

Designing Experiments and Analyzing Data: A Model Comparison Perspective, Third Edition

Abdelrahman M, Reutzel EW, Nassar AR, Starr TL (2017) Flaw detection in powder bed fusion using optical imaging. *Addit Manuf* 15:11

Aboulkhair NT, Everitt NM, Ashcroft I, Tuck C (2014) Reducing porosity in AlSi10Mg parts processed by selective laser melting. *Addit Manuf* 1:77-86

Acharya R, Sharon JA, Staroselsky A (2017) Prediction of microstructure in laser powder bed fusion process. *Acta Mater* 124:360-371

Al Jassmi H, Al Najjar F, Mourad A-HI (2018) Large-scale 3D printing: the way forward. In: *IOP conference series: materials science and engineering*. IOP Publishing

Asadi-Eydivand M, Solati-Hashjin M, Fathi A, Padashi M, Abu Osman NA (2016) Optimal design of a 3D-printed scaffold using intelligent evolutionary algorithms. *Appl Soft Comput* 39:36-47

Bacha A, Sabry AH, Benhra J (2019) Fault diagnosis in the field of additive manufacturing (3D printing) using Bayesian networks. *Int J Online Biomed Eng (iJOE)* 15(3):110-123

Bayraktar A, Uzun G, Akiroglu R, Guldaz A (2017) Experimental study on the 3D-printed plastic parts and predicting the mechanical properties using artificial neural networks. *Polym Adv Technol* 28(8):1044-1051

Benoit N, Rana H, Valamanesh A (2018) Applying machine learning for real time optimization of powder bed manufacturing. *Worcester Polytechnic Institute, Worcester*

Bin Maidin S, Campbell I, Pei E (2012) Development of a design feature database to support design for additive manufacturing. *Assem Autom* 32(3):235-244

Caiazza F, Caggiano A (2018) Laser direct metal deposition of 2024 Al alloy: trace geometry prediction via machine learning. *Materials* 11(3):444

Caltanissetta F, Grasso M, Petrucci S, Colosimo BM (2018) Characterization of in situ measurements based on layerwise imaging in laser powder bed fusion. *Addit Manuf* 24:183-199

Chen H, Zhao YF (2015) Learning algorithm based modeling and process parameters recommendation system for binder jetting additive manufacturing process. In: *ASME 2015 international design engineering technical conferences and computers and information in engineering conference*

Chen Q, Guillemot G, Gandin C-A, Bellet M (2017) Three-dimensional finite element thermomechanical modeling of additive manufacturing by selective laser melting for ceramic materials. *Addit Manuf* 16:124-137

Chowdhury S (2016) Artificial neural network based geometric compensation for

P

thermal deformation in additive manufacturing processes. University of Cincinnati, Cincinnati

Deng L, Feng B, Zhang Y (2018) An optimization method for multi-objective and multi-factor designing of a ceramic slurry: combining orthogonal experimental design with artificial neural networks. *Ceram Int* 44(13):15918â€“15923

Ding D, Pan Z, Cuiuri D, Li H, van Duin S, Larkin N (2016a) Bead modelling and implementation of adaptive MAT path in wire and arc additive manufacturing. *Robot Comput Integr Manuf* 39:32â€“42

Ding D, Shen C, Pan Z, Cuiuri D, Li H, Larkin N, van Duin S (2016b) Towards an automated robotic arc-welding-based additive manufacturing system from CAD to finished part. *Comput Aided Des* 73:66â€“75

Dong Y, Guo G (2014) Evaluation and selection approach for cloud manufacturing service based on template and global trust degree. *Comput Integr Manuf Syst* 20(1):207â€“214

Equbal A, Sood AK, Mahapatra SS (2011) Prediction of dimensional accuracy in fused deposition modellingâ€”a fuzzy logic approach. *Int J Prod Qual Manag* 7(1):22â€“43

Everton SK, Hirsch M, Stravroulakis P, Leach RK, Clare AT (2016) Review of in situ process monitoring and in situ metrology for metal additive manufacturing. *Mater Des* 95:431â€“445

Faruque MAA (2016) Forensics of thermal side-channel in additive manufacturing systems. University of California, Irvine

Fergani O, Berto F, Welo T, Liang S (2017) Analytical modelling of residual stress in additive manufacturing. *Fatigue Fract Eng Mater Struct* 40(6):971â€“978

Francis J, Bian L (2019) Deep learning for distortion prediction in laser-based additive manufacturing using big data. *Manuf Lett* 20:10â€“14

Gan Z, Li H, Wolff SJ, Bennett JL, Hyatt G, Wagner GJ, Cao J, Liu WK (2019) Data-driven microstructure and

microhardness design in additive manufacturing using a self-organizing map. *Engineering* 5(4):730-735

Garg A, Lam JSL, Savalani MM (2016) A new variant of genetic programming in formulation of laser energy consumption model of 3D printing process. In: Muthu SS, Savalani MM (eds) *Handbook of sustainability in additive manufacturing*, vol 1. Springer, Singapore, pp 31-50

Gassman EE, Powell SM, Kallemeyn NA, DeVries NA, Shivanna KH, Magnotta VA, Ramme AJ, Adams BD, Grosland NM (2008) Automated bony region identification using artificial neural networks: reliability and validation measurements. *Skeletal Radiol* 37(4):313-319

Gobert C, Reutzel EW, Petrich J, Nassar AR, Phoha S (2018) Application of supervised machine learning for defect detection during metallic powder bed fusion additive manufacturing using high resolution imaging. *Addit Manuf* 21:517-528

Gu GX, Chen C-T, Buehler MJ (2018a) De novo composite design based on machine learning algorithm. *Extreme Mech Lett* 18:19-28

Gu GX, Chen C-T, Richmond DJ, Buehler MJ (2018b) Bioinspired hierarchical composite design using machine learning: simulation, additive manufacturing, and experiment. *Mater Horizons* 5(5):939-945

He H, Yang Y, Pan Y (2019) Machine learning for continuous liquid interface production: printing speed modelling. *J Manuf Syst* 50:236-246

Huff TJ, Ludwig PE, Zuniga JM (2018) The potential for machine learning algorithms to improve and reduce the cost of 3-dimensional printing for surgical planning. *Expert Rev Med Devices* 15(5):349-356

Jafari-Marandi R, Khanzadeh M, Tian W, Smith B, Bian L (2019) From in situ monitoring toward high-throughput process control: cost-driven decision-making framework for laser-based additive manufacturing. *J Manuf Syst* 51:29-41

Jiang Z, Liu Y, Chen H, Hu Q (2014) Optimization of process parameters for biological 3D printing forming based on BP neural network and genetic algorithm. In: 21st ISPE Inc. international conference on concurrent engineering

- Kanko JA, Sibley AP, Fraser JM (2016) In situ morphology-based defect detection of selective laser melting through inline coherent imaging. *J Mater Process Technol* 231:488â€“500
- Khadilkar A, Wang J, Rai R (2019) Deep learning-based stress prediction for bottom-up SLA 3D printing process. *Int J Adv Manuf Technol* 102(5â€“8):2555â€“2569
- Khan Z, Kahin K, Rauf S, Ramirez-Calderon G, Papagiannis N, Abdulmajid M, Hauser C (2019) Optimization of a 3D bioprinting process using ultrashort peptide bioinks. *Int J Bioprint* 5(1):173
- Khanzadeh M, Chowdhury S, Marufuzzaman M, Tschopp MA, Bian L (2018a) Porosity prediction: supervised-learning of thermal history for direct laser deposition. *J Manuf Syst* 47:69â€“82
- Khanzadeh M, Tian W, Yadollahi A, Doude HR, Tschopp MA, Bian L (2018b) Dual process monitoring of metal-based additive manufacturing using tensor decomposition of thermal image streams. *Addit Manuf* 23:443â€“456
- Koeppe A, Hernandez Padilla CA, Voshage M, Schleifenbaum JH, Markert B (2018) Efficient numerical modeling of 3D-printed lattice-cell structures using neural networks. *Manuf Lett* 15:147â€“150
- Kuo CN, Chua CK, Peng PC, Chen YW, Sing SL, Huang S, Su YL (2020) Microstructure evolution and mechanical property response via 3D printing parameter development of Alâ€“Sc alloy. *Virtual Phys Prototyp* 15(1):120â€“129
- Lao W, Li M, Wong TN, Tan MJ, Tjahjowidodo T (2020) Improving surface finish quality in extrusion-based 3D concrete printing using machine learning-based extrudate geometry control. *Virtual Phys Prototyp* 15(2):178â€“193
- Lee SH, Park WS, Cho HS, Zhang W, Leu MC (2001) A neural network approach to the modelling and analysis of stereolithography processes. *Proc Inst Mech Eng Part B J Eng Manuf* 215(12):1719â€“1733
- Le-Quang T, Shevchik S, Meylan B, Vakili-Farahani F, Olbinado M, Rack A, Wasmer K (2018) Why is in situ quality control of laser keyhole welding a real challenge? *Procedia CIRP* 74:649â€“653
- Li X-f, Dong J-h, Zhang Y-z (2009) Modeling and applying of RBF neural network based on fuzzy clustering and

- pseudo-inverse method. In: 2009 international conference on information engineering and computer science, Wuhan, China. IEEE
- Li Z, Zhang Z, Shi J, Wu D (2019) Prediction of surface roughness in extrusion-based additive manufacturing with machine learning. Robot Comput Integr Manuf 57:488-495
- Lim CW, Tan K, Zhu X (2018) The framework of combining artificial intelligence and construction 3D printing in civil engineering. In: MATEC web of conferences, vol 206
- Liu T, Guessasma S, Zhu J, Zhang W, Nouri H, Belhabib S (2018) Microstructural defects induced by stereolithography and related compressive behaviour of polymers. J Mater Process Technol 251:37-46
- Ludwig M, Meyer G, Tastl I, Moroney N, Gottwals M (2018) An appearance uniformity metric for 3D printing. In: Proceedings of the 15th ACM symposium on applied perception. In: Vancouver, British Columbia, Canada, ACM, pp 1-8
- Madara SR, Selvan CP (2017) Review of recent developments in 3-D printing of turbine blades. Eur J Adv Eng Technol 4(7):497-509
- Mai J, Zhang L, Tao F, Ren L (2016) Customized production based on distributed 3D printing services in cloud manufacturing. Int J Adv Manuf Technol 84(1-4):71-83
- Meng L, Zhao J, Lan X, Yang H, Wang Z (2020) Multi-objective optimisation of bio-inspired lightweight sandwich structures based on selective laser melting. Virtual Phys Prototyp 15(1):106-119
- Menon A, Páczos B, Feinberg AW, Washburn NR (2019) Optimization of silicone 3D printing with hierarchical machine learning. 3D Print Addit Manuf 6(4):181-189
- Mishbak HH, Cooper G, Bartolo P, JDS (2019) Development and characterisation of a photocurable alginate bioink for 3D bioprinting. Int J Bioprint 5(2):189
- Mohamed OA, Masood SH, Bhowmik JL (2016) Investigation of dynamic elastic deformation of parts processed by fused

deposition modeling additive manufacturing. *Adv Prod Eng Manag* 11(3):227â€"238

Munguã-a J, Ciurana J, Riba C (2009) Neural-network-based model for build-time estimation in selective laser sintering. *ProcInst Mech Eng Part B J Eng Manuf* 223(8):995â€"1003

Nagarajan HPN, Mokhtarian H, Jafarian H, Dimassi S, Bakrani-Balani S, Hamed A, Coatanãa E, Gary Wang G, Haapala KR (2019) Knowledge-based design of artificial neural network topology for additive manufacturing process modeling: a new approach and case study for fused deposition modeling. *J Mech Des*. <https://doi.org/10.1115/1.4042084>

Noriega A, Blanco D, Alvarez BJ, Garcia A (2013) Dimensional accuracy improvement of FDM square cross-section parts using artificial neural networks and an optimization algorithm. *Int J Adv Manuf Technol* 69(9â€"12):2301â€"2313

Okaro IA, Jayasinghe S, Sutcliffe C, Black K, Paoletti P, Green PL (2019) Automatic fault detection for laser powder-bed fusion using semi-supervised machine learning. *Addit Manuf* 27:42â€"53

Petrov A, Pernot J, Giannini F, Falcidieno B, Vãron P (2016) Mapping aesthetic properties to 3D free form shapes through the use of a machine learning based framework. *IMATI Report Series*, p 16

Pham G, Lee S-H, Kwon O-H, Kwon K-R (2018) Anti-3D weapon model detection for safe 3D printing based on convolutional neural networks and D2 shape distribution. *Symmetry* 10(4):90

Qi X, Chen G, Li Y, Cheng X, Li C (2019) Applying neural-network-based machine learning to additive manufacturing: current applications, challenges, and future perspectives. *Engineering* 5(4):721â€"729

Radzi S, Tan JHK, Tan GJS, Yeong WY, Ferenczi MA, Low-Beer N, Mogali SR (2020) Development of a three-dimensional printed heart from computed tomography images of a plastinated specimen for learning anatomy. *Anat Cell Biol* 53(1):48

Rong-Ji W, Xin-hua L, Qing-ding W, Lingling W (2008) Optimizing process parameters for selective laser sintering based on neural network and genetic algorithm. *Int J Adv Manuf Technol* 42(11â€"12):1035â€"1042

Sanjayan JG, Nematollahi B (2019) Chapter 1â€"3D concrete printing for construction applications. In: Sanjayan JG,

Nazari A, Nematollahi B (eds) 3D concrete printing technology. Butterworth-Heinemann, Oxford, pp 11

Saqib S, Urbanic RJ, Aggarwal K (2014) Analysis of laser cladding bead morphology for developing additive manufacturing travel paths. Procedia CIRP 17:824-829

Sarlo R, Tarazaga PA (2016) A neural network approach to 3D printed surrogate systems. Springer, Cham

Scime L, Beuth J (2018a) Anomaly detection and classification in a laser powder bed additive manufacturing process using a trained computer vision algorithm. Addit Manuf 19:114-126

Scime L, Beuth J (2018b) A multi-scale convolutional neural network for autonomous anomaly detection and classification in a laser powder bed fusion additive manufacturing process. Addit Manuf 24:273-286

Scime L, Beuth J (2019) Using machine learning to identify in situ melt pool signatures indicative of flaw formation in a laser powder bed fusion additive manufacturing process. Addit Manuf 25:151-165

Shen X, Yao J, Wang Y, Yang J (2004) Density prediction of selective laser sintering parts based on artificial neural network. In: International symposium on neural networks. Springer, Berlin

Shevchik SA, Kenel C, Leinenbach C, Wasmer K (2018) Acoustic emission for in situ quality monitoring in additive manufacturing using spectral convolutional neural networks. Addit Manuf 21:598-604

Shi Y, Zhang Y, Baek S, De Backer W, Harik R (2018) Manufacturability analysis for additive manufacturing using a novel feature recognition technique. Comput-Aided Des Appl 15(6):941-952

Sing SL, Wiria FE, Yeong WY (2018) Selective laser melting of titanium alloy with 50 wt% tantalum: effect of laser process parameters on part quality. Int J Refract Metal Hard Mater 77:120-127

Snell R, Tammam-Williams S, Chechik L, Lyle A, Hernández-Nava E, Boig C, Panoutsos G, Todd I (2019) Methods for rapid pore classification in metal additive manufacturing. JOM 72:101-109

- Sood AK, Ohdar RK, Mahapatra SS (2009) Parametric appraisal of fused deposition modelling process using the grey Taguchi method. Proc Inst Mech Eng Part B J Eng Manuf 224(1):135â€"145
- Sood AK, Equbal A, Toppo V, Ohdar RK, Mahapatra SS (2012a) An investigation on sliding wear of FDM built parts. CIRP J Manuf Sci Technol 5(1):48â€"54
- Sood AK, Ohdar RK, Mahapatra SS (2012b) Experimental investigation and empirical modelling of FDM process for compressive strength improvement. J Adv Res 3(1):81â€"90
- Tan JHK, Sing SL, Yeong WY (2020) Microstructure modelling for metallic additive manufacturing: a review. Virtual Phys Prototyp 15(1):87â€"105
- Tapia G, Elwany A (2014) A review on process monitoring and control in metal-based additive manufacturing. J Manuf Sci Eng 136(6):060801-1
- Thompson A, Maskery I, Leach RK (2016) X-ray computed tomography for additive manufacturing: a review. Meas Sci Technol 27(7):072001
- Vahabli E, Rahmati S (2016) Application of an RBF neural network for FDM partsâ€™ surface roughness prediction for enhancing surface quality. Int J Precis Eng Manuf 17(12):1589â€"1603
- van Eijnatten M, van Dijk R, Dobbe J, Streekstra G, Koivisto J, Wolff J (2018) CT image segmentation methods for bone used in medical additive manufacturing. Med Eng Phys 51:6â€"16
- Vijayaraghavan V, Garg A, Lam JSL, Panda B, Mahapatra SS (2014) Process characterisation of 3D-printed FDM components using improved evolutionary computational approach. Int J Adv Manuf Technol 78(5â€"8):781â€"793
- Vosniakos G-C, Maroulis T, Pantelis D (2007) A method for optimizing process parameters in layer-based rapid prototyping. Proc Inst Mech Eng Part B J Eng Manuf 221(8):1329â€"1340
- Wang R-J, Li J, Wang F, Li X, Wu Q (2009) ANN model for the prediction of density in selective laser sintering. Int J

Manuf Res 4(3):362-373

Wang C, Jiang N, Chen Z, Chen Y, Dong Q (2015a) Prediction of sintering strength for selective laser sintering of polystyrene using artificial neural network. J Donghua Univ 5:22

Wang W, Wang Y, Williams W, Browne A (2015b) Secure cloud manufacturing: research challenges and a case study. In: IFIP workshop on emerging ideas and trends in engineering of cyber-physical systems (EITEC), in CPS Week, Seattle

Wasmer K, Le-Quang T, Meylan B, Shevchik SA (2018a) In situ quality monitoring in AM using acoustic emission: a reinforcement learning approach. J Mater Eng Perform 28(2):666-672

Wasmer K, Le-Quang T, Meylan B, Vakili-Farahani F, Olbinado M, Rack A, Shevchik S (2018b) Laser processing quality monitoring by combining acoustic emission and machine learning: a high-speed X-ray imaging approach. Procedia CIRP 74:654-658

Williams G, Meisel NA, Simpson TW, McComb C (2019) Design repository effectiveness for 3D convolutional neural networks: application to additive manufacturing. J Mech Des 141(11):e4044199

Wohlkinger W, Vincze M (2011) Shape-based depth image to 3D model matching and classification with inter-view similarity. In: 2011 IEEE/RSJ international conference on intelligent robots and systems. IEEE

Wong KV, Hernandez A (2012) A review of additive manufacturing. International scholarly research notices

Wu M, Phoha VV, Moon YB, Belman AK (2016a) Detecting malicious defects in 3D printing process using machine learning and image classification. In: ASME 2016 international mechanical engineering congress and exposition

Wu Y, Peng G, Chen L, Zhang H (2016b) Service architecture and evaluation model of distributed 3D printing based on cloud manufacturing. In: 2016 IEEE international conference on systems, man, and cybernetics (SMC). IEEE

Wu M, Song Z, Moon YB (2017) Detecting cyber-physical attacks in CyberManufacturing systems with machine learning methods. J Intell Manuf 30(3):1111-1123

- Wu H, Yu Z, Wang Y (2019) Experimental study of the process failure diagnosis in additive manufacturing based on acoustic emission. *Measurement* 136:445â€“453
- Xiong J, Zhang G, Hu J, Wu L (2014) Bead geometry prediction for robotic GMAW-based rapid manufacturing through a neural network and a second-order regression analysis. *J Intell Manuf* 25(1):157â€“163
- Yamanaka Y, Todoroki A, Ueda M, Hirano Y, Matsuzaki R (2016) Fiber line optimization in single ply for 3D printed composites. *Open J Compos Mater* 06(04):121â€“131
- Yang J, Gu D, Lin K, Ma C, Wang R, Zhang H, Guo M (2020) Laser 3D printed bio-inspired impact resistant structure: failure mechanism under compressive loading. *Virtual Phys Prototyp* 15(1):75â€“86
- Yao X, Moon SK, Bi G (2017) A hybrid machine learning approach for additive manufacturing design feature recommendation. *Rapid Prototyp J* 23(6):983â€“997
- Ye D, Hsi Fuh JY, Zhang Y, Hong GS, Zhu K (2018) In situ monitoring of selective laser melting using plume and spatter signatures by deep belief networks. *ISA Trans* 81:96â€“104
- Yu C, Jiang J (2020) A perspective on using machine learning in 3D bioprinting. *Int J Bioprint* 6(1):95
- Yu WH, Sing SL, Chua CK, Kuo CN, Tian XL (2019a) Influence of re-melting on surface roughness and porosity of AlSi10Mg parts fabricated by selective laser melting. *J Alloys Compd* 792:574â€“581
- Yu WH, Sing SL, Chua CK, Kuo CN, Tian XL (2019b) Particle-reinforced metal matrix nanocomposites fabricated by selective laser melting: a state of the art review. *Prog Mater Sci* 104:330â€“379
- Yuan B, Guss GM, Wilson AC, Hau-Riege SP, DePond PJ, McMains S, Matthews MJ, Giera B (2018) Machine-learning-based monitoring of laser powder bed fusion. *Adv Mater Technol* 3(12):1800136
- Zhang X, Le X, Panotopoulou A, Whiting E, Wang CCL (2015) Perceptual models of preference in 3D printing direction. *ACM Trans Graph* 34(6):1â€“12

Zhang W, Mehta A, Desai PS, Higgs C (2017) Machine learning enabled powder spreading process map for metal additive manufacturing (AM). In: International Solid Free Form Fabrication Symposium Austin, TX

Zhang Y, Hong GS, Ye D, Zhu K, Fuh JYH (2018) Extraction and evaluation of melt pool, plume and spatter information for powder-bed fusion AM process monitoring. Mater Des 156:458-469

Zhao C, Fezzaa K, Cunningham RW, Wen H, De Carlo F, Chen L, Rollett AD, Sun T (2017) Real-time monitoring of laser powder bed fusion process using high-speed X-ray imaging and diffraction. Sci Rep 7(1):3602

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