

Product Data Capture, Design, Prototyping and Manufacture

Book

1. Lu, L, J.Y.H. Fuh and Y.S. Wong,"Laser-induced Materials and Processes for Rapid Prototyping", Kluwer Academic Publishers, U.S.A., 2001.

Chapters in Books

1. Wong, Y.S., A.N. Poo and O.H. Chai,"Mechatronic Systems Techniques in Computer Numerical Control of Machine Tools," Edited by Cornelius T. Leondes, Chapter 2, Mechatronic Systems Techniques and Applications, Volume 1, Industrial Manufacturing, Gordon and Breach International Series in Engineering, Technology and Applied Science, Gordon and Breach Science Publishers, pp.45-102.
2. Wong, Y.S., H.T. Loh and K.S. Neo,"Techniques for Computer Aided Design (CAD) for the Translation of Geometric Data to Numerical Control Programs for Manufacturing Systems", Chapter of Book on Computer Aided and Integrated Manufacturing Systems Techniques and Applications.

Refereed Journals - International

1. Lim, F.S., Y.S. Wong and M. Rahman,"Circular Interpolators for Numerical Control: A Comparison of the Modified DDA Techniques and an LSI Interpolator", Computers in Industry, Vol. 18, (1992), pp.41-52.
2. Chai, O.H., Y.S. Wong and A.N. Poo,"A DDA Parabolic Interpolator for Computer Numerical Control of Machine Tools", Mechatronics, Vol. 4, No. 7 (1994), pp. 673-692.
3. Wong, Y.S. and Z.P. Wang,"Automated Process Planning for CNC Machining of Spherical Space-Frame Nodes", Journal of Manufacturing Systems, Vol. 14, No. 5 (1995), pp. 369-377
4. Wong,Y.S., H.T. Loh and C.S. Teng,"An Optimal Piecewise Curve-Fitting Approach for CNC Machining", Transactions of NAMRI/SME, Vol. 23 (1995), pp.157-162.
5. Cheng, W., J.Y.H. Fuh, A.Y.C. Nee, Y.S. Wong and H.T. Loh,"Multi-Objective Optimisations of Part-Building Orientation in Stereolithography", Rapid Prototyping Journal, Vol. 1, No. 4 (1995), pp.12-23.
6. Fuh, J.Y.H., Y.S. Choo, L. Lu, A.Y.C. Nee, Y.S. Wong and W.L. Wang,"Post-Cure Shrinkage of Photo-Sensitive Material Used in Laser Lithography Process", Journal of Materials Processing Technology, Vol. 63 (1996), pp.887-891.
7. Chai, O.H., Y.S. Wong and A.N. Poo,"An Interpolation Scheme for Tool-Radius Compensation Parabolic Paths for CNC", IIE Transactions on Manufacturing Process and Devices, Vol. 28 (1996), pp.11-17.
8. Ong, C.J., Y.S. Wong, H.T. Loh and X.G. Hong,"An Optimisation Approach for Biarc Curve-fitting of B-Spline", Computer-Aided Design, Vol. 28, No. 12 (1996).
9. Xu, F., Y.S. Wong, H.T. Loh, J.Y.H. Fuh and T. Miyazawa,"Optimal Orientation with Variable Slicing in Stereolithography", Rapid Prototyping Journal, Vol. 3, No. 3 (1997), pp.76-88.
10. Xu, F., H.T. Loh and Y.S. Wong,"Considerations and Selection of Optimal Orientation for Different Rapid Prototyping Systems", Rapid Prototyping Journal, Vol. 5, No. 2 (1999), pp.54-60.
11. Lu, L, J.Y. H. Fuh, Y.S. Wong and C.C. Leong,"In Situ Formation of TiC Composite using Selective Laser Melting", Materials Research Bulletin, Vol. 35 (2000), pp.1555-1561.

12. Xu, F., Y.S. Wong, and H.T. Loh, "Towards Generic Models for Comparative Evaluation and Process Selection in Rapid Prototyping and Manufacturing," *Journal of Manufacturing Systems*, Vol. 19, No. 5 (2000), pp.283-296.
13. Zuo, J., Y.P. Chen, Z.D. Zhou, A.Y.C. Nee, Y.S. Wong and Y.F. Zhang, "Building Open CNC Systems with Software IC Chips based on Software Reuse", *The International Journal of Advanced Manufacturing Technology*, Vol. 16 (2000), pp.643-648.
14. Lim, M.W., C.J. Ong and Y.S. Wong, "Fitting of Unstructured Objects using Simulated Re-annealing", *International Journal of Knowledge-based Intelligent Engineering Systems*, Vol. 5 (July 2001), No. 3, pp.195-202.

Accepted for Publication

15. Liu, G.H., Y.S. Wong, Y.F. Zhang and H.T. Loh, "Modelling Cloud Data for Prototype Manufacturing", *Journal of Materials Processing Technology*.
16. Liu, G.H., Y.S. Wong, Y.F. Zhang, H.T. Loh, "Adaptive Fairing of Digitized Point Data with Discrete Curvature", *Computer Aided Design*.

Refereed Journals - Local/Regional

1. Lim, F.S., Y.S. Wong and M. Rahman, "Design and Development of a PC-based CNC System using LSI Chips", *Journal of the Institution of Engineers, Singapore*, Vol. 30, No. 1, (1990) pp.63-69.
2. Zhang, Y.F., Y.S. Wong, Y.S. Choo, K.K. Kwong and L.B. Tan, "Comparative Study of CNC Machining, SLA, LOM and FDM Processes for the Prototyping of a Compressor Rotor", *Journal of the Institution of Engineers, Singapore*, Vol. 37, No. 4 (1997) pp. 7-13.

Non-Refereed Journals

1. Wong, Y.S., "Desktop Design and Prototyping Systems", *Singapore Manufacturing Engineering Yearbook*, Vol. 9, Singapore (1989) pp.31-33.
2. Wong, Y.S., and K.S. Lee, "PC-based 2 1/2D Interactive Computer-graphics NC Programming System", *Singapore Production Engineers Yearbook*, Vol. 6, Singapore, (1989) pp.78-80.
3. Poo, A.N. and Y.S. Wong, "Singapore Develops Its CNC Potential", *Asiamac Journal*, Vol. 3, No. 3, Hong Kong, (August 1991), pp.62-63.

Conferences

1. Chen, Y.F., V.C. Venkatesh and Y.S. Wong, "A Microcomputer-based CAD/CAM System for Low-cost Automation", *Proc. Factory Automation, Houston, Instrument Society of America, U.S.A.*, (10th-13th Oct. 1983) pp.775-794.
2. Wong, Y.S., M. Rahman and W.L. Mark, "A PC-based Interpolator for CNC Control Using the DDA Interpolation Algorithm", *Proc. 3rd International Conference on Advances in Manufacturing Technology, Singapore*, (14th-16th August 1989), 7 pages.
3. Chai, O.H., Y.S. Wong, A.N. Poo, F.S. Lim and M. Rahman, "Development and Evaluation of Parabolic Interpolators for CNC", *Proc. International Conference on Automation, Robotics and Computer Vision (ICARCV '90), Singapore*, (18-21 September 1990), pp.791-795.
4. Guan, K.W., Y.S. Wong and S.H. Teoh, "Development of Computer-aided Rotational Moulding Techniques for Moulding of Below-elbow Cosmetic Hand Prosthesis", *Proc. 2nd Inter-Faculty*

Symposium on Materials Science and Technology, NUS, Singapore, (25th October 1990), pp.101-114.

5. Teoh, S.H., K.K.W. Ong, Y.S. Wong, K.W. Chai, K.W. Guan, A.Y.C. Nee and R.W.H. Pho, "Cosmetic Hand Prostheses: Computer Aided Color Matching and Rotation Molding", Digest of the World Congress on Medical Physics and Biomedical Engineering, Kyoto, Japan (7th-12th July 1991), pp.140.
6. Teoh, S.H., K.W. Guan, Y.S. Wong, A.Y.C. Nee and R.W.H. Pho, "Multi-layering Technique in Computer Aided Rotation Moulding using Solvent-silicone Rubber for Cosmetic Hand Prostheses", Proc. 8th Annual Meeting of the Polymer Processing Society, New Delhi, India (24th-27th March 1992), pp.452-453.
7. Neo, K.S. and Y.S. Wong, "Link between a CAD System and a Computer-controlled CMM via the Dimensional Measuring Interface Specification (DMIS)", Proc. Industrial Automation (IA) '92 Conference, 20-23 May 1992, Singapore, pp.179-188.]
8. Wong, Y.S., H.T. Loh and C.S. Teng, "Best-fitting Cubic Bezier Curves for CNC Machining", Proc. National Symposium on Manufacturing Technology, (ManuTech 92), 24 September 1992, Singapore, pp.C1/27-31.
9. Loh, H.T., C.S. Teng and Y.S. Wong, "An Algorithm for Linear Interpolation of Cubic Bezier Curves", Proc. International Conference on Optimisation: Techniques and Applications, (1992), Singapore, Vol. 2, pp.815-822.
10. Chai, O.H., Y.S. Wong and A.N. Poo, "Design and Development of a Multiprocessor-based CNC System", Proc. 3rd Asia-Pacific Industrial Automation Conference IA '94, 23-25 March 1994, Singapore, pp.TS-07.
11. Y.S. Wong, A.Y.C. Nee, S.B. Tan, A.K.H. Chao, S.C. Tok and K.S. Neo, "A Neural Network Approach to Extrapolate 3D Femoral Geometry from 2D X-Ray Pictures", Proceedings of Eighth International Conference on Biomedical Engineering, 7-10 December 1994, Singapore, pp.499-501.
12. G. Subramanian, M. Rahman and Y.S. Wong, "Tool Clustering Technique using Tool Life", Proceedings of the Pacific Conference on Manufacturing 1994, Jakarta, Indonesia, 19-22 Dec., 1994, pp.150-157.
13. Wang, W.L., J.Y.H. Fuh, Y.S. Wong and T. Miyazawa, "Make-up Fabrication of the Big or Complex Parts using the SLA Process", University of Texas, Austin, U.S.A., 12-14 August 1996, pp.299-306.
14. Chew, Y.K., Y.S. Wong, J.Y.H. Fuh, W.L. Wang and A.Y.C. Nee, "Computer-aided Fabrication of Below-knee Prosthesis using Stereolithography Process", Proceedings of the 7th International Conference on Rapid Prototyping, 31 March-3 April 1997, San Francisco Hyatt Hotel, San Francisco, United States, pp.229-239.
15. Xu, F., Y.S. Wong, H.T. Loh and J.Y.H. Fuh, "Optimal Orientation with Adaptive Slicing for Part Building with SLA," Proceedings of the 7th International Conference on Rapid Prototyping, 31 March-3 April 1997, San Francisco Hyatt Hotel, San Francisco, United States, pp.148-156.
16. Wang, Y.F., J.Y.H. Fuh and Y.S. Wong, "A Model-based On-line Control of Optimal Fixturing Process", Proceedings of the 1997 IEEE International Conference on Robotics and Automation, 20-25 April 1997, Albuquerque Conventional Centre, Albuquerque/New Mexico, United States, pp.2019-2024.
17. Wong, Y.S., F. Xu and H.T. Loh, "A Proposed Framework for Rapid Prototyping and Manufacturing System Selector", Proceedings of the 8th International Manufacturing Conference, Edited by N. He, J.H. Xu, Y.S. Wong and S.K. Ong, 12-14 May 1998, Singapore, pp. 82-88.

18. Loh, H.T., F. Xu and Y.S. Wong, "Optimal Orientation Selection in Different Rapid Prototyping Processes", Proceedings of the 8th International Manufacturing Conference, Edited by N. He, J.H. Xu, Y.S. Wong and S.K. Ong, 12-14 May 1998, Singapore, pp. 140-148.
19. Wang, Y.J.G., Y.S. Wong, J.Y.H. Fuh, H.T. Loh, Z.H. Du, G.D. Hong and Y.N. Yan, "Rapid Prototyping based on 2D Photographic Images", Proceedings of the 9th SFF Symposium, 10-12 August 1998, University of Texas, Austin, U.S.A.
20. Lim, M.W., C.J. Ong, Y.S. Wong and S.B. Tan, "On Matching of Unstructured Objects Using Simulated Annealing," Proceedings of the 3rd International ICSC Symposium on Soft Computing, 1-4 June 1999, Geneva, Italy, pp. 543-548.
21. Leong, C.C., L. Lu, J.Y.H. Fuh, Z.D. Chen and Y.S. Wong, "Formation of Copper-based Alloys for Rapid Cooling," Proceedings of the 8th European Conference on Rapid Prototyping and Manufacturing, Edited by R. I. Campbell, Nottingham/U.K., 5 July 1999, pp. 225-234.
22. Lim, Y.S., Y.S. Wong, J.Y.H. Fuh and T. Miyazawa, "Characteristics of Powder-mixed Photopolymer for Improved Stereolithography Models", Proceedings of the 8th European Conference on Rapid Prototyping and Manufacturing, Edited by R. I. Campbell, Nottingham/U.K., 5 July 1999, pp. 313-324.
23. Feng, Q., H.T. Loh and Y.S. Wong, "Optimal Curve Fitting with Biarcs and Linear Segments", Proceedings of Fourth Asia-Pacific Conference on Computational Mechanics for the Next Millennium, 15-17 December 1999, Apollo Hotel, Singapore.
24. Wang, X.H., J.Y.H. Fuh and Y.S. Wong, "Development of Injection Mold with Conformal Colling Channel Produced by Direct Metal Laser Sintering (EOS) Process", Proceedings of the International Conference on Precision Engineering (ICOPE) 2000, 21-23 March 2000, Singapore, pp.455-460.
25. Fuh, J.Y.H., Y.S. Wong, Y.S. Lim, T. Miyazawa, A.Y.C. Nee and H.T. Loh, "Development of Aerosil-mixed Stereolithography Process for Support-less Modelling", Proceedings of the 8th International Conference on Rapid Prototyping, 12-13 June 2000, Japan, pp.123-130.
26. Tang, Y.X., L. Lu, J.Y.H. Fuh, Y.S. Wong, M. Gupta, and H.H. Zhu, "Laser Cladding of Copper-based Materials for Building Electrical Discharge Machining Electrodes", Proceedings of 2nd International Symposium on Laser Precision Micro-Fabrication", 16-18 May 2001, Data Storage Institute, Singapore.
27. Ang, T.H., Y.S. Wong, J.Y.H. Fuh, H.T. Loh, X. Mo and D.W. Huttmacher, "Development of a Rapid Prototyping Desktop Robotic Dispensing System for Fabrication of 3D Chitosan Scaffolds," ICMAT 2001 International Conference on Materials for Advanced Technologies, Singapore, 1-6 July 2001, pp.82-83.
28. Tan, C.H.L., Y.S. Wong, Y.F. Zhang and H.T. Loh, "Application of Rapid Prototyping on a Tooth Cavity Insert", ICMAT 2001 International Conference on Materials for Advanced Technologies, Singapore, 1-6 July 2001, pp.93-94.

Seminar, Public Talk and Lecture

1. Chai, O.H., Y.S. Wong and A.N. Poo, "Interpolation for Toolpath Control in CNC Systems", Proc. Seminar on Mechatronics -Essential Technology for 2000 and Beyond, 27 May 1995, Ngee Ann Polytechnic, Singapore, pp.28-33.

Published Reports

1. Nee, A.Y.C., J.Y.H. Fuh, Y.S. Wong and H.T. Loh and Y.S. Choo, GR6370 Final Report for NSTB-Ontario Joint Research Programme, "Development of a Flexible Rapid Manufacturing

Patents

1. Chew, Y.K., Y.S. Wong, J.Y.H. Fuh, H.T. Loh, A.Y.C. Nee, Y.S. Choo, L. Lu, K.B. Lim, C.L. Teo and E.T. Kang,” Method for Determining Curing Areas in an Optical Stereolithography Process”, PCT Application No. (1999) PCT/SG99/00036. Compiled by Patent Application No. 9801021-8. Singapore: Registry of Trade Marks and Patents, 8 May 1998.
2. Lu, L, J.Y.H. Fuh, C.C. Leong, Y.S. Wong and Z.D. Chen,”Method of Laser Casting Copper-based Composites”, PCT Application No. (1999) PCT/SG99/00116. Compiled by Patent Application No. 9804031-4. Singapore: Registry of Trade Marks and Patents, 12 November 1998.
3. Wang, X.H., J.Y.H. Fuh, Y.S. Wong, L. Lu, Y. Tang, H.B. Cheng and X.L. Zhang,”Method and Apparatus for Creating a Free-form Three-Dimensional Metal Part using High-Temperature Direct Laser Melting”, Provisional U.S. Patent Filing. Compiled by U.S. Patent Office, November 2000.

Funded Projects

1. Collaborator

Development of High-accuracy SLA

(Source: MOE, \$25K)

Completed in 1997, project resulted in an NSTB-funded project involving collaboration with Sony.

2. Collaborator

Development of A New Rapid Prototyping System using 3D Optical Lithography Technology

(Source: NSTB & Sony, \$455K)

Completed in 1998.

Industry Partner: Sony

3. Collaborator

Development of a Flexible Manufacturing System for Fibre-Reinforced Plastics (Source: NSTB, \$160K)

Completed in 1998.

University Partner: University of Toronto. Project has involved staff exchange and video conferencing.

4. Collaborator

Integrated Reverse Engineering, Rapid Prototyping and Virtual Manufacturing

(Source: MOE, \$188K)

University Partners: Huazhong UST, U. Nottingham, U. Michigan, U. Hong Kong and U. Victoria

Industry Partner: Kinergy.

5. Collaborator

Development of Rapid Tooling Technology for Injection Moulded Parts

(Source: MOE, \$221K)

Industry Partner: Kinergy.

Postgraduate Research

<i>#</i>	<i>PG</i>	<i>Title</i>	<i>Degree</i>
1	Lim F.S.	Development of a Microcomputer-controlled Multi-axis NC System	M.Eng.
2	Guan K.W.	Computer-aided Rotation Moulding of a Below-elbow Cosmetic Prosthesis	M.Eng.
2	Chai O.H.	Design and Development of a Multiprocessor-based CNC System	M.Eng.
3	Teng C.S.	Optimal Curve Fitting for CNC Machining	M.Eng.
4	Hon X.G.	Characterization of Biarc Curves and Optimization of Biarc Curve Fitting	M.Eng.
5	Feng Q.	Curve Fitting for CNC Machining	M.Eng.
6	Xu F.	Integrated Decision Support for Part Fabrication with Rapid Prototyping & Manufacturing Systems	Ph.D.
7	Lim M.W.	Matching of Unstructured Objects using Simulated Annealing	M.Eng.
8	Lim Y.S.	Development and Investigation of Aerosil-mixed Stereolithography Process	M.Eng.
9	Zhu T.S.	Cutter Path Generation for Free Form Surface on Open CNC	M.Eng.
10	Liu G.H.	Segmentation of Cloud Data for Reverse Engineering and Direct Rapid Prototyping	M.Eng.
11	Cheng H.B.	Development of A Direct Metal Laser Sintering Control System	M.Eng.

Ongoing:

1	Wang X.H.	Rapid Tooling Technology	M.Eng.
2	Zhang C.	An Improved Iterative Closest Point Algorithm for Cloud Data Registration	M.Eng.
3	Liang X.H.	Computer Aided Tool Path Generation for 5-axis Machining of Free-form Surfaces	M.Eng.
4	Ning Yu	Rapid Prototyping	M.Eng.
5	Huang Z.H.	Rapid Tooling	Ph.D.
6	Hu QY	Study of Rapid Tooling Materials	M.Eng.
7	Geng L	Rapid Product Development	M.Eng.
8	M Mahesh	Web-based Rapid Prototyping Decision Support System	M.Eng.
9	Wu YF	Reverse Engineering	M.Eng.