output File Formats

This subsection demonstrates sample input and output files and how to interpret them.

* MS Excel Multipoint Input File Format
* MS Excel Tabular Results File Format
* Graph Result Image File Format

# Developer Manual

This section describes the simple steps required by a researcher in order to introduce a new DGA method, not already in the software package, so that it can be available in the GUI and be included in a comparative DGA study.

## Software Packaging List

<<A table with the names of the files within the package and the purpose of each of them>>

## Adding a Method in MATLAB

**Step 1**: Create a function with the following signature

function diagnosis=method\_name(ratios)

where

ratios: gas concentrations vector of length 9

in this order [H2,CH4,C2H6,C2H4,C2H2,CO,CO2,N2,O2]

diagnosis: diagnosis code, a number between 0 and 7

such that 0=NF, 1=PD, 2=D1, 3=D2, 4=T1, 5=T2, 6=T3, 7=UD

<<insert a table describing what each diagnosis code means>>

**Step 2**: Add new method to the configuration file (Config.xls) as follows:

a) Under the first column enter the method title to be shown in the User Interface

b) Under the second column enter the function name you created in step 1, e.g. method\_name

## How to add a new method in any other language:

**Step 1**: Write the new method in the programming language of your choice and make sure your program reads the input from a file called "ratios.txt" and output the diagnosis code to a file called "diagnosis.txt"

ratios.dat: An input text file with 9 lines. Each line contains a number that represents

a gas concentration, in this order:

H2, CH4, C2H6, C2H4, C2H2, CO, CO2, N2, O2

diagnosis.dat: An output text file with one number which is the diagnosis code,

such that 0=NF, 1=PD, 2=D1, 3=D2, 4=T1, 5=T2, 6=T3, 7=UD

2. Compile your program into an executable (.exe) file and copy the executable file and any other files required for its operation to the MATLAB DGA program folder.

3. Add new method to the configuration file (Config.xls) as follows:

a) Under the first column enter the method title to be shown in the User Interface

b) Under the second column enter the executable file name you created in step 2, e.g. method\_name.exe