Stanford



Davis Vigneault

Assistant Professor of Radiology (Cardiovascular Imaging)

Bio

BIO

Dr. Vigneault is a fellow in cardiovascular imaging at Stanford, where he also completed his residency (including a year as chief resident) in diagnostic radiology. Previously, he received his medical degree from Tufts University School of Medicine and his DPhil in Biomedical Engineering from the University of Oxford through the NIH-Oxford Scholars and Medical Scientist Training Programs. For his graduate degree, Dr. Vigneault worked on novel algorithms for measuring regional cardiac function from cardiac CT and MR, publishing in Radiology, Medical Image Analysis, and the Journal of Cardiovascular Magnetic Resonance, among others. In addition to cardiovascular imaging and deep learning, Dr. Vigneault has a strong interest in open science, having been a frequent contributor of software to large open-source libraries such as ITK and related packages.

ACADEMIC APPOINTMENTS

- Assistant Professor-Univ Med Line, Radiology

HONORS AND AWARDS

- Dr. Marc and Diane Homer Award in Diagnostic Radiology, Tufts University School of Medicine (2020)
- Best Poster in Cardiac Image Analysis, Functional Imaging and Modelling of the Heart (FIMH) (2017)
- NIH Graduate Symposium Travel Award, NIH-OxCam (2013)
- David F. Noonan Research Fellowship, Tufts University School of Medicine (2012)
- Howard Sample Prize in Physics, Tufts University College of Arts and Sciences (2010)
- Durkee Scholarship in Chemistry, Tufts University College of Arts and Sciences (2008)
- Nathan Gantcher Research Scholarship, Tufts University College of Arts and Sciences (2008)

PROFESSIONAL EDUCATION

- DPhil, University of Oxford , Biomedical Engineering (2020)
- MD, Tufts University School of Medicine (2020)

Publications

PUBLICATIONS

- **Connecting Ambient Air Pollution and Myocardial Fibrosis.** *Radiology*
  Vigneault, D. M.
  2025; 316 (1): e251801
- **M-SiSSR: Regional Endocardial Function Using Multilabel Simultaneous Subdivision Surface Registration.** *Functional imaging and modeling of the heart : ... International Workshop, FIMH ..., proceedings. FIMH*

Vigneault, D. M., Contijoch, F., Bridge, C. P., Lowe, K., Jan, C., McVeigh, E. R.
2021; 12738: 242-252

- **Left Ventricular Strain Is Abnormal in Preclinical and Overt Hypertrophic Cardiomyopathy: Cardiac MR Feature Tracking** *RADIOLOGY*
  Vigneault, D. M., Yang, E., Jensen, P. J., Tee, M. W., Farhad, H., Chu, L., Noble, J., Day, S. M., Colan, S. D., Russell, M. W., Towbin, J., Sherrid, M. V., Canter, et al
  2019; 290 (3): 640-648

- **Omega-Net (Omega-Net): Fully automatic, multi-view cardiac MR detection, orientation, and segmentation with deep neural networks**
  Vigneault, D. M., Xie, W., Ho, C. Y., Bluemke, D. A., Noble, J.
  ELSEVIER.2018: 95-106

- **SiSSR: Simultaneous subdivision surface registration for the quantification of cardiac function from computed tomography in canines** *MEDICAL IMAGE ANALYSIS*
  Vigneault, D. M., Pourmorteza, A., Thomas, M. L., Bluemke, D. A., Noble, J.
  2018; 46: 215-228

- **Right ventricular strain by MR quantitatively identifies regional dysfunction in patients with arrhythmogenic right ventricular cardiomyopathy** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
  Vigneault, D. M., te Riele, A. M., James, C. A., Zimmerman, S. L., Selwaness, M., Murray, B., Tichnell, C., Tee, M., Noble, J., Calkins, H., Tandri, H., Bluemke, D. A.
  2016; 43 (5): 1132-1139

- **Nondiagnostic Lung Biopsies: Radiologist Performance in Prediction of Malignancy.** *Academic radiology*
  Altmayer, S., Guo, H. H., Lin, M., Vigneault, D. M., You, H., Patel, P., Shaller, B., Chang, J., Free, D., Yenepalli, A., Choi, H. J., Hochhegger, B., Leung, et al
  2026

- **Benchmarking 54 large language model configurations for CAD-RADS scoring: open-weight models approach human-level agreement.** *The international journal of cardiovascular imaging*
  Sandfort, V., Vigneault, D. M., Willemink, M. J., Wu, J., Hallett, R. L., Nieman, K., Fleischmann, D., Mastrodicasa, D.
  2026

- **Cardiac Computed Tomography Angiography Plane Prediction and Comprehensive LV Segmentation**
  Vigneault, D., Manohar, A., Hernandez, A., Wong, K., Kong, F., Gegenava, T., Nieman, K., Fleischmann, D.
  edited by Tasdizen, T., Elhabian, S., Summers, R., Chen, C., Koch, L., Zhuang, Y.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 1638-1652

- **Quantitative metrics of the LV trabeculated layer by cardiac CT and cardiac MRI in patients with suspected noncompaction cardiomyopathy.** *European radiology*
  Manohar, A., Vigneault, D. M., Kwon, D. H., Caliskan, K., Budde, R. P., Hirsch, A., Lee, S. P., Lee, W., Owens, A., Litt, H., Haddad, F., Mistelbauer, G., Wheeler, et al
  2023

- **Opportunistic Screening for Atrial Fibrillation on Routine Chest Computed Tomography.** *Journal of thoracic imaging*
  Parker, W. A., Vigneault, D. M., Yang, I., Bratt, A., Marquardt, A. C., Sharifi, H., Guo, H. H.
  2023

- **Non-Newtonian blood rheology impacts left atrial stasis in patient-specific simulations.** *International journal for numerical methods in biomedical engineering*
  Gonzalo, A., Garcia-Villalba, M., Rossini, L., Duran, E., Vigneault, D., Martinez-Legazpi, P., Flores, O., Bermejo, J., McVeigh, E., Kahn, A. M., Del Alamo, J. C.
  2022: e3597

- **Octree Representation Improves Data Fidelity of Cardiac CT Images and Convolutional Neural Network Semantic Segmentation of Left Atrial and Ventricular Chambers.** *Radiology. Artificial intelligence*
  Gupta, K., Sekhar, N., Vigneault, D. M., Scott, A. R., Colvert, B., Craine, A., Raghavan, A., Contijoch, F. J.
  2021; 3 (6): e210036

- **Demonstration of Patient-Specific Simulations to Assess Left Atrial Appendage Thrombogenesis Risk** *FRONTIERS IN PHYSIOLOGY*
  Garcia-Villalba, M., Rossini, L., Gonzalo, A., Vigneault, D., Martinez-Legazpi, P., Duran, E., Flores, O., Bermejo, J., McVeigh, E., Kahn, A. M., del Alamo, J. C.

2021; 12: 596596

- **Vascular Landmark-Based Method for Highly Reproducible Measurement of Left Atrial Appendage Volume in Computed Tomography** *CIRCULATION-CARDIOVASCULAR IMAGING*
  Schluchter, A., Jan, C., Lowe, K., Vigneault, D. M., Contijoch, F., McVeigh, E. R.
  2019; 12 (12): e009075

- **Regional dynamics of fractal dimension of the left ventricular endocardium from cine computed tomography images** *JOURNAL OF MEDICAL IMAGING*
  Manohar, A., Rossini, L., Colvert, G., Vigneault, D. M., Contijoch, F., Chen, M. Y., Del Alamo, J. C., McVeigh, E. R.
  2019; 6 (4): 046002

- **Left Atrial structure and function in hypertrophic cardiomyopathy sarcomere mutation carriers with and without left ventricular hypertrophy** *JOURNAL OF CARDIOVASCULAR MAGNETIC RESONANCE*
  Farhad, H., Seidelmann, S. B., Vigneault, D., Abbasi, S. A., Yang, E., Day, S. M., Colan, S. D., Russell, M. W., Towbin, J., Sherrid, M. V., Canter, C. E., Shi, L., Jerosch-Herold, et al
  2017; 19: 107

- **Internal tissue references for (18)Fluorodeoxyglucose vascular inflammation imaging: Implications for cardiovascular risk stratification and clinical trials** *PLOS ONE*
  Ahlman, M. A., Vigneault, D. M., Sandfort, V., Maass-Moreno, R., Dave, J., Sadek, A., Mallek, M. B., Selwaness, M. A. F., Herscovitch, P., Mehta, N. N., Bluemke, D. A.
  2017; 12 (11): e0187995

- **Feature tracking CMR reveals abnormal strain in preclinical arrhythmogenic right ventricular dysplasia/cardiomyopathy: a multisoftware feasibility and clinical implementation study** *JOURNAL OF CARDIOVASCULAR MAGNETIC RESONANCE*
  Bourfiss, M., Vigneault, D. M., Ghasebeh, M., Murray, B., James, C. A., Tichnell, C., Hoesein, F., Zimmerman, S. L., Kamel, I. R., Calkins, H., Tandri, H., Velthuis, B. K., Bluemke, et al
  2017; 19: 66

- **Automatic high-resolution infarct detection using volumetric multiphase dual-energy CT** *JOURNAL OF CARDIOVASCULAR COMPUTED TOMOGRAPHY*
  Sandfort, V., Kwan, A. C., Elumogo, C., Vigneault, D. M., Symons, R., Pourmorteza, A., Rice, K., Davies-Venn, C., Ahlman, M. A., Liu, C., Zimmerman, S. L., Bluemke, D. A.
  2017; 11 (4): 288-294

- **Coronary Plaque Burden at Coronary CT Angiography in Asymptomatic Men and Women** *RADIOLOGY*
  Rodriguez, K., Kwan, A. C., Lai, S., Lima, J. A. C., Vigneault, D., Sandfort, V., Pattanayak, P., Ahlman, M. A., Mallek, M., Sibley, C. T., Bluemke, D. A.
  2015; 277 (1): 73-80

- **Regional Strain Analysis with Multidetector CT in a Swine Cardiomyopathy Model: Relationship to Cardiac MR Tagging and Myocardial Fibrosis** *RADIOLOGY*
  Tee, M. W., Won, S., Raman, F. S., Yi, C., Vigneault, D. M., Davies-Venn, C., Liu, S., Lardo, A. C., Lima, J. A. C., Noble, J., Emter, C. A., Bluemke, D. A.
  2015; 277 (1): 88-94