

ABSTRACT

Present manufacturing industry demands more automation from design stage to manufacturing stage. The flexibility in design and production has become simpler with the use of computers. Geometric models with complete design data details are created through CAD software and are in the form of neutral file. These files can be transported for further analysis or process planning or for manufacturing floor. Automatic feature recognition is the process of extraction of design information from neutral file and identifying the features to be machined on a product without any human intervention. Automatic feature recognition is an important aspect for CAPP and it is an important task between CAD and CAPP. CAPP is the bridging gap between CAD and CAM. Present work is an attempt to develop a method for automatic feature recognition of rotational components from neutral file, STEP (AP203). A rule based search is employed to recognize manufacturing features and its attributes such as dimension (length and radius), nature of internal feature (through/ blind), type of feature (external/internal), nature of contour (concave/convex) and feature location relative to the original coordinates of the designed part(online/offline). Three dimensional rotational parts that are created using CATIA software are used in this methodology to recognize features. A generalized JAVA code has been written to extract the data and to recognize the features.

The developed software consists of five major segments. First segment deals with extraction of geometrical data from neutral file and remaining four segments are used to recognize cylindrical features, curved features, cross hole features and special features respectively from extracted geometrical data. Full automation of feature recognition for rotational parts can be achieved by using the software developed. The segments have been implemented and tested on several components. The results are satisfactory and successful.