List of Symbols

Symbol	Description
K_T	Tangential Cutting Constant
K_R	Radial Cutting Constant
K_A	Axial Cutting Constant
K_{Tf}	Flank Edge Tangential Cutting Constant
K_{Rf}	Flank Edge Radial Cutting Constant
K_{Tb}	Bottom Edge Tangential Cutting Constant
K_{Rb}	Bottom Edge Radial Cutting Constant
F_T	Tangential Force
F_R	Radial Force
F_A	Axial Force
F_F	Feed Force
F_N	Normal Force
F_X	Force in X- direction
F_Y	Force in Y- direction
F_X^m	Experimental Cutting Force in X- direction
F_Y^m	Experimental Cutting Force in Y- direction
F_X^{mf}	Flank Edge Experimental Cutting Force in X- direction
F_Y^{mf}	Flank Edge Experimental Cutting Force in Y- direction
F_X^{mb}	Bottom Edge Experimental Cutting Force in X- direction
F_Y^{mb}	Bottom Edge Experimental Cutting Force in Y- direction
F_X^T	Computational Total Cutting Force in X- direction
F_Y^T	Computational Total Cutting Force in Y- direction
F_X^f	Computational Flank Cutting Force in X- direction
F_Y^f	Computational Flank Cutting Force in Y- direction
F_X^b	Computational Bottom Cutting Force in X- direction
F_Y^b	Computational Bottom Cutting Force in Y- direction
dz	Thickness of Disc Element
$\beta(i,j,k)$	Angular Position of the k^{th} Flute on j^{th} Disk Element at i^{th} Angular Rotation
θ_c	Tooth Spacing Angle of the Cutter
θ_h	Helix Angle of the Cutter
θ_{en}	Engagement Angle
θ	Angle Subtended by F_N with X- axis
ϕ	Cutter Rotation Angle
$t_c(i,j,k)$	Instantaneous Uncut Chip Thickness
t_{avg}	Average Uncut Chip Thickness
f_{pt}	Actual Feed per Tooth
f_a	Programmed Feed per Tooth
R_c	Radius of the Cutter
R_f	Final Radius of Curvature
$w(i,j,k)$	Weighting Factor

Symbol	Description
d_{a1}	Smaller *ADOC*
d_{a2}	Larger *ADOC*
σ	Activation Function
$x_{p,q}$	Output Value of a q^{th} Neuron for p^{th} Layer
$W_{p,q}$	Weight of a q^{th} Neuron for p^{th} Layer
y	Predicted Value of ANN Network
t	Actual Value of ANN Network
E	Error of ANN Network
α	Learning Rate
D_e	Equivalent Diameter
n	Number of Axial Disk
δ_T	Deflection in Tangential Direction
δ_N	Deflection in Normal Direction
d	Width of Quad Element in FE
h	Height of Quad Element in FE
$acor$	Actual Coordinate
$dcor$	Distorted Coordinate
$RDOC_{act}$	Programmed or Actual *RDOC*
$RDOC_{rev}$	Corrected *RDOC*
a_d	Arithmetic Mean of Deflections
A	Angle with X- axis
A	Angle with X- axis
B	Angle with Y- axis
C	Angle with Z- axis
D	Intercept at Z- axis
PV^f	Parameter Vector for Flatness
$Flat(PV^f)$	Objective Function for Flatness
T^t	Normal Distance from Reference to Bounding Planes
PV^c	Parameter Vector for Cylindricity
$Cycl(PV^c)$	Objective Function for Cylindricity
P_t	Point-cloud
P_a	Position of Point on Axis of Cylinder
R^t	Orthogonal Distance between P_t and P_a
m	Number of Particle in PSO
w_{max}, w_{min}	Inertia Weights
c_1, c_2	Acceleration Coefficients
r_1, r_2	Independently Uniformly Distributed Random Variables
u	Number of Iterations in PSO
LL_{best}	Individual Local Best
GL_{best}	Global Best
R_L	*RDOC* at L^{th} Location along Length of Cut