WHAT IS CLAIMED IS:

1. A method for real-time data analysis of water pipe network, comprising:

step S1: obtaining a current flow data x_i to be identified, where *i* is a positive integer greater than or equal to 2;

step S2: determining whether a first difference between the current flow data x_i to be identified and a previous identified flow data x_{i-1} adjacent to the current flow data x_i to be identified is less than or equal to a preset threshold, and waiting to be outputted in response to the first difference being less than the preset threshold;

step S3: determining whether a second difference between a next to-be-identified flow data x_{i+1} adjacent to the current flow data x_i to be identified and the previous identified flow data x_{i-1} is less than or equal to the preset threshold in response to the first difference being greater than the preset threshold, and waiting to be outputted after correction in response to the second difference being less than or equal to the preset threshold;

step S4: determining whether a third difference between the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} is less than or equal to the preset threshold in response to the second difference being greater than the preset threshold, and waiting to be outputted in response to the third difference being less than or equal to the preset threshold;

step S5: detecting changing trends of the previous identified flow data x_{i-1}, the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} in response to the third difference being greater than a present threshold, waiting to be outputted in response to a trend satisfying a preset condition, waiting to be outputted after correction in response to the trend not failing to satisfy the preset condition, and obtaining and outputting an analysis result after an output period is reached.

2. The method of claim 1, further comprising:

detecting a current time, and in response to the current time satisfying a preset time period, determining the current to-be-identified flow data as a new previous identified flow data, and determining the next to-be-identified flow data as a new current flow data to be identified, and continuing to execute the step S1.

3. The method of claim 2, further comprising:

detecting whether the analysis result reaches an alarm condition;

generating an alarm signal in response to reaching the alarm condition.

4. The method of claim 3, further comprising:

controlling an acoustic prompting device and/or an optical display device to give an alarm in response to the alarm signal.

5. The method of claim 1, wherein the identified flow data x_1 is a preset value.

6. The method of claim 1, wherein the preset condition is that: the previous identified flow data x_{i-1}, the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} continue to rise or continue to fall.

7. An apparatus for real-time data analysis of water pipe network, comprising:

an obtaining module, configured to obtain a current flow data x_i to be identified, where *i* is a positive integer greater than or equal to 2;

a first determining module, configured to determine whether a first difference between the current flow data x_i to be identified and a previous identified flow data x_{i-1} adjacent to the current flow data x_i to be identified is less than or equal to a preset threshold, and waiting to be outputted in response to the first difference being less than the preset threshold;

a second determining module, configured to determine whether a second difference between a next to-be-identified flow data x_{i+1} adjacent to the current flow data x_i to be identified and the previous identified flow data x_{i-1} is less than or equal to the preset threshold in response to the first difference being greater than the preset threshold, and waiting to be outputted after correction in response to the second

difference being less than or equal to the preset threshold;

a third determining module, configured to determine whether a third difference between the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} is less than or equal to the preset threshold in response to the second difference being greater than the preset threshold, and waiting to be outputted in response to the third difference being less than or equal to the preset threshold;

a detecting module, configured to detect changing trends of the previous identified flow data x_{i-1}, the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} in response to the third difference being greater than a present threshold, wait to be outputted in response to a trend satisfying a preset condition, wait to be outputted after correction in response to the trend not failing to satisfy the preset condition, and obtain and output an analysis result after an output period is reached.

8. The apparatus of claim 7, further comprising:

a looping execution module, configured to detect a current time, and in response to the current time satisfying a preset time period, to determine the current to-be-identified flow data as a new previous identified flow data, and determine the next to-be-identified flow data as a new current flow data to be identified, and continue to execute the obtaining module.

9. The apparatus of claim 8, further comprising:

an alarm module, configured to detect whether the analysis result reaches an alarm condition, to generate an alarm signal in response to reaching the alarm condition, and to control an acoustic prompting device and/or an optical display device to give an alarm in response to the alarm signal.

10. The apparatus of claim 7, wherein,

the identified flow data x_1 is a preset value;

the preset condition is that: the previous identified flow data x_{i-1}, the current flow data x_i to be identified and the next to-be-identified flow data x_{i+1} continue to rise

or continue to fall.