Ga-Young Kelly Suh, Ph. D.

Gayoung.suh@csulb.edu or gysuh@stanford.edu

EDUCATION:

2011 **Ph.D., Mechanical Engineering**, Stanford University
2007 **M.S., Mechanical Engineering**, Stanford University
2005 **B.S., Mechanical Engineering**, Yonsei University, South Korea

EMPLOYMENT:

2019 – Present **Assistant Professor**, **Department of Biomedical Engineering**
California State University, Long Beach, California

2017 – Present **Adjunct Professor**, **Department of Surgery – Vascular Surgery**
Stanford University School of Medicine, California

2016 – Present **Consultant**
Global Science & Technology Inc., Greenbelt, MD
» Boundary condition analysis of human vessels for medical device testing and design

2016 – 2017 **Consulting Assistant Professor**, **Department of Surgery – Vascular Surgery**
Stanford University School of Medicine, California
» Endovascular device modeling and analysis for human aorta and vessels before / after surgery or during in vivo motion

2016 – 2018 **Consultant**
MD CTO Consulting LLC, Los Altos, California
» Boundary condition analysis of human vessels for medical device testing and design

2014 – 2016 **Research Associate, Department of Surgery – Vascular Surgery**
Stanford University School of Medicine, Stanford, California
(Advisor: Christopher P. Cheng, PhD.)
» Managed research projects including patient recruitment, medical image acquisition, image modeling, and algorithm development for analysis of diseased vessels
» Supervised students to guide their research projects and establish knowledge in human anatomy, cardiovascular physiology, and numerical analysis

2011 – 2014 **Postdoctoral Fellow, Department of Surgery – Vascular Surgery**
Stanford University School of Medicine, Stanford, California
(Advisor: Christopher P. Cheng, PhD.)
» Designed protocols to recruit patients, acquire research-specific CTs, and construct 3D models of human arteries / veins
» Developed geometric parameters for repaired aorta, stented arteries, and endograft: lumen volume, curvature, branch angle, and bend angle at stent end.

HONORS AND AWARDS:

» Best trainee paper award at the Western Vascular Society, Coronado CA (2014)
» Selected podium presentation at the Society of Interventional Radiology, San Diego CA (2014)
» Top 12 posters at the Society of Interventional Radiology, San Francisco CA (2012)
» Top 3 podium presentation at ASME Bioengineering, Lake Tahoe CA (2009)
» Top 3 poster presentation at ASME Bioengineering, Keystone CO (2007)
» Two-year graduate fellowship from Kwanjeong Foundation, Seoul, Korea (2005-2007)

JOURNAL PUBLICATIONS:

- Frohlich MM, Suh GY, Bondesson J, Lee JT, Dake MD, Leinweber M, Cheng CP. Thoracic Aortic Geometry Correlates with Endograft Bird-beaking Severity. Journal of Vascular Surgery. 2020 (DOI: 10.1016/j.jvs.2019.11.045).
- Bondesson J, Suh GY, Lundh T, Lee JT, Dake MD, Cheng CP. Automated Quantification of Diseased Thoracic Aortic Longitudinal Centerline and Surface Curvatures. Journal of Biomechanal Engineering. 2019 (DOI: 10.1115/1.4045271).
- Cheng CP, Suh GY, Kim JJ, Holden A. Cardiac Pulsatility- and Respiratory-Induced Deformations of the Renal Arteries and Snorkel Stents After Snorkel Endovascular Aneurysm Sealing. Journal of Endovascular Therapy (June 2019) (DOI: 10.1177/1526602819856363).
- Suh GY (co-1st), Ullery BW, Lee JT, Dake MD, Fleischmann D, Cheng CP. Cardiopulmonary-Induced Deformations of the Thoracic Aorta Following Thoracic Endovascular Aortic Repair. Vascular (Nov. 2018) (https://doi-org.stanford.idm.oclc.org/10.1177/1708538118811204).
- Itoga NK, Suh GY, Cheng CP. Stabilization of the Abdominal Aorta During the Cardiac Cycle with the Sac-Anchoring Nellix Device. Accepted by Annals Vasc Surg. (Feb. 2018).
- Lundh T, Suh GY, DiGiacomo P, Cheng CP. A Lagrangian Cylindrical Coordinate System for Characterizing Dynamic Surface Geometry of Tubular Anatomic Structures. Accepted by Med Biol Eng Comput. (Jan. 2018).
- Cheng CP, Zhu YD, Suh GY. Optimization of Three-Dimensional Modeling for Geometric Precision and Efficiency for Healthy and Diseased Aortas. Comput Methods Biomech Biomed Eng. 2018;21:65-74.
- Suh GY (co-1st), Ullery BW, Hirotsu K, Zhu YD, Lee JT, Dake MD, Fleischmann D, Cheng CP. Geometric Deformations of the Thoracic Aorta and Supra-aortic Arch Branch Vessels Following Thoracic Endovascular Aortic Repair. Accepted by Vasc Endovasc Surg. (Dec 2017).
- Suh GY (co-1st), Hirotsu K, Lee JT, Dake MD, Fleischmann D, Cheng CP. Changes in Geometry and Cardiac Deformation of the Thoracic Aorta after Thoracic Endovascular Aortic Repair (TEVAR). Annals Vasc Surg. 2017 (http://dx.doi.org/10.1016/j.avsg.2017.07.033).
- Suh GY (co-1st), Ullery BW, Kim JJ, Lee JT, Dalman RL, Cheng CP. Dynamic Geometric Analysis of the Renal Arteries and Aorta Following Complex Endovascular Aneurysm Repair. Ann Vasc Surg. 2017;43:85-95.
- Suh GY, Fleischmann D, Beygui R, Cheng CP. Quantification of Motion of the Thoracic Aorta after Ascending Aortic Repair of Type-A Dissection. Int J Comput Assist Radiol Surg. 2017;12:811-819.
- Suh GY (co-1st), Hirotsu K, Beygui R, Dake MD, Fleischmann D, Cheng CP. Volumetric Analysis Demonstrates True and False Lumen Remodeling Persist for 12 Months after TEVAR. J Vasc Surg Cases 2016;2:101-104.
- Suh GY, Choi G, Herfkens RJ, Dalman RL, Cheng CP. Three-Dimensional Modeling Analysis of Visceral Arteries and Kidneys during Respiration. Annals Vasc Surg. 2016;34:250-260.
- Suh GY (co-1st), Ullery BW, Lee JT, Liu B, Stineman R, Dalman RL, Cheng CP. Comparative Geometric Analysis of Renal Artery Anatomy Before and After Fenestrated or Snorkel EVAR. J Vasc Surg. 2015;63:922-929.
- Suh GY (co-1st), Ullery BW, Lee JT, Liu B, Stineman R, Dalman RL, Cheng CP. Geometry and Respiratory-induced Deformation of Abdominal Branch Vessels Following Complex EVAR. J Vasc Surg. 2015;61:875-84.
- Suh GY, Beygui R, Marangi R, Fleischmann D, Cheng CP. Aortic Arch Vessel Geometries and Deformations in Patients with Thoracic Aortic Aneurysms and Dissections. J Vasc Interv Radiol. 2014;25:1903-1911.
- Arzani A, Suh GY, Dalman RL, Shadden SC. A longitudinal comparison of hemodynamics and intraluminal thrombus deposition in abdominal aortic aneurysms. Am J Physiol – Heart Circ Physiol. 2014;307:H1786-H1795.
- Suh GY, Choi G, Herfkens RJ, Dalman RL, Cheng CP. Respiratory Deformations of the Superior Mesenteric Artery and Renal Arteries in Patients with Abdominal Aortic Aneurysm. J Vasc Interv Radiol. 2013;24:1035-1042.
- Suh GY, Choi G, Draney MT, Herfkens RJ, Dalman RL, Cheng CP. Respiration-Induced 3D Deformations of the Renal Arteries Quantified with Geometric Modeling During Inspiration and Expiration Breath-holds of Magnetic Resonance Angiography. J Magn Reson Imaging. 2013;38:1325-1332.
- Suh GY, Les AS, Tenforde AS, Shadden SC, Spilker RL, Yeung JJ, Cheng CP, et al. Hemodynamic Changes Quantified in Abdominal Aortic Aneurysm with Increasing Exercise Intensity Using MR Exercise Imaging and Computational Fluid Dynamics. Annals Biomed Eng. 2011;39:2186-2202.
- Suh GY, Les AS, Tenforde AS, Shadden SC, Spilker RL, Yeung JJ, et al. Quantification of Particle Residence Time in Abdominal Aortic Aneurysm Using Magnetic Resonance Imaging and Computational Fluid Dynamics. Annals Biomed Eng. 2011;39:864-883.
- Tenforde AS, Cheng CP, Suh GY, Herfkens RJ, Dalman RL, Taylor CA. Quantifying In Vivo Hemodynamic Response to Exercise in Patients with Intermittent Claudication and Abdominal Aortic Aneurysms Using Cine Phase-Contrast MRI. J Magn Reson Imaging. 2010;31:425-429.

PUBLICATIONS UNDER REVIEW:

- Suh GY, Bondesson J, Kim JJ, Zhu YD, Lee JT, Dake MD, Cheng CP. Biomechanical Effects of TEVAR on Multiaxial Pulsatility and Surface Curvature Deformation of the Thoracic Aorta. Reviewed by Journal of Vascular Surgery. 2019.

BOOK CHAPTER:

- Suh GY, Ullery BW, Bondesson J, Cheng CP, Lee JT. Dynamic Geometric Changes Of The Thoracic Aorta: Implications For TEVAR And Branched Grafts. European Symposium on Vascular Biomaterials. (Oct. 2019).
- Cheng CP. Handbook of Vascular Motion. Elsevier. Chapters 8 and 9 (to be published in 2019).
- Suh GY, Cheng CP, Lee JT, Dalman RL. Renal and Superior Mesenteric Arteries Motion during Respiration in Patients with Aortic Aneurysms. European Symposium on Vascular Biomaterials. pp. 25–33 (Oct. 2015).

CONFERENCE PUBLICATIONS:

- Bondesson J, Suh GY, Lundh T, Dake MD, Lee JT, et al. Quantification of True Lumen Helicity in Type B Dissections. Transcatheter Cardiovascular Therapeutics (TCT), San Francisco CA (Oct. 2019).
- Suh GY, Cabreros S, Kim JJ, Bondesson J, Lee JT, Dake MD, et al. Multiaxial Pulsatile Compliance Changes to the Thoracic Aorta from Before to After TEVAR. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Kim JJ, Suh GY, Lee JT, Dalman RL, Cheng CP. Renal Snorkel Stent Length Affects Branch Angle in Snorkel EVAR and EVAS Patients. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Frohlich MM, Suh GY, Bondesson J, Lee JT, Dake MD, et al. Geometric Features of the Thoracic Aorta and Endograft Correlate with TEVAR Bird-beaking Severity. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Bondesson J, Suh GY, Lundh T, Lee JT, Dake MD, et al. Quantification of Thoracic Aortic Longitudinal Centerline and Surface Curvatures for TEVAR Planning and Evaluation. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Cheng CP, Suh GY, Kim JJ, Lee JT, Dalman RL, et al. Dynamic Geometry of Renal Arteries in Untreated AAA, Snorkel Endovascular Aneurysm Repair, and Snorkel Endovascular Aneurysm Sealing. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Cheng CP, Kim JJ, Suh GY, Holden A. Cardiac- and Respiratory-Induced Motion of Renal Arteries and Stents in Snorkel Endovascular Aneurysm Sealing. Leipzig Interventional Course (LINC), Leipzig Germany (Jan. 2018).
- Hirotsu K, Suh GY, Lee JT, Dake MD, Fleischmann D, Cheng CP. Changes in Geometry and Cardiac Deformation of the Thoracic Aorta after TEVAR. The Vascular and Endovascular Surgery Society (VESS), Steamboat Springs CO (Feb. 2017).
- Suh GY, Zhu YD, Hirotsu K, Lee JT, Dake MD, Fleischmann D, et al. Cardiac- and Respiratory-Induced Deformation of Thoracic Aorta after TEVAR. The International Symposium on Endovascular Therapy (ISET), Hollywood FL (Feb. 2016).
- Suh GY, Ullery BW, Kim JJ, Lee JT, Dalman RL, Cheng CP. Geometric Changes of Renal Arteries and Abdominal Aorta with Complex EVAR from Preop to Follow-up Stage. The International Symposium on Endovascular Therapy (ISET), Hollywood FL (Feb. 2016).
- Suh GY, Hirotsu K, Zhu YD, Lee JT, Dake MD, Fleischmann D, et al. Geometric Analysis of Thoracic Aorta and Arch Branches Before and After TEVAR. Transcatheter Cardiovascular Therapeutics (TCT), San Francisco CA (Oct. 2015).
- Suh GY (co-1st), Ullery BW, Lee JT, Liu B, Stineman R, Dalman RL, Cheng CP. Comparative Geometric Analysis of Renal Artery Anatomy Before and After Fenestrated and Snorkel EVAR. Vascular Annual Meeting of the Society for Vascular Surgery, Chicago IL (June 2015).
- Suh GY (co-1st), Ullery BW, Lee JT, Liu B, Stineman R, Dalman RL, Cheng CP. Geometry and Respiratory-induced Deformation of Abdominal Branch Vessels Following Complex EVAR. The Western Vascular Society, Coronado CA (Sept. 2014).
- Suh GY, Beygui R, Fleischmann D, Cheng CP. Respiratory- and Cardiac-Induced Motion of the Thoracic Aorta in Patients with Thoracic Aortic Disease. The Society of Interventional Radiology (SIR), San Diego CA (Mar. 2014).
- Arzani A, Suh GY, McConnell MV, Dalman RL, Shadden SC. Progression of Abdominal Aortic Aneurysm: Effect of Lagrangian Transport and Hemodynamic Parameters. ASME Summer Bioengineering Conference, Sunriver OR (Jun. 2013).
- Suh GY, Beygui R, Marangi R, Fleischmann D, Cheng CP. Respiratory- and Cardiac-Induced Branch Deformation of the Aortic Arch Vessels in Patients with Thoracic Aortic Disease. The International Symposium on Endovascular Therapy (ISET), Miami FL (Jan. 2013).
- Suh GY, Choi G, Herfkens RJ, Dalman RL, Cheng CP. Respiratory Deformation of the Superior Mesenteric Artery and Renal Arteries in Patients with Abdominal Aortic Aneurysms. The Society of Interventional Radiology (SIR), San Francisco CA (Mar. 2012).
- Suh GY, Choi G, Herfkens RJ, Dalman RL, Cheng CP. Respiratory Deformation of the Renal Arteries in Healthy Subjects and Patients with Abdominal Aortic Aneurysms. The International Symposium on Endovascular Therapy (ISET), Miami FL (Jan. 2012).
- Suh GY, Tenforde AS, Cheng CP, Herfkens RJ, Dalman RL, Taylor CA. Hemodynamics in Abdominal Aortic Aneurysms At Rest and Graded Levels of Exercise. ASME Summer Bioengineering Conference, Lake Tahoe CA (Jun. 2009).
- Tenforde AS, Cheng CP, Suh GY, Les AS, Dalman RL, Herfkens RJ, Taylor CA. Hemodynamic Response to Exercise in Small Abdominal Aortic Aneurysms. International Society for Magnetic Resonance In Medicine (ISMRM), Toronto, Ontario Canada (May 2008).
- Suh GY, Choi G, Draney MT, Taylor CA. Quantification of Three Dimensional Motion of Renal Arteries Using Image-Based Modeling Techniques. ASME Summer Bioengineering Conference, Keystone CO (Jun. 2007).

» Choi G, Cheng CP, Suh GY, Herfkens RJ, Taylor CA. Quantification of Radial Compression and Deflection of Superficial Femoral Artery due to Musculoskeletal Motion. Transcatheter Cardiovascular Therapeutics (TCT), Washington DC (Oct. 2006).
» Choi G, Cheng CP, Suh GY, Herfkens RJ, Taylor CA. In Vivo Axial and Twisting Deformations of the Superficial Femoral Artery due to Hip and Knee Flexion. Transcatheter Cardiovascular Therapeutics (TCT), Washington DC (Oct. 2006).

PROFESSIONAL SERVICE

» Invited reviewer for Journal of Vascular Surgery (Mar. 2018 – present), Journal of Endovascular Therapy (Mar 2015 – present), Biocybernatics and Biomedical Engineering (Jan. 2018), Nature – Scientific Reports (April 2017), Journal of Thoracic and Cardiovascular Sugery (May 2016), and Academic Radiology (Jan. 2015)