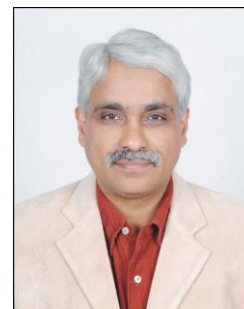


## **CURRICULAM- VITAE**

### **PERSONAL**

Name : Shalendra Kumar Singhal  
Father's Name : Late Shri M. S. Singhal  
Date of Birth : December 26<sup>th</sup> 1965  
Nationality : INDIAN  
Marital Status : Married  
Children : Two  
Qualification : Ph. D. (*Mechanical*)  
*Specialization* : Rapid prototyping, Ultrasonic Tomography  
Present Occupation : Associate Professor (Mech. Engg.)  
Address for Correspondence : Type IV  
East Campus, H.B.T.I., Kanpur  
Office Address : Mech. Engg. Department  
H.B.T.I., Nawabganj  
Kanpur, U.P. (INDIA)  
Permanent Address : III/E- 15 Nehru Nagar  
Ghaziabad, U.P. INDIA



**Phone (Off.) :** 91-512-2534001-05 Ext.

**Fax:** 91-512-2533812

**Phone (Res.)** 91-512-2531789

**Mobile:** 91-9452339410

E-mail Address : [Shalendra\\_singhal@rediffmail.com](mailto:Shalendra_singhal@rediffmail.com)

### **EDUCATIONAL**

S. No.	EXAM PASSED	BOARD / UNIVERSITY	INSTITUTE	YEAR	%MARKS OBTAINED	DIVISION
01	H. School	U.P.Board, U.P.	DPS Inter College, Nawabganj Kanpur	1980	68.4	First
02	Intermediate	U.P.Board, U.P	B.N.S.D. Inter College, Kanpur	1982	60.4	First
03	B.E. (Mechanical)	Avadh University, Faizabad	Kamla Nehru Institute of Technology, Sultanpur, U.P.	1986	78.9	First (Honours)
04	M.E. (M/c Design)	University of Roorkee, Roorkee	Presently Known as I.I.T, Roorkee	1989	78.3	First (Honours)
05	Ph.D.	U.P. Technical University, Lucknow	H.B.T.I., Kanpur	2008	*	Defended on 22 Jan 2008

\* Title of Thesis: “Optimum Part Deposition Orientation and Adaptive Slicing in SL and SLS Prototyping”

### **WORK HISTORY**

<b>S. No.</b>	<b>POST HELD</b>	<b>EMPLOYER</b>	<b>PERIOD</b>	<b>NATURE OF WORK</b>
01	Lecturer	H.B.Technological Institute, Kanpur	28 <sup>th</sup> Dec. 87to 27 <sup>th</sup> Dec 93	Teaching
02	Sr. Lecturer	H.B.Technological Institute, Kanpur	28 <sup>th</sup> Dec. 93to 27 <sup>th</sup> Dec 98	Teaching
03	Asstt. Prof.	H.B.Technological Institute, Kanpur	27 <sup>th</sup> Dec 98 to 31 Dec2006	Teaching
04	Assoc. Prof.	H.B.Technological Institute, Kanpur	1 Jan 2006 to till date	Teaching
05	Professor	H.B.Technological Institute, Kanpur (now HBTU Kanpur)	2008 till date	Teaching

### **Projects Carried Out:**

#### *Sponsored Projects : 01*

Worked As Co-investigator at I.I.T.,Kanpur in “Laser Ultrasonic Tomographic Imaging of Composite.” 1998, with Prof. N.N.Kishore, Prof. N.G.R.Iyenger Prof. P. Munshi and Prof. S.K.Rathor

**Total amount of Project was Rs. 19.63 lacks sanctioned for three year by NRB for three years vide letter no DNRD/4003/11 dated 29<sup>th</sup> October 1998.**

### **Award & Honors**

4<sup>th</sup> position in B.Tech. and Merit scholarship in B.tech. II<sup>nd</sup>, III<sup>rd</sup> and IV<sup>th</sup> year.

### **PUBLICATIONS**

#### *International journal*

1. S. K. Singhal, A. P. Pandey, P. M. Pandey, A. K. Nagpal (2005) Optimum part deposition orientation in Stereolithography, **Computer Aided Design and Applications**, 2, pp. 319-238.
2. P. B. Bacchewar, S. K. Singhal, P. M. Pandey (2007) Statistical modelling and optimization of surface roughness in selective laser sintering process, Journal of Engineering Manufacture, **Proc. IMechE J. of Engineering Manufacture**, 221(B), 35-52.
3. Alka Gupta, S. K. Singhal, Suman Katiyar, Reena Singhal, and A. K. Nagpal, (2008) Reactive Blends of Epoxy Resin (DGEBA) Cross-Linked by Anionically Polymerized Polycaprolactam: Adhesive Property and Chemical Resistance; **Polymer-Plastics Technology and Engineering**, 47: 1-14,
4. S. K. Singhal, P. K. Jain, P. M. Pandey, (2008) Adaptive slicing for SLS prototypes, **Computer Aided Design and Applications**, 5(1-4), 2008, 412-423.

5. S. K. Singhal, P. K. Jain, P. M. Pandey, A. K. Nagpal, (2008) Optimum part deposition orientation for multiple objectives in SL and SLS prototyping, Accepted on 1 May 2008, **International Journal of Production Research**, Taylor and Francis. Vol. 47(22) 2009, pp.6375-6396.

#### ***National / International Conferences***

1. S.K. Singhal, S.K. Rathore, P. Munshi, N.N. Kishore and N.G.R. Iyenger, "Ultrasonic Tomography of Polymeric Materials" Presented in "Satellite Conference on Image Analysis of Materials & Life Sciences", Nov. 7-10, **1999**, Kalpakkam, India.
2. S.K. Singhal, S.K. Rathore, P. Munshi, N.N. Kishore and N.G.R. Iyenger, "Defect Identification by Ultrasonic Tomography in Polymers" in 15th World Conference on Non-Destructive Testing, Oct. 12-15, **2000**, Rome, Italy.
3. S.K. Rathore, , N.N. Kishore P. Munshi and S.K. Singhal, "Ultrasonic Tomography of closely spaced defects " in 15th World Conference on Non-Destructive Testing, Oct. 12-15, **2000**, Rome, Italy.
4. S. K. Singhal Rapid Prototyping: a boon for product development, Souvenir, ECKAME **2006** held at Engineering College, Kota,
5. S. K. Singhal, P. M. Pandey, A. K. Nagpal ' Optimization of SLS process parameters through Taguchi's technique for better surface quality, E-Proceedings of Global Conference on Production and Industrial Engineering, National Institute of Technology, (**2007**) Jalandhar.
6. Alka Gupta, S.K.Singhal,Varun Dixit, A.K.Nagpal, "Study on Mechanical and Electrical properties of Reactive blends of Epoxy resin and polycaprolactam" presented in International Conference, "INCOM-06" Held AT I.I.T., Kanpur Held on 12-14 Dec. (**2007**)
7. V. K. Chaurasia, Jitendra Bhaskar and S.K.Singhal "Structural properties of easte tyre rubber compoites" published in prceeding of Innovation in Materials, Design & Manufacturing March 27-28, 2015 pp: 154-160,ISBN:9789384869-47-2.

#### ***NATIONAL / INTERNATIONAL CONFERENCES ATTENDED***

1. S.K. Singhal, S.K. Rathore, P. Munshi, N.N. Kishore and N.G.R. Iyenger, "Ultrasonic Tomography of Polymeric Materials" Presented in "Satellite Conference on Image Analysis of Materials & Life Sciences", Nov. 7-10, (**1999**), Kalpakkam, India.
2. S. K. Singhal, A. P. Pandey, P. M. Pandey, A. K. Nagpal (**2005**) Optimum part deposition orientation in Stereolithography, Computer Aided Design and Applications, (CAD'05 Bangkok, Thailand).
3. S. K. Singhal (**2006**) Rapid Prototyping: a boon for product development, Souvenir, ECKAME 2006 held at Engineering College, Kota.

4. S. K. Singhal, P. M. Pandey, A. K. Nagpal (2007) Optimization of SLS process parameters through Taguchi's technique for better surface quality, E-Proceedings of Global Conference on Production and Industrial Engineering, National Institute of Technology, Jalandhar.

### **MEMBERSHIP OF PROFESSIONAL BODIES**

- Life member of Indian Society for Technical Education (ISTE) LM-19356.

### **List of Short Term courses/workshop and Training Attended (after 1998)**

- Fuzzy Logic and its Engineering Application at IIT, Kanpur from May 3, to May 9, 1999.
- Short term Course on "Non Destructive Assessment Of Structures" March 15-20 2004, at M.B.M. Engineering College, Jodhpur
- A course on Scientific Computing with MATLAB , June 7-11,2004 IIT, Kanpur
- Short term Course on "CAD/CAM using CATIA" 30-5-2005 to 3-6-2005. at NITTTR Chandigarh.
- Short term Course on "CAD USING PRO/ENGINEERING" 8-5-2006 to 12-05-2006. at NITTTR Chandigarh.
- TEQIP Workshop on Applied Mechanics at IIT Kanpur, 4-7, October 2013.
- Management Capacity Enhancement Programme for Administrators at IIM Lucknow at Noida Campus March 10-14, 2014.
- TEQIP Workshop on Mechanics and Applied Mathematics at IIT Kanpur, 19-25 July 2014.

### **COURSES TAUGHT AT HBTI KANPUR**

Engineering Mechanics, Fluid Mechanics, Mechanics of Solids, Experimental stress analysis, Machine Design, Thermodynamics, Product design and development, Rapid prototyping, FEM, Optimization.

Shalendra Kumar Singhal  
Professor  
Mech. Engg. Department  
H.B.T.I. Kanpur

- Modern Measurement Techniques in Fluid Mechanics at IIT Kanpur (9 Dec – 14 Dec. 1991)
- Design of Machine Tools at IIT Kanpur from June 22 to July 4, 1992.
- Application of Finite Element Method in Mechanical Engineering at REC Surat, From 7 June to 19 June 1993.
- One Month Summer vacation training at Panki Thermal power Station, Panki, Kanpur. From 15-6-95 to 14-7-95

# Computer-Aided Design and Applications

**Volume 2, Issue 1-4, 2005**

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## Optimum Part Deposition Orientation in Stereolithography

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### DOI:

10.1080/16864360.2005.10738380

S. K. Singhal<sup>a</sup>, A. P. Pandey<sup>b</sup>, P. M. Pandey<sup>b</sup> & A. K. Nagpal<sup>a</sup>  
pages 319-328

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### Abstract

In the present work an attempt has been made to achieve minimum average part surface roughness (best overall surface quality) for Stereolithography processed parts by determining optimum part deposition orientation. A conventional optimization algorithm based on Trust Region Method (available with MATLAB 6.5 optimization tool box) has been used to solve the optimization problem. It is observed that the problem is highly multi-modal in nature and a suitable initial guess, which is used, as an input to execute optimization module is important to achieve a global optimum. A simple methodology has been proposed to find out initial guess so that global minimum is obtained. Finally the surface roughness simulation is carried out with optimum part deposition orientation to have an idea of surface roughness variation over the entire part's surface before depositing the part. Case studies are presented to demonstrate the capabilities of the developed system

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### Keywords

[Stereolithography \(SL\)](#),

[Part deposition orientation](#),

[Average part surface roughness](#)

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