Problem Statement

To make a software which can convert old photo of engineering drawing (ED) to a computer generated engineering drawing, which can be used for milling operation.

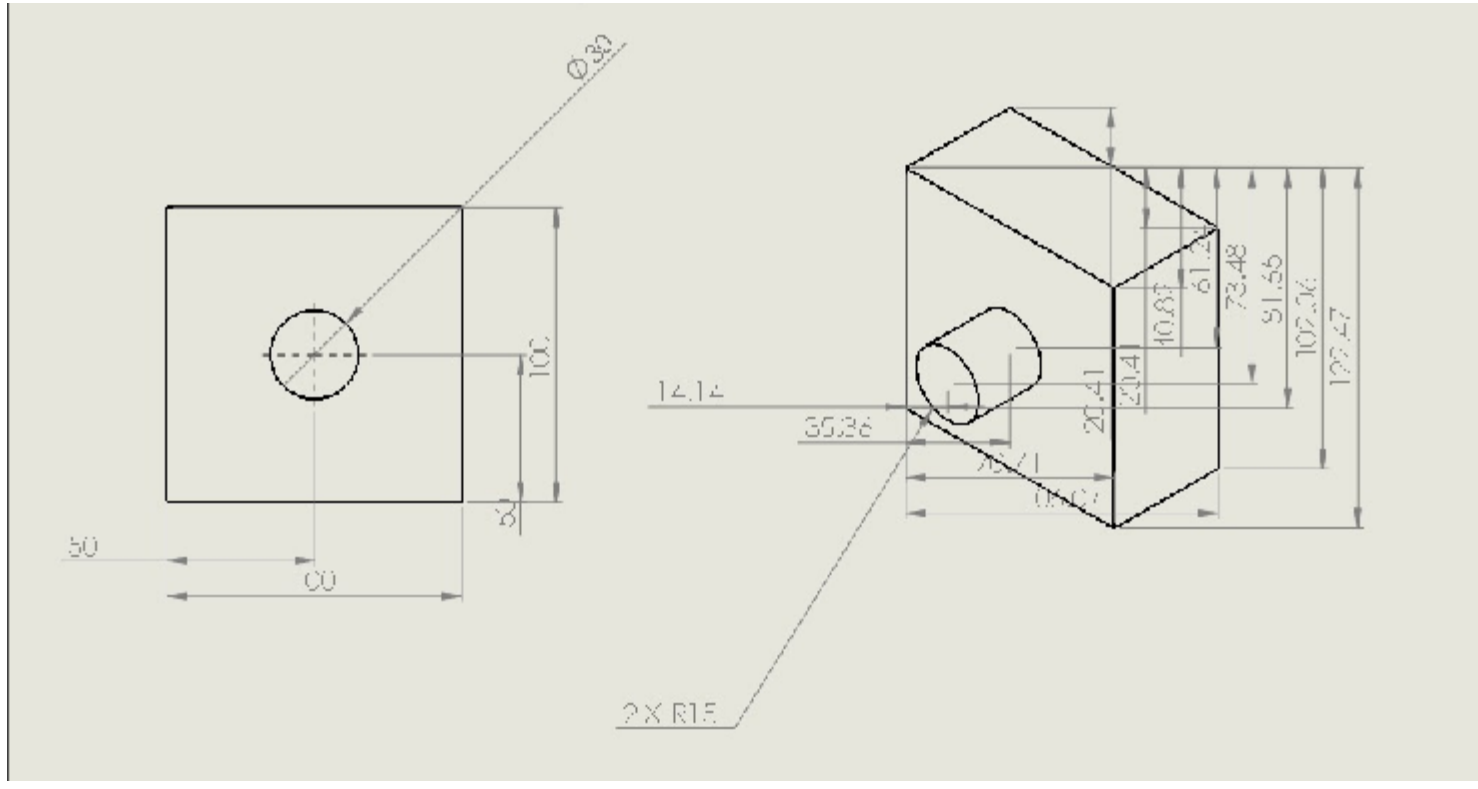
Contributions

- Conversion of old picture of ED to mathematical functions
- Optimum path for tool motion
- No deformation on any type of transformations on the vector image of the file
- Obtained high compression ratio

Algorithms

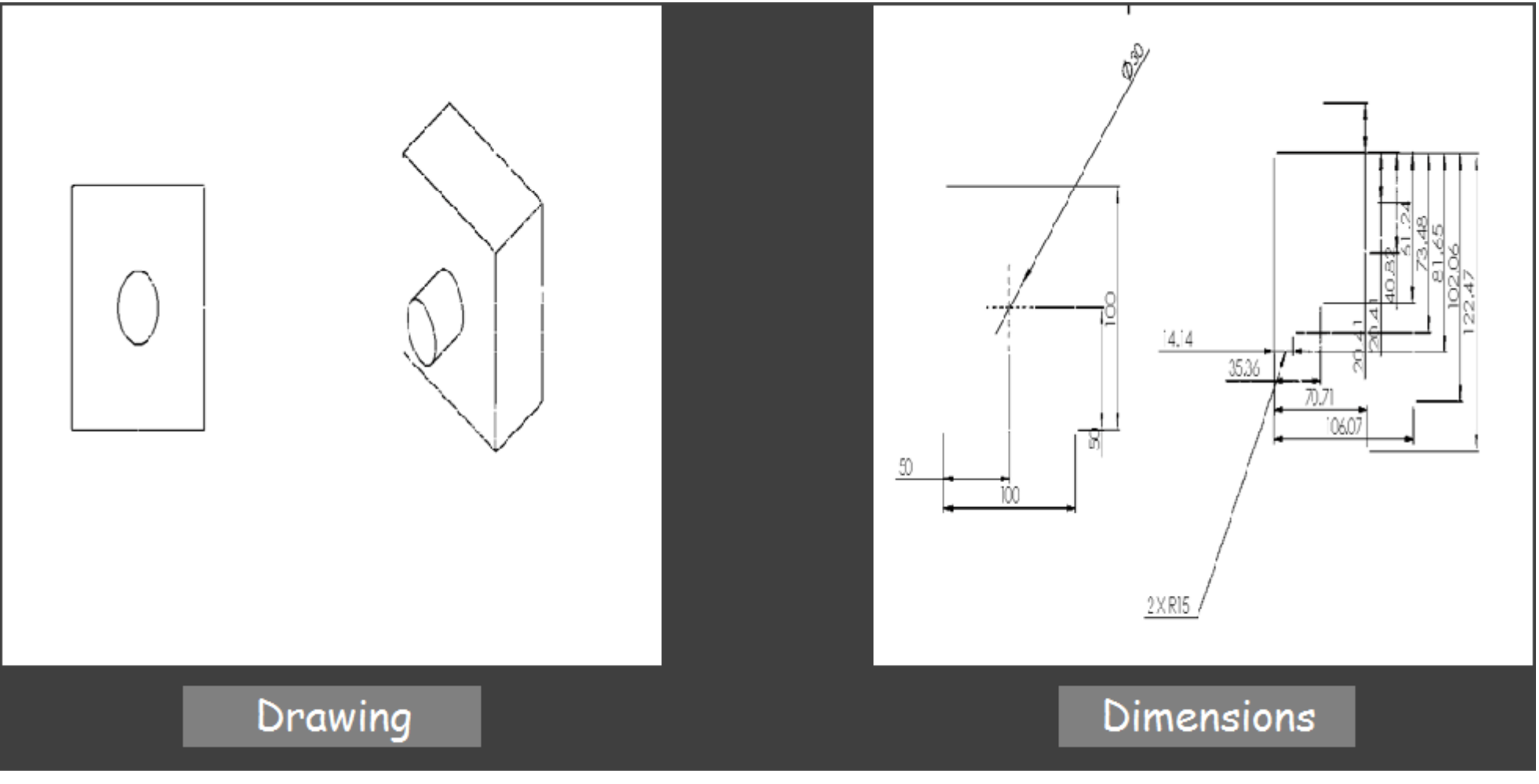
1. Extraction of dimensions
2. Noise reduction
3. Skeletonization
4. Scanning
5. Vectorization
6. Data storage and management
7. G-code and path optimization

Extraction of dimensions



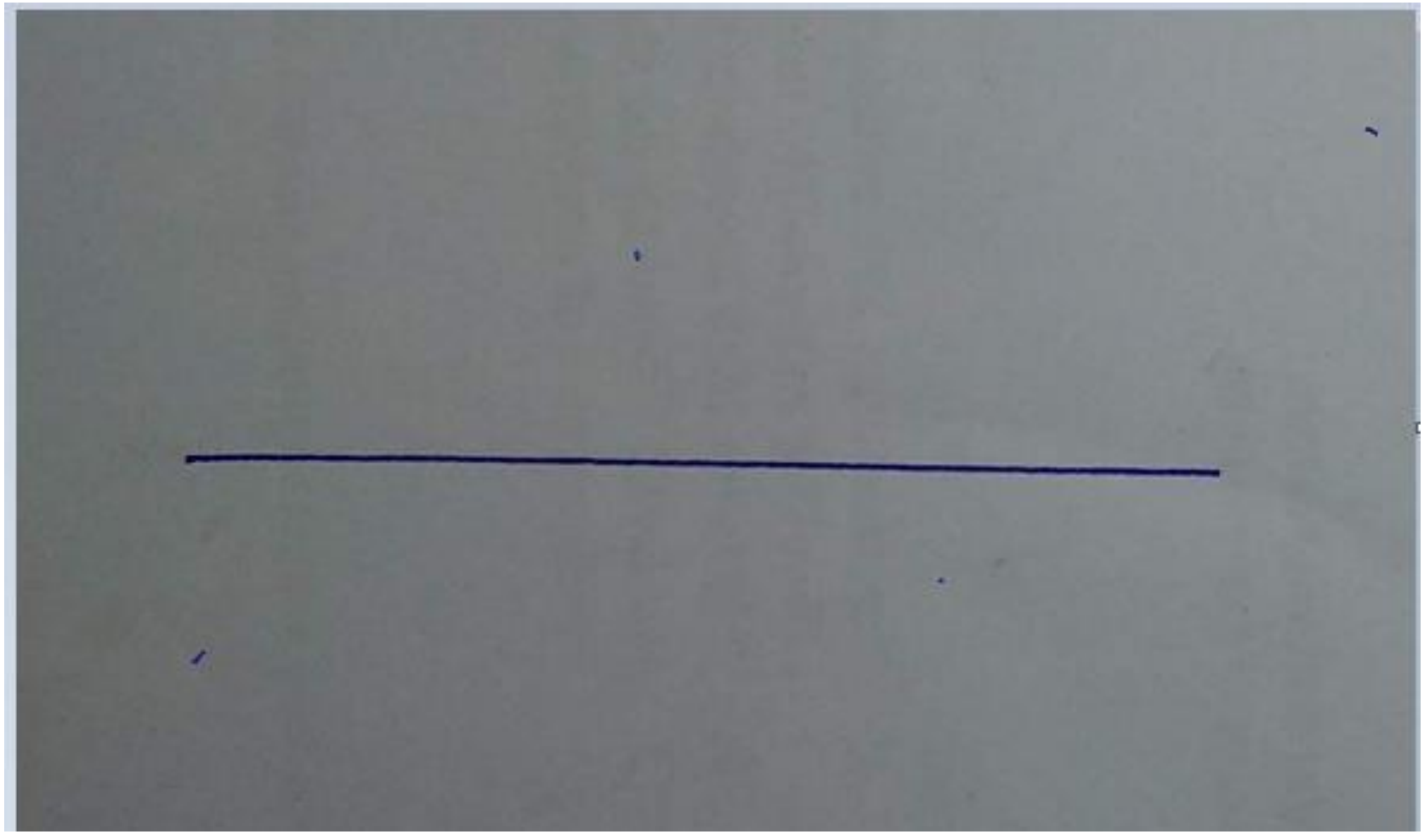
Before

Extraction of dimensions



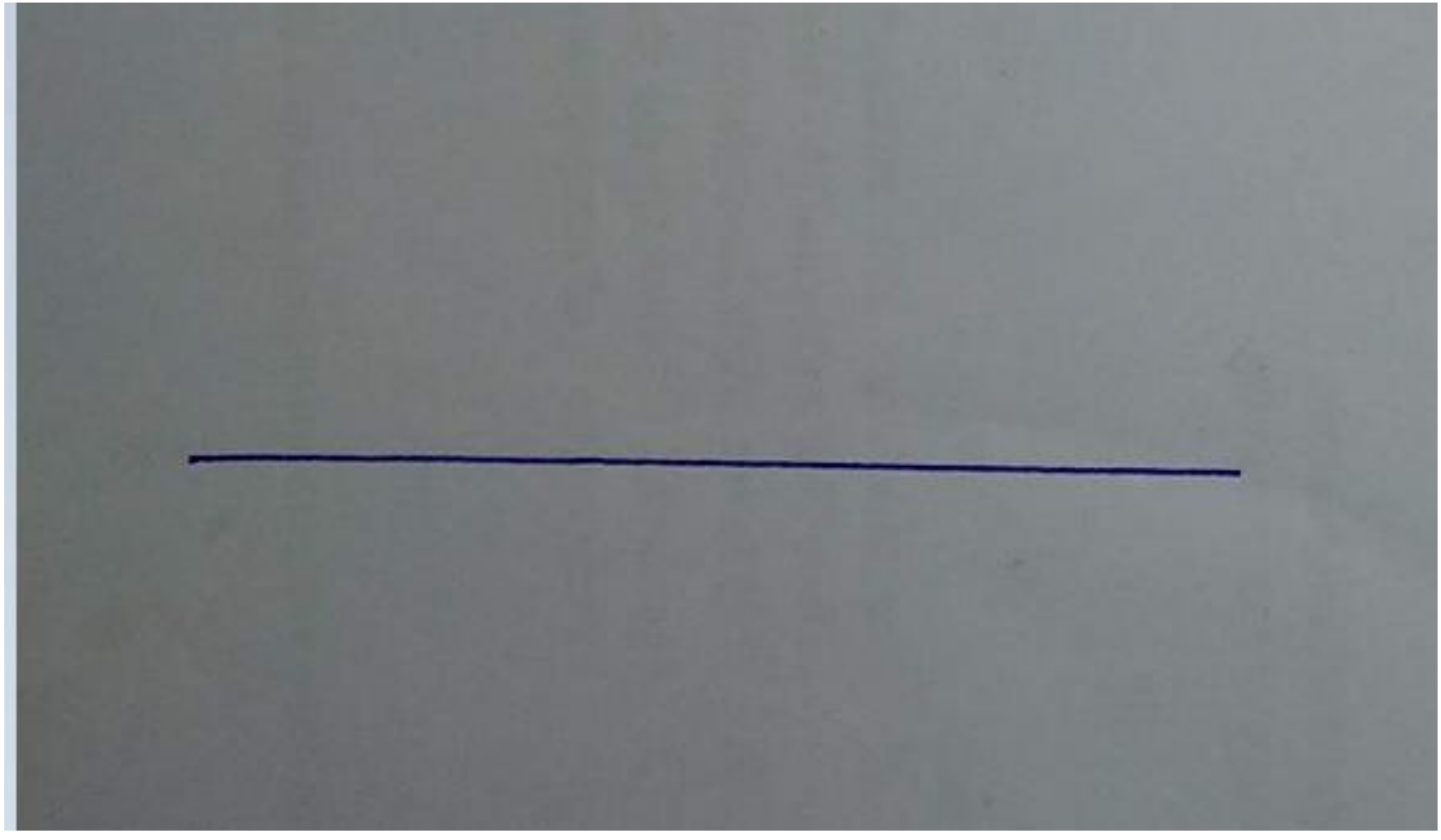
AFTER

Noise reduction



Before

Noise reduction



AFTER

Skeletonization

Before

Skeletonization

AFTER

Scanning

An algorithm was made to scan the image and convert it to two simple Matlab vectors for further processing.

Vectorization

1. Traversal method (Linear interpolation (fastest))
2. Parametric - Linear interpolation (accurate)
   Parametric - Cubic spline interpolation (accurate)
   Parametric - Hermite interpolation (accurate)

Data storage and management

1. Size reduction.
2. Only details of the curves are stored.

G-code and path optimization

On the basis of the given method of Vectorization, optimum path is calculated and the G-code of the geometry is stored in the disk.

Thank You!