

# Stanford

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## Christopher Cheng

Adjunct Professor, Surgery - Vascular Surgery

 Curriculum Vitae available Online

### Bio

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#### BIO

I split my time between the medical device industry and academic research. For my day job, I run the Global Science & Technology - Medical Division, focusing on medical device consulting and services for healthcare agencies. At Stanford, my research is focused on the interaction between vascular implants and the dynamic anatomy. I advise companies on device design, biomechanics, mechanical testing, preclinical and cadaver testing, regulatory strategy, and entrepreneurship.

#### ACADEMIC APPOINTMENTS

- Adjunct Professor, Surgery - Vascular Surgery

#### PROFESSIONAL EDUCATION

- PhD, Stanford University , Biomechanical Engineering (2002)
- MS, Stanford University , Biomechanical Engineering (2000)
- BSE, Duke University , Biomedical Engineering (1998)
- BSE, Duke University , Electrical Engineering (1998)

#### LINKS

- VIBE Lab website: <http://vibelab.stanford.edu>

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research laboratory focuses on understanding the mechanics of the cardiovascular system, especially with respect to interactions between medical devices and the dynamic cardiovascular environment. We use medical imaging, 3D geometric modeling, and custom deformation quantification techniques to investigate disease processes and medical device performance. We are interested in the dynamics of the heart, aorta, and peripheral vasculature, and are always seeking ways to apply our research to current and emerging therapies. While our research pursuits seek to add to the fundamental understanding of cardiovascular biomechanics, all of our projects are directly related to improving medical device design, evaluation, regulation, and their use in clinical practice.

### Teaching

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#### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cardiothoracic Surgery (Fellowship Program)
- Vascular Interventional Radiology (Fellowship Program)
- Vascular Surgery (Fellowship Program)

## Publications

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### PUBLICATIONS

- **Cardiopulmonary-induced deformations of the thoracic aorta following thoracic endovascular aortic repair.** *Vascular*  
Suh, G., Ullery, B. W., Lee, J. T., Dake, M. D., Fleischmann, D., Cheng, C.  
2018; 1708538118811204
- **Stabilization of the Abdominal Aorta During the Cardiac Cycle with the Sac-Anchoring Nellix Device.** *Annals of vascular surgery*  
Itoga, N. K., Suh, G., Cheng, C. P.  
2018
- **Geometric Deformations of the Thoracic Aorta and Supra-Aortic Arch Branch Vessels Following Thoracic Endovascular Aortic Repair** *VASCULAR AND ENDOVASCULAR SURGERY*  
Ullery, B. W., Suh, G., Hirotsu, K., Zhu, D., Lee, J. T., Dake, M. D., Fleischmann, D., Cheng, C. P.  
2018; 52 (3): 173–80
- **A Lagrangian cylindrical coordinate system for characterizing dynamic surface geometry of tubular anatomic structures.** *Medical & biological engineering & computing*  
Lundh, T., Suh, G., DiGiacomo, P., Cheng, C.  
2018
- **Optimization of three-dimensional modeling for geometric precision and efficiency for healthy and diseased aortas** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*  
Cheng, C. P., Zhu, Y. D., Suh, G.  
2018; 21 (1): 65–74

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