Dr. Chiwoo Park

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Industrial & Systems Engineering
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Google Scholar Profile: total citations 2,988, h-index 28

A. Education

Seoul National University	Industrial Engineering (Cum Laude)	B.S.	2001
Texas A&M University	Industrial & Systems Engineering	Ph.D.	2011

B. Appointments

2024-Present	*Professor*	University of Washington. Industrial and Systems Engineering
2023	*Professor (with tenure)*	Florida State University. Industrial and Manufacturing Engineering
2017–2023	*Associate Professor (with tenure)*	Florida State University. Industrial and Manufacturing Engineering
2020-2020	*Visiting Professor*	Sungkyunkwan University. Systems Management Engineering. e-Manufacturing Lab
2019-2019	*Visiting Professor*	Air Force Research Lab. Manufacturing and Materials Directorate
2011–2017	*Assistant Professor*	Florida State University. Industrial and Manufacturing Engineering
2005–2006	*Consultant*	Deloitte Consulting. IT Consulting Service.
2001–2005	*Software Engineer*	Handysoft Corp. Real-time Enterprise Research Center.

C. Honors and Awards

- Featured Article, ISE Magazine – Vol. 54, Number 6 (2022).
- Nominee, Best Faculty at the College, Nominated by Graduating Seniors in FAMU-FSU Engineering (2021)
- AFRL Summer Faculty Fellowship, Air Force Office of Scientific Research (2021, 2022)
- BrainPool Faculty Fellowship, National Research Foundation - Korea (2020)
- Nominee, Developing Scholars Award, Florida State University (2018)
- NSF Travel Award to Innovation Lab, National Science Foundation (2018).
- Featured Speaker, Randy Sitter Technometrics Session, ASA SRC/QPRC (2014)
- Award for Research Excellence, FAMU-FSU Engineering (2014).
- Best Application Paper Award, IISE Transactions (2014).
- Nominee, 2014 Blavatnik Awards for Young Scientists, The New York Academy of

Sciences (2014).
- Ralph E. Powe Jr. Faculty Enhancement Award, Oak Ridge Associated Universities (2013).
- First Year Assistant Professor Award, Florida State University - Council of Research and Creativity (2012).
- First Place in Best Student Paper Award, IEEE Conference on Automation Science & Engineering (2008).

D. Books, Book Chapters, Edited Volumes

Book:

Park, C. and Ding, Y. (2021) Data Science for Nano Image Analysis. Springer Nature. ISBN 978-3-030-72821-2.

Book Chapter:

Park, C. and Ding, Y., (2023) Dynamic Data-Driven Monitoring of Nanoparticle Self Assembly Processes. In *Handbook of Dynamic Data Driven Applications Systems – 2nd Ed*. Springer. ISBN 978-3-031-27985-0.

E. Refereed Journal Articles

Data Science, AI, ML, OR Journals:

[J1] Park, C., Qiu, P., Carpena-Núñez, J., Rao, R., Susner, M., & Maruyama, B., (2023) Sequential adaptive design for jump regression estimation. *IISE Transactions*. 55(2): 111-128.

[J2] Park, C., Noh, S.D. and Srivastava, A., (2022) Data science for motion and time analysis with modern motion sensor data. *Operations Research*. 70(6), 3217-3233.

[J3] Park, C. (2022) Jump Gaussian process model for estimating piecewise continuous regression functions. *Journal of Machine Learning Research*. 23(278), 1-37.

[J4] Park, C., Borth, D.J., Wilson, N.S., Hunter, C.N. & Friedersdorf, F.J., (2022) Robust Gaussian process regression with a bias model. *Pattern Recognition*. 124(108444).

[J5] Park, C., Borth, D.J., Wilson, N.S., & Hunter, C.N., (2022) Variable selection for Gaussian process regression through a sparse projection. *IISE Transactions*. 54(7), 699-712.

[J6] Esmaieeli, A., & Park, C. (2021) A mixture of linear-linear regression models for linear-circular regression. *Statistical Modelling*. 21 (3), 220–243.

[J7] Mu, C. & Park, C. (2020) Sparse filtered SIRT for electron tomography. *Pattern Recognition*. 102: 107253.

[J8] Qian, Y., Huang, J., Park, C., Ding, Y. (2019) Fast dynamic nonparametric distribution tracking in electron microscopic data. *Annals of Applied Statistics*. 13 (3), 1537—1563

[J9] Park, C., & Apley, D. (2018) Patchwork kriging for large-scale Gaussian process regression. *Journal of Machine Learning Research*. 19(7): 1-43.

[J10] Esmaieeli, A., Welch, D. A., Woehl, T., Faller, R., Evans, J. E., Browning, N. D., & Park, C. (2018). Directional statistics of preferential orientations of two shapes in their aggregate and its application to nanoparticle aggregation. *Technometrics*. 60(3): 332-344

[J11] Vo, G., & Park, C. (2018). Robust regression for image binarization under heavy noises and nonuniform background. *Pattern Recognition*. 81: 224-239.

[J12] Li, X., Belianinov, A., Jesse, S., & Park, C. (2018). Two-level structural sparsity regularization for identifying lattices and defects in noisy images. *Annals of Applied Statistics*. 12(1): 348-377.

[J13] Li, X., Tran, P., Liu, T., & Park, C. (2017). Simulation-guided regression approach for estimating the nanoparticle size distribution with dynamic light scattering data. *IISE Transactions*. 49(1), 70-83.

[J14] Park, C., & Huang, J.Z. (2016). Efficient computation of Gaussian process regression for large spatial data sets by patching local Gaussian processes. *Journal of Machine Learning Research*. 17(174),1–29.

[J15] Park, C., Woehl, T. J., Evans, J. E., & Browning, N. D. (2015). Minimum cost multi-way data association for optimizing multitarget tracking of interacting objects. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 37(3), 611-624.

[J16] Park, C. (2014). Estimating multiple pathways of object growth using nonlongitudinal image data. *Technometrics*, 56(2), 186-199.

[J17] Park, C., & Shrivastava, A. (2014). Multimode geometric-profile monitoring with correlated image data and its application to nanoparticle self-assembly processes. *Journal of Quality Technology*, 46(3), 1-32.

[J18] Park, C., Huang, J. Z., Ji, J., & Ding, Y. (2013). Segmenting, inference and classification of partially overlapping nanoparticles. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 35 (3), 669-681.

[J19] Park, C., Huang, J. Z., & Ding, Y. (2012). GPLP: A local and parallel computation tool box for Gaussian process regression. *Journal of Machine Learning Research*, 13, 775-779.

[J20] Park, C., Huang, J. Z., Huitink, D., Kundu, S., Mallick, B., Liang, H., & Ding, Y. (2012). A multi-stage, semi-automated procedure for analyzing the morphology of nanoparticles. *IIE Transactions*, 44(7), 507-522.

[J21] Park, C., Huang, J. Z., & Ding, Y. (2011). Domain decomposition for fast Gaussian process regression of large spatial datasets. *Journal of Machine Learning Research*, 12, 1697–1728.

[J22] Park, C., Huang, J. Z., & Ding, Y. (2010). A computable plug-in estimator of minimum volume sets for novelty detection. *Operations Research*, 58(5), 1469-1480.

Review & Perspective:
[J23] Stach, E., DeCost, B., Kusne, A.G., Hattrick-Simpers, J., Brown, K.A., Reyes, K.G., Schrier, J., Billinge, S., Buonassisi, T., Foster, I., Gomes, C.P., Gregoire, J.M., Mehta, A., Montoya, J., Olivetti, E., Park, C., Rotenberg, E., Saikin, S.K., Smullin, S., Stanev, V., and Maruyama, B. (2021) Autonomous Experimentation Systems for Materials Development: A Community Perspective. *Cell Press: Matter,* 4(9), 2702-2726.

[J24]   Park, C. & Ding, Y. (2019) Automating material image analysis for material discovery. *MRS Communications*, 9 (2), 545-555.

[J25]   Agbabiaka, A., Wiltfong, M., & Park, C. (2013). Small angle X-ray scattering technique for the particle size distribution of nonporous nanoparticles. *Journal of Nanoparticles*, *2013*, 11.

Application to Material & Biomedical Imaging:

[J26]   Wang, M., Park, C., & Woehl, T. (2022) Real-time imaging of metallic supraparticle assembly during nanoparticle synthesis. *Nanoscale.* 14(2), 312-319.

[J27]   Vo, G., Zakharov, D. and Park, C. (2021) Data association algorithm for large-scale multi-object tracking with complex interactions. *SPIE Journal of Electronic Imaging.* 30 (6), 063021.

[J28]   Bakalis, E., Parent, L.R., Park, C., Gianneschi, N. C., & Zerbetto F. (2020) Complex nanoparticle diffusional motion in liquid cell transmission electron microscopy. *Physical Chemistry Chemical Physics.* 124(27), 14881-14890.

[J29]   Touve, M., Wright, D., Mu, C., Park, C. & Gianneschi, N. (2019) Block copolymer amphiphile phase diagrams by high-throughput transmission electron microscopy. *Macromolecules*, 52 (1), 5529-5537.

[J30]   Wang, M., Dissanayake, T., Park, C., Gaskell, K. & Woehl, T. (2019) Nanoscale mapping of non-uniform heterogeneous nucleation kinetics mediated by surface chemistry. *Journal of the American Chemical Society*, 141 (34), 13516-13524.

[J31]   Wang, M., Park, C., & Woehl, T. J. (2018) Quantifying the nucleation and growth kinetics of electron beam nanochemistry with liquid cell scanning transmission electron microscopy. *Chemistry of Materials.* 30 (21), pp 7727–7736.

[J32]   Touve, M. A., Figg, C. A., Wright, D. B., Park, C., Cantlon, J., Sumerlin, B. S. & Gianneschi, N. C. (2018). Polymerization-induced self-assembly of micelles observed by liquid cell transmission electron microscopy. *ACS Central Science.* 4 (5), pp 543–547.

[J33]   Moser, T., Mehta, H., Park, C., Kelly, R., Shokuhfar, T. & Evans, J.E. (2018). The role of electron irradiation history in liquid cell transmission electron microscopy. *Science Advances.* 4(4).

[J34]   Parent, L., Bakalis, E., Proetto, M., Li, Y., Park, C., Zerbetto, F., Gianneschi, N. (2018) Tackling the challenges of dynamic experiments using liquid-cell transmission electron microscopy. *Accounts of Chemical Research.* 51(1). 3-11.

[J35]   Parent, L., Bakalis, E., Ramirez-Hernandez, A., Kammeyer, J. K., Park, C., Pablo J. d., Zerbetto, F., Patterson, J. P., & Gianneschi, N. C. (2017). Directly observing micelle fusion and growth in solution by liquid-cell transmission electron microscopy. *Journal of the American Chemical Society*, *139(47)*, 17140–17151.

[J36]   Smith, B., Parent, L., Overholts, A., Beaucage, P., Bisbey, R., Chavez, A., Hwang, N., Park, C., Evans, A., Gianneschi, N., & Dichtel, W. (2017). Colloidal covalent organic frameworks. *ACS Central Science.* 3 (1), 58–65.

[J37]   Mehdi, B. L., Qian, J., Park, C., Stevens, A., Xu, W., Henderson, W. A., Zhang, J.-G., Mueller, K. T., & Browning, N. D. (2016). The impact of Li grain size on coulombic efficiency in Li batteries. *Scientific Reports*, 6, 34267.

[J38]   Welch, D. A., Woehl, T., Park, C., Faller, R., Evans, J. E., & Browning, N. D. (2016).

Understanding the role of solvation forces on the preferential attachment of nanoparticles in liquid. *ACS Nano*, 10 (1), 181–187.

[J39] Abellan, P., Parent, L., Al Hasan, N., Park, C., Arslan, I., Karim, A., Evans, J., & Browning, N. (2016). Gaining control over the radiolytic synthesis of uniform sub-3nm Palladium nanoparticles; the use of aromatic liquids in the electron microscope. *Lagmuir. 32(6)*, 1468–1477.

[J40] Patterson, J. P., Abellan-Baez, P., Denny, M. S., Jr., Park, C., Browning, N. D., Cohen, S. M., Evans, J. E., & Gianneschi, N. C. (2015). Observing the growth of metal–organic frameworks by in situ liquid cell transmission electron microscopy. *Journal of American Chemical Society*, 137(23), 7322-7328.

[J41] Mehdi, B. L., Qian, J., Nasybulin, E., Park, C., Welch, D. A., Faller, R., Mehta, H., Henderson, W. A., Xu, W., Wang, C. M., Evans, J. E., Liu, J., Zhang, J. G., Mueller, K. T., & Browning, N. D. (2015). Observation and quantification of nanoscale processes in Lithium batteries by operando electrochemical (S)TEM. *Nano Letters*, 15(3), 2168–2173.

[J42] Abellán, P., Mehdi, B. L., Parent, L. R., Gu, M., Park, C., Xu, W., Zhang, Y., Arslan, I., Zhang, J. G., & Wang, C. (2014). Probing the degradation mechanisms in electrolyte solutions for Li-ion batteries by in situ TEM. *Nano Letters*, 14(3), 1293–1299.

[J43] Woehl, T. J., Park, C., Evans, J. E., Arslan, I., Ristenpart, W. D., & Browning, N. D. (2014). Direct observation of aggregative nanoparticle growth: kinetic modeling of the size distribution and growth rate. *Nano Letters*, 14(1), 373-378.

[J44] Huitink, D., Kundu, S., Park, C., Mallick, B., Huang, J. Z., & Liang, H. (2010). Nanoparticle shape evolution identified through multivariate statistics. *Journal of Physical Chemistry A*, 114(17), 5596–5600.

Application to Advanced Manufacturing and Energy Systems:

[J45] Kang, B., Park, C., Kim, H., and Hong, S., (in press) Bayesian optimization for the vehicle dwelling policy in a semiconductor wafer fab. *IEEE Transactions on Automation Science and Engineering*.

[J46] Park, C., Rao, R., Nikolaev, P., & Maruyama, B, (2022) Gaussian process surrogate modeling with manipulating factors for carbon nanotube growth experiments. *Journal of Manufacturing Science and Engineering*. 144(3), 1-10.

[J47] Jeong, D., Park, C. and Ko, Y. (2021). Missing data imputation using mixture factor analysis for building electric load data. *Applied Energy*. 304(15), 117655.

[J48] Jeong, D., Park, C. & Ko, Y. (2021) Short-term electric load forecasting for buildings using logistic mixture vector autoregressive model with curve registration. *Applied Energy*. 282 (B), 116249.

[J49] Ren, J., Park, C. & Wang, H. (2018) Stochastic modeling and diagnosis of leak areas for surface assembly. *Journal of Manufacturing Science and Engineering*. 140(4): 1-10.

[J50] Agbabiaka, A., & Park, C. (2016). SDP-based ensemble pruning algorithm with an improved re-sizing step. *International Journal of Data Mining, Modelling and Management*, *8(1)*, 12.

[J51] Mishra, S., Vanli, A. O., & Park, C. (2015). A multivariate cumulative sum method for

continuous damage monitoring with lamb-wave sensors. *International Journal of Prognostics and Health Management*, 6, 1-11.

[J52] Park, C., Tang, J., & Ding, Y. (2010). Aggressive data reduction for damage detection in structural health monitoring. *Structural Health Monitoring*, 9(1), 59-74.

Unpublished:

[J53] Mu, C. and Park, C., (submitted) Tomographic reconstruction with shape priors for mitigating missing wedge effects. *SPIE Journal of Electronic Imaging*.

[J54] Chen, S., Park, C. and Sun, Y., (submitted) Predicting Flight-level Checked Baggage for a Major U.S. Airline. *Transportation*.

[J55] Park, J., Park, C. and Hong, S., (submitted) Gaussian process-based storage location assignments with risk assessments for progressive zone picking systems. *Computers & Industrial Engineering*.

[J56] Park, C., Waelder, R., Kang, B., Maruyama, B., Hong, S., and Gramacy, R., (submitted) Active Learning of Piecewise Gaussian Process Surrogates. *Journal of Machine Learning Research*.

F. Refereed Proceedings

[C1] Park, J., Joatiko, P.V.E., Park, C., Hong, S. (2022). Average Flow Time Estimation and Its Application for Storage Relocation in an Order Picking System. In: Kim, D.Y., von Cieminski, G., Romero, D. (eds) Advances in Production Management Systems. Smart Manufacturing and Logistics Systems: Turning Ideas into Action. APMS 2022. IFIP Advances in Information and Communication Technology, vol 663. Springer, Cham.

[C2] Park, C. and Ding, Y. (2020). October. Dynamic Data-Driven Distribution Tracking of Nanoparticle Morphology. In *International Conference on Dynamic Data Driven Application Systems* (pp. 132-139). Springer, Cham.

[C3] Wang, M., Park, C. and Woehl, T.J., (2019). Visualizing Platinum Supraparticle Formation with Liquid Cell Electron Microscopy and Correlative Investigation of Catalytic Activity. *Microscopy and Microanalysis*, 25(S2), pp.2026-2027.

[C4] Wang, M., Park, C. and Woehl, T., (2019). Toward Quantitative Liquid Cell Electron Microscopy through Kinetic Control of Solution Chemistry. *Microscopy and Microanalysis*, 25(S1), pp.23-24.

[C5] Wang, M., Woehl, T.J. and Park, C., (2018). Quantitative Modeling of Kinetically Controlled Nanocrystal Synthesis with Liquid Cell Electron Microscopy. *Microscopy and Microanalysis*, 24(S1), pp.280-281.

[C6] Abellan, P., Arslan, I., Hasan, N.A., Browning, N.D., Evans, J.E., Grate, J.W., Karim, A.M., Lucas, I.T., Moser, T.H., Parent, L.R. and Park, C. (2016). November. The Determining Role of Solution Chemistry in Radiation-Induced Nanoparticles Synthesis in the STEM. In *European Microscopy Congress 2016: Proceedings* (pp. 31-32). Weinheim, Germany: Wiley-VCH Verlag GmbH & Co. KGaA.

[C7] Mehdi, B. L., Cao, R., Park, C., Henderson, W. A., Xu, W., Zhang, J., Mueller, K. T., & Browning, N. D. (2016). Understanding the effect of additives in Li-Sulfur batteries

by operando EC-(S)TEM. In Robert L. Price (Ed.), *Microscopy and Microanalysis* (pp. 836-837). Columbus, OH; Cambridge Univ Press.

[C8]   Woehl, T. J., Welch, D. A., Park, C., Faller, R., Evans, J. E., & Browning, N. D. (2016). The mechanisms for preferential attachment of nanoparticles in liquid determined using liquid cell electron microscopy, machine learning, and molecular dynamics. In Robert L. Price (Ed.), *Microscopy and Microanalysis* (pp. 812-813). Columbus OH: Cambridge Univ Press.

[C9]   Mehdi, B.L., Stevens, A., Hufschmid, R., Park, C., Muller, K. and Browning, N., (2016). Imaging Dynamic Processes in Liquids: Application for Batteries. In *European Microscopy Congress 2016: Proceedings* (pp. 680-681). Weinheim, Germany: Wiley-VCH Verlag GmbH & Co. KGaA.

[C10] Abellan, P., Parent, L. R., Moser, T. H., Park, C., Al Hasan, N., Munusamy, P., Lucas, I. T., Arslan, I., Grate, J., Karim, A. M., & Evans, J. E. (2015). Controlled radiolytic synthesis in the fluid stage towards understanding the effect of the electron beam in liquids. In *Microscopy and Microanalysis* (pp. 2125-2126). Portland, OR: Cambridge University Press.

[C11] Mehdi, B. L., Qian, J., Nasybulin, E., Park, C., Welch, D. A., Faller, R., Mehta, H., Henderson, W. A., Xu, W., Wang, C. M., & Evans, J. E. (2015). Quantification of electrochemical nanoscale processes in lithium batteries by operando EC-(S) TEM. In *Microscopy and Microanalysis* (pp. 1917-1918). Portland, OR: Cambridge University Press.

[C12] Patterson, J. P., Abellan, P., Denny, M. S., Park, C., Browning, N. D., Cohen, S. M., Evans, J. E., & Gianneschi, N. C. (2015). Observing the self-assembly of metal-organic frameworks by in-situ liquid cell TEM. In *Microscopy and Microanalysis* (pp. 2445-2446). Portland, OR; Cambridge University Press.

[C13] Mehdi, L. B., Abellan, P., Parent, L. R., Gu, M., Park, C., Xu, W., Zhang, Y., Arslan, I., Zhang, J.-G., Wang, C.-M., Evans, J. E., & Browning, N. D. (2014). Direct observation of electrolyte degradation mechanisms in Li-ion batteries. In *Microscopy and Microanalysis* (pp. 1624-1625). Hartford CT: Cambridge University Press.

[C14] Patterson, J. P., Abellan, P. B., Denny, M., Jr., Cohen, S., Park, C., Browning, N. D., Evans, J. E., & Gianneschi, N. C. (2014). In-situ liquid transmission electron microscopy (TEM) for the analysis of metal organic frameworks (MOFs). In *Microscopy and Microanalysis* (pp. 1614-1615). Hartford CT: Cambridge University Press.

[C15] Woehl, T. J., Park, C., Evans, J. E., Arslan, I., Ristenpart, W. D., & Browning, N. D. (2013). Analysis of single nanoparticle growth environments to explain abnormal Ostwald ripening of nanoparticle ensembles. In *Microscopy and Microanalysis* (pp. 500-501). Cambridge University Press.

[C16] Park, C., Ding, Y., & Byon, E. (2008). Collaborative data reduction for energy efficient sensor networks. In *The 4th Annual IEEE Conference on Automation Science and Engineering*. IEEE.

[C17] Ding, Y., Byon, E., Park, C., Tang, J., Lu, Y., & Wang, X. (2007). Dynamic data-driven fault diagnosis of wind turbine systems. In *the 7th international conference on Computational Science*. Springer-Verlag Berlin, Heidelberg.

[C18]   Ji, Y. G., Park, C., & Kim, M. (2006). A study on the application of BPM systems for implementation of RosettaNet based e-Logistics. In *ICCSA*. Springer-Verlag Berlin Heidelberg.

G. Invited Seminars

[S1]   Kyonggi University (Industrial and Systems Engineering). June 2023. *Data Science for Smart Manufacturing.*

[S2]   Hongik University (Industrial and Data Engineering). June 2023. *Data Science for Smart Manufacturing.*

[S3]   University of Washington (Industrial and Systems Engineering). February 2023. *Active Machine Learning of Surrogates for Smart Manufacturing.*

[S4]   Clemson University (Industrial Engineering). February 2023. *Active Machine Learning of Surrogates for Smart Manufacturing.*

[S5]   Rutgers University (Industrial and Systems Engineering). January 2023. *Data Science for Smart Manufacturing Systems.*

[S6]   Seoul National University (Industrial Engineering). August 2022. *AI/ML-driven Autonomy in Scientific Experimentation.*

[S7]   Binghamton University, State University of New York (T.J. Watson College of Engineering). July 2022. *AI/ML-driven Autonomy in Scientific Experimentation.*

[S8]   Seoul National University (Materials Science and Engineering). April 2022. *Machine Learning for Autonomous Materials Experimentation.*

[S9]   Air Force Research Lab (Miracle Forum). August 2021. *Patchwork Gaussian Process Model for Prediction with Large Datasets.*

[S10]   Pusan National University (Industrial Engineering). January 2020. *Sequential Adaptive Design for Jump Regression Estimation.*

[S11]   Sungkyunkwan University (Industrial Engineering). June 2019. *Patchwork Kriging for Big Data.*

[S12]   Air Force Research Lab (Materials and Manufacturing Directorate). Jan 2019. *Accelerating Materials Discovery via Material Imaging and Machine Learning.*

[S13]   Pohang University of Science and Technology (Industrial and Management Engineering). June 2018. *Patchwork Kriging for Big Data.*

[S14]   Brookhaven National Lab (Center for Functional Material). May 2018. *Advanced Image Analytics For Accelerating Material Discovery*

[S15]   Florida State University (Scientific Computing Department). April 2018. *Patchwork Kriging for Large datasets.*

[S16]   Oklahoma State University (Industrial Engineering and Management). April 2018. *Patchwork Kriging for Large datasets.*

[S17]   University of Southern Florida (Chemical and Biomedical Engineering). November 2017. *Understanding of Nanomaterial Processes with In situ Microscopy and Big Data.*

[S18]   Eindhoven University of Technology (Liquid Phase Electron Microscopy Workshop). September 2017. *Using Analytics to Improve the Frame Rate of Liquid Phase Electron Microscopy.*

[S19] Pacific Northwest National Laboratory (Analysis In Motion Initiative). May 2017. *Learning Nanomaterial Processes from Big Image Data*.

[S20] University of Florida (Industrial and Systems Eng.). April 2017. *Learning Nanomaterial Processes from Big Image Data*.

[S21] Pusan National University (Industrial Engineering). December 2016. *Inline monitoring of micro-macro dynamics of nanomaterial systems*.

[S22] Florida State University (Statistics Department). September 2016. *Patching Gaussian Processes for Large-scale Spatial Regression*.

[S23] Northwestern University (Industrial and Management Engineering). October 2015. *Scaling Gaussian Process Regression for Large Spatial Datasets*.

[S24] Texas A&M University (Spatial Statistics Workshop). January 2015. *Domain decomposition approach for fast Gaussian process regression of large spatial data sets.*

[S25] Lawrence Berkely National Lab. November 2014. *Visual Analytic Methods for a Large Volume of Scientific Image Datasets*.

[S26] Korea Advanced Institute of Science and Technology (Industrial and Systems Engineering). August 2014. *Modeling and Analysis of Nanomaterial Processes*.

[S27] Sungkyunkwan University (Industrial Engineering). August 2014. *Modeling and Analysis of Nanomaterial Processes*.

[S28] University of Washington (Industrial and Systems Engineering). February 2014. *Modeling and Analysis of Nanoparticle Self-Assembly Processes*.

[S29] Arizona State University (Computing, Informatics, and Decision Systems Eng.). January 2014. *Modeling and Analysis of Nanoparticle Self-Assembly Processes*.

[S30] Pohang University of Science and Technology. (Industrial and Management Engineering). May 2012. *Estimating Nanocrystal Growth Trajectories from Non-longitudinal Image Data via Nonparametric Bayesian Radial Growth Model*.

[S31] Samsung Electronics (Samsung Research). May 2012. *Estimating Nanocrystal Growth Trajectories from Non-longitudinal Image Data via Nonparametric Bayesian Radial Growth Model*.

H. Funding

External Grants. (PI Total: $2.99 million, Co-PI Total: $1.31 mil., My Share: $2.38 mil.)

Sponsor / Program	Title	Role	Total / My Share	Period
Air Force Office of Scientific Research (AFOSR) FA9550-23-1-0673 Dynamical Systems and Control Theory Program	Data-Driven Adaptive Control of Shape Evolution with Regime Changes	PI	$449,996/ $245,422	10/2023 -9/2026
Primoris Service Corporation (PSC)	Developing a Digital Twin to Automate the Detection of Anomalies	Co-PI PI: Hui Wang, Other	$151,228	9/2023- 08/2024

	When Operating Fired Heaters	Co-PIs: Juan Ordonez		
National Science Foundation (NSF) 2332161 HBCU Program	Planning: HBCU-UP: Strengthening Data Science Research Capacity and Education Programs through Academia-Industry Partnership	Co-PI PI: Yanshuo Sun (Florida State University)	$200,000/ $80,000	9/2023-9/2025
National Science Foundation (NSF) 2152655/2152679 Computational and Data-Enabled Science and Engineering	CDS&E/Collaborative Research: Local Gaussian Process Approaches for Predicting Jump Behaviors of Engineering Systems	PI Co-PI: Robert Gramacy (Virginia Tech)	$474,602 / $293,236	7/2022-6/2025
National Science Foundation (NSF) 2132311 Operations Engineering	New Data Science for Human Operational Analysis in Smart Manufacturing	PI Co-PI: Anuj Srivastava (Florida State Univ.)	$375,425 / $251,535	8/2022-7/2025
Department of Defense HBCU/MI Equipment/Instrumentation	Physical Data-Driven Characterization for Material Science Discovery & Design	Co-PI PI: Rebekah Sweat (Florida State Univ.) Other Co-PIs: Natalie Annett, Muhammad Haseeb, Tarik Dickens (Florida A&M Univ.) Zhiyong Liang (Florida State Univ.)	$575,000	7/2022-6/2023
Brookhaven National Lab. (BNL) 365032 Center for Functionalized Nanomaterials (CFN)	Near Realtime Analysis of In-Situ Transmission Electron Microscopy Experiments	PI	$214,663 / $214,663	5/2019-5/2024
Air Force Office of Scientific Research (AFOSR)	Dynamic Data Driven Control of Nanoparticle Self-Assembly Processes	PI Co-PIs: Hedi	$539,208/ $362,208	4/2018-12/2022

FA9550-18-1-0144 Dynamic Data Information Processing Program (DDIP)		Mattoussi (Florida State Univ.) Yu Ding & Jianhua Huang (Texas A&M Univ.)		
National Research Foundation-Korea 2019H1D3A2A01100 649 BrainPool Fellowship	Autonomous Update and Calibration of a Digital Twin Model Through Industrial AI and Uncertainty Quantification	Faculty Fellowship Mentor: Sang Do Noh (Sungkyunkwan Univ.)	$100,000 / $100,000	12/2019 -8/2020
Air Force Research Lab (AFRL) FA8650-19-F-5400 Manufacturing and Materials Directorate	Machine Learning for Materials Discovery	Faculty Fellowship Mentor: Benji Maruyama (Air Force Research Lab)	$72,000 / $72,000	7/2019- 12/2019
Oak Ridge National Lab (ORNL) 4000152630 Center for Nanophase Materials Sciences (CNMS)	Machine Learning Approach for Learning Crystal Lattice Structures from Atomic Scale Electron Microscope Image Data	PI	$77,203 / $77,203	1/2017- 9/2019
Air Force Office of Scientific Research (AFOSR) FA9550-16-1-0110 Defense University Research Instrumentation Program (DURIP)	Liquid Specimen Holder for In-situ Transmission Electron Microscope for Characterizing Wet-Chemistry-Based Nanomaterial Processes in Real-Time	PI Co-PIs: Yan Xin, Sachin Shanbhag, Tao Liu (Florida State Univ.)	$120,500 / $120,500	12/2015 - 12/2016
National Science Foundation (NSF) 1359235 Research Experience for Undergraduates (REU)	REU Site: Research Experience for Undergraduates: Retaining Engineers through Research Entrepreneurship and Advanced-Materials Training	Senior Personnel PI: Okoli, Okenwa (FSU) Co-PI: Dickens, Tarik (FAMU)	$380,000	5/2014- 4/2019
National Science Foundation (NSF) 1334012	Understanding and Monitoring Nanoparticle	PI	$284,993 / $284,993	10/2013 - 9/2017

Manufacturing Enterprise Systems	Self-assembly Processes with Online Transmission Electron Microscopic Data			
Air Force Office of Scientific Research (AFOSR) FA9550-13-1-0075 Dynamic Data Driven Application Systems (DDDAS)	Dynamic, Data-Driven Modeling of Nanoparticle Self Assembly Processes	Subcontract PI PI: Yu Ding (Texas A&M Univ) Co-PIs: Jianhua Huang (Texas A&M Univ.) Tao Liu (Florida State Univ.) Chuck Zhang (Gatech)	$642,030 / $267,663	3/2013-3/2016
Oak Ridge Associated University (ORAU) Ralph E. Powe Junior Faculty Enhancement Award	Automated Statistical Analysis of In-situ TEM Characterization of Nanoparticle Self-Assemblies	PI	$10,000 / $10,000	6/2013-5/2014

Internal Grants ($Total: 103k):

Sponsor / Program	Title	Role	Total / My Share	Period
FSU CRC Planning Grant	Data Science for Human Operational Analysis in Operations Research	PI	$25,000	6/2022-6/2023
FSU CRC Committee on Faculty Research Support	Sequential Adaptive Data Acquisition for Piecewise Continuous Response Surfaces of Experiments	PI	$20,000	5/2021-8/2021
FSU CRC Committee on Faculty Research Support	Distributed Control of Multi-Stage Dynamic Processes	PI	$14,000	5/2017-8/2017
FSU CRC Planning Grant	In-situ Processing of Massive Scientific Image Data	PI	$13,000	5/2015-4/2016
FSU CRC	Data Driven Characterization of	PI	$14,000	05/2013 - 8/2013

Committee on Faculty Research Support	Nanoparticles Self-Assembly Process			
FSU CRC

First Year Assistant Professor | Real-time characterization of shape evolution of nanoparticles. | PI | $17,000 | 05/2012 -08/2012 |

I. Courses Taught

Semester	Course Name	Evaluation
Spring 2023	Introduction to Machine Learning	4.6
Fall 2022	Principles of Engineering Economy (Sections 1 & 2)	4.5 & 4.0
Spring 2022	Introduction to Machine Learning	(Small Class)
Fall 2021	Principles of Engineering Economy (Sections 1 & 2)	4.1 & 3.9
Spring 2021	Introduction to Machine Learning	(Small Class)
Spring 2019	Leadership and Communications	5.0
Spring 2019	Systems Simulation	4.3
Fall 2018	Principles of Engineering Economy	3.5
Spring 2018	Systems Simulation	4.3
Fall 2017	Principles of Engineering Economy (Sections 1 & 2)	4.0 & 3.9
Spring 2017	Principles of Engineering Economy	3.8
Spring 2017	Leadership and Communications	5.0
Fall 2016	Principles of Engineering Economy (Sections 1 & 2)	3.7 & 3.9
Fall 2015	Principles of Engineering Economy (Sections 1 & 2)	4.0 & 4.0
Spring 2015	Principles of Engineering Economy (Sections 1 & 2)	4.0 & 3.2
Fall 2014	Principles of Engineering Economy (Sections 1 & 2)	3.3 & 3.8
Spring 2014	Principles of Engineering Economy (Sections 1 & 2)	3.2 & 3.6
Spring 2014	Data Mining	5.0
Fall 2013	Principles of Engineering Economy (Sections 1 & 2)	3.2 & 3.3
Fall 2012	Principles of Engineering Economy	3.7
Fall 2012	Quality Control and Reliability Engineering	3.9
Spring 2012	Data Mining	3.4
Fall 2011	Quality Control and Reliability Engineering	3.5

J. Supervision of Graduate Students as a Major Professor

Ph.D. Students (5 graduated and 2 on-going)
- Li, Min-yang (Aug 2016), co-chaired with Dr. Richard Liang, Topological and electrical properties of carbon nanotube networks. Currently Assistant Professor, Feng Chia University, Taiwan
- Agbabiaka, Adeseye (Aug 2017), Ensemble pruning algorithms in machine learning.
- Li, Xin (August 2018), Regularized regression with structural sparsity. Currently Postdoctoral associate at Oak Ridge National Lab.
- Vo, Garret (Aug 2019), Large-scale multi-target tracking for interacting targets, Currently Operation Research Scientist in National Geospatial Intelligence Agency & Adjunct Faculty at George Mason University.
- Chen, Mu (May 2021), Optimization approaches for tomography reconstruction,

Currently Sr. Data Scientist in Circle-K.
- Hasan, Rifat (Exp. December 2024). Graduate Research Assistant. *Modeling and analysis of dynamic shape populations.*
- Isaac Adjetey (Exp. May 2025). Graduate Research Assistant. *Adaptive data acquisition strategies for estimating jump Gaussian process regression models.*

Master Students (4 graduated):
- Kakareko, Sylwia (May 2020), Statistical shape theory for dynamic shape evolutions. Product Development Returns Specialist in AeroGrow International.
- Allada, Kartheek (Dec 2015), Image segmentation for extracting nanoparticles, currently project manager & senior business analyst in Citizens Financial Group.
- Ghadiyali, Huzefa (May 2016), Iterative solvers for large-scale linear system equations, currently owner of Marvel Enterprises
- Esmaieeli, Ali (May 2017), Surrogate modeling with angular data, currently VP Data Science Lead at JP Morgan Chase Bank.

K. Professional Membership
- Senior Member, Institute of Industrial and Systems Engineers (IISE)
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, Institute for Operations Research and the Management Sciences (INFORMS)
- Member, Microscopy Society of America (MSA) and the Microanalysis Society (MAS)

L. Service

Service to Professional Society
- Referee for Paper Competitions (IISE DAIS Best Student Paper, IISE QCRE Best Student Paper, INFORMS QSR Best Paper, INFORMS QSR Best Student Paper)
- Board Member (2016-2017), INFORMS Section on Quality, Reliability and Statistics.
- Associate Editor (2018-2022), IISE Transactions on Design and Manufacturing.
- Associate Editor (2017-present), IISE Transactions on Quality and Reliability Engineering.
- Associate Editor (2020-present), IEEE Transactions on Automation Science and Engineering
- Member, IISE Best Paper Award Committee (2021), Institute of Industrial and Systems Engineers.
- Chair, Wilcox-Youden Prize Committee (2022-2023), American Statistical Associations
- Member, Wilcox-Youden Prize Committee (2020-2021), American Statistical Associations.
- Organizing Committee (2020-2021), The 37th ASA Quality and Productivity Research Conference (QPRC). American Statistical Associations.
- Program Committee (2019), The Fifth International Conference on the Interface between Statistics and Engineering
- Committee Chair, INFORMS QSR Best Student Paper Award Committee (2016, 2020)

- Organizer, INFORMS QSR Student Interaction and Poster Session (2017)
- Session Organizations for National & International Conferences: INFORMS Annual Meetings, IISE Annual Conferences, IEEE Conference on Automation Science and Engineering
- Reviewer for Refereed Journals: IISE Transactions, Technometrics, Journal of Machine Learning Research, Journal of Computational Graphical Statistics, Computational Statistics and Data Analysis, Naval Research Logistics, Quality and Reliability Engineering International, ACS Nano, Computers & Industrial Engineering, Neurocomputing, The Industrial and Systems Engineering Research Conference, Journal of Manufacturing Systems, Journal of Manufacturing Science and Technology, IEEE Transactions on Automation Science and Engineering, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Industrial Informatics
- Reviewer or Panelist for Grant Applications: National Science Foundation (2015-present, Advanced Manufacturing, Future Manufacturing), Department of Energy (2020-2021), Maryland Industrial Partnerships Program (2017), Office for Science & Technology (OST) of the Embassy of France in the United States of America (2013)

Major Committee Assignments at University and College
- Faculty Sponsor, Young Scholars Program (YSP) (2013, 2014, 2015 & 2016).
- Department Representative, Commencement Ceremony (2013, 2015 & 2019).
- Member, Search Committee for Associate Dean for Research (2013–2014).
- Leader, College of Engineering Strategic Planning, I led the team of Systems Engineering Faculty to write and present a white paper responding to the College-wide Strategic Planning (2017).
- College Liaison, M.S. Degree in Data Science @ FSU (2020)
- Working Group Member & College Liaison, Data Science, Engineering and Analysis degree programs @ FAMU (2021)
- Committee Member, University's Review and Nomination Committee for Ralph E. Powe Junior Faculty Award University Nomination Committee (2020, 2022)
- University's Research Computing Task Force Member (2020)

Major Committee Assignments in Department
- Member, Department Promotion & Tenure Committee (2023)
- Member, Faculty Search Committee (2022-2023).
- Chair, Faculty Search Committee (2021-2022).
- Member, Search Committee for Department Head (2021).
- Member, Engineering Data Analytics Certificate Program Planning Committee (2021-present).
- Member, Engineering Doctor Degree Program Planning Committee (2021-present)
- Member, Undergraduate Committee (2014–2019).
- Member, Industrial Outreach Committee (2015-2019).

- Member, Graduate Committee (2016-2019).
- Member, Department Curriculum Committee (2017-present).
- Mentors, Junior Faculty Mentoring Committee for Lichun Li and Yanshuo Sun (2020)
- Member, Faculty Search Committee (2016-2017).
- Chair, Faculty Search Committee (2017-2018).
- Chair, Faculty Evaluation Committee (2018-2019).
- Member, Faculty Search Committee for Teaching Faculty (2017-2018).
- Committee Member, Departmental Grievance Committee (2013, 2014).
- Faculty Advisor, IIE Student Chapter (2013–2014).
- Department Newsletter Editor (2014-2019).
- Organizer of the Finishing School Program (2015-2019).
- Faculty Advisor, FAMU/FSU IME Corporate Mentoring Program (2019-2021)