As it was discovered that hereditary transmission from one generation to another generation is controlled by DNA. By chemical process, DNA can be provided a set of genetic markers called DNA fingerprints which are completely specific to an individual and can be applied directly to problems of human identification or parenthood testing.

In this research, DNA fingerprints recognizer prototype is developed on an IBM PC microcomputer. As each individual DNA fingerprints pattern is uniquely characterized by the band position, width and intensity, the key approach here is to employ the compact binary digital search tree (BDS-tree) structure for pattern representation. For standard referencing of all DNA fingerprint patterns, the Lagrange polynomial interpolation is used to normalize the scale of pattern length. Furthermore, the prototype applies the technique of Levenshtein distance for pattern similarity measures in order to compare among DNA fingerprints. The recognizer after implementation is able to search not only fast and accurately, but also exhaustively search any similar patterns which can be used for parenthood testing.

The prototype is then tested under the database of approximate 50,000 patterns on a 386SX microcomputer. The result is that the recognizer performs the search for an existing pattern by an average time of 1.03 seconds. Not only the existing one, the recognizer can also search for 'close' patterns with a pre-defined level of similarity, the average time is 4.47 seconds per pattern.