

Jess Tate

549 N 200 West
Bountiful, UT 84010
jess@sci.utah.edu
office: (801) 587-3542, mobile: (801) 608-7842
<http://www.sci.utah.edu/~jess>

EDUCATION	<i>Doctorate of Philosophy</i> , Bioengineering University of Utah, Salt Lake City, UT Focus: Computational Electrophysiology	2018
	<i>Bachelor of Science</i> , Bioengineering University of Utah, Salt Lake City, UT, GPA 3.7 Track: Computational Bioengineering	2009
TECHNICAL SKILLS	<i>Languages & Software</i> : Matlab, Python, C++, Bash scripting, SCIRun, Seg3D, Cleaver, CARP, LabVIEW. <i>Image Based Modeling</i> : image processing, mesh generation, geometry registration, FE modeling, BE modeling, inverse problems, uncertainty quantification. <i>Model Validation</i> : clinical studies, large animal experiments, signal processing, data acquisition, image acquisition.	
EXPERIENCE	<i>Technical Manager</i> Scientific Computing and Imaging Institute (SCI), U. of Utah, Salt Lake City, UT	2017 – present
	<ul style="list-style-type: none">• Manage research and software development projects for the Center for Integrative Biomedical Computing (CIBC).• Manage software developer personnel.• Manage technical resources and assist with budgeting.	
	<i>Research Associate</i> Scientific Computing and Imaging Institute (SCI), U. of Utah, Salt Lake City, UT	2018 – present
	<ul style="list-style-type: none">• Mentor graduate and undergraduate students in research projects.• Perform research, publish scientific papers, and present at scientific conferences.• Develop software tools for research projects and contribute to long term software projects.	
	<i>Research Assistant</i> Scientific Computing and Imaging Institute (SCI), U. of Utah, Salt Lake City, UT	2009 – 2018
	<ul style="list-style-type: none">• Perform validation studies for defibrillation and cardiac source models using clinical data and animal preparations.• Publish scientific papers, and present at scientific conferences.• Test and help develop software for the CIBC.• Mentor undergraduate students with senior research projects.	
	<i>Teaching Assistant, Systems Physiology Course</i> University of Utah, Salt Lake City, UT	spring 2012
	<ul style="list-style-type: none">• Setup, run, and grade labs for the course, and guest lecture.	

	<p><i>Student Researcher</i> 2007 – 2009</p> <p>University of Utah, Salt Lake City, UT</p> <ul style="list-style-type: none"> • Develop and present teaching modules to encourage high school students to pursue engineering.
COMMUNITY INVOLVEMENT	<p><i>Executive board member</i> of the Consortium for ECG Imaging (CEI), 2015 – present url: https://ecg-imaging.org</p> <p><i>Chairperson</i> of local HOA board, Bountiful, UT 2011 – 2014</p> <p><i>Officer in Tau Beta Pi</i>, Utah Alpha chapter, Salt Lake City, UT 2008 – 2009</p> <p><i>Local leader</i> for the Boy Scouts of America 2009 – 2013</p> <p><i>Faculty relations committee</i> Students of Biomed. Eng. (SBME) 2008 – 2009</p> <p><i>Recreational therapy volunteer</i> at Shriners’ Hospital for Children, Salt Lake City, UT 2008 – 2009</p> <p>Vice President of <i>Sigma Gamma Chi</i>, Delta chapter, Salt Lake City, UT 2008 – 2009</p>
TEACHING	<p><i>Guest Lecturer</i> for Intro to Image Based Modeling Course 2015 – present</p> <p><i>Project mentor</i> for undergraduate students 2009 – present</p> <p><i>TA and Organizer</i> for Image-Based Biomed. Modeling summer course 2013 – 2018</p> <p><i>Guest Lecturer</i> for Optimization Course 2012</p> <p><i>Teaching Assistant</i> for Systems Physiology Course 2012</p>
AWARDS AND HONORS	<p><i>Singapore Travel Grant</i> for the 2019 Computing in Cardiology Conference 2019</p> <p><i>NSF Graduate Research Fellowship</i> honorable mention 2010, 2011</p> <p><i>Best Poster Award</i> Computing in Cardiology 2010</p> <p><i>Dean’s List</i> University of Utah six Semesters</p> <p><i>Eagle Scout</i> 2003</p>
SOFTWARE CONTRIBUTIONS	<p><i>SCIRun</i> – http://scirun.org</p> <p><i>Seg3D</i> – http://seg3d.org</p> <p><i>Forward/Inverse Toolkit</i> – https://github.com/SCIInstitute/FwdInvToolkit</p> <p><i>BrainStimulator Toolkit</i> – https://github.com/SCIInstitute/BrainStimulator</p> <p><i>PFEIFER</i> – https://www.sci.utah.edu/software/pfeifer.html</p> <p><i>Cleaver</i> – https://www.sci.utah.edu/software/Cleaver2.html</p> <p><i>ShapeWorks</i> – https://www.sci.utah.edu/software/shapeworks.html</p> <p><i>CEI Covalic Challenges</i> – https://challenge.kitware.com/#challenge/57027f17cad3a55ecee8f9e3 https://challenge.kitware.com/#challenge/573f26a5cad3a51cc63466ba</p>
CONFERENCE PRESENTATIONS	<p><i>The effect of patient-specific cardiac anatomical models on ECGI accuracy.</i> CEI Workshop on ECGI, 2019.</p> <p><i>Correcting Undersampled Cardiac Sources in Equivalent Double Layer Forward Simulations.</i> Functional Imaging and Modeling of the Heart, 2019.</p> <p><i>Introduction to SCIRun.</i> Computing in Cardiology Symposium, 2018.</p> <p><i>Effect of Segmentation Variation on ECG Imaging.</i> Computing in Cardiology, 2018.</p> <p><i>Analyzing Source Sampling to Reduce Error in ECG Forward Simulations.</i> Utah Biomedical Engineering Conference, 2017.</p> <p><i>Analyzing Source Sampling to Reduce Error in ECG Forward Simulations.</i> Computing in Cardiology, 2017.</p> <p><i>A Sampling Strategy for Reducing Error in ECG Forward Simulations.</i> International Society of Electrocardiology, 2017.</p> <p><i>Temporal dilation of animal cardiac recordings registered to human torso geometries.</i></p>

Computing in Cardiology, 2016.
A Pipeline for Generating Physiological Volumetric ECG Signals. International Society for Computerized Electrocardiology (ISCE), 2016.
Verification of a Defibrillation Simulation Using Internal Electric Fields in a Human Shaped Phantom. Computing in Cardiology, 2014.
Strategies for Effective Image Segmentation and Visualization Using Seg3D and ImageVis3D. SPIE, 2012.
Measuring Defibrillator Surface Potentials for Simulation Verification. Conference of the IEEE Engineering in Medicine and Biology Society, 2011.
Simulating Defibrillation: Verification Using Defibrillation Thresholds and Surface Recordings. Heart Rhythm Society 2011.
Measurement of Defibrillator Surface Potentials for Simulation Verification. Computing in Cardiology, 2010.
Measuring Implantable Cardioverter Defibrillators (ICDs) during Implantation Surgery: Verification of a Simulation. Computers in Cardiology, 2009.

PUBLICATIONS

- [1] J. D. Tate, S. Schuler, O. Dössel, R. S. MacLeod, T. F. Oostendorp, Correcting undersampled cardiac sources in equivalent double layer forward simulations, in: *Functional Imaging and Modeling of the Heart*, Springer International Publishing, Cham, 2019, pp. 147–155.
- [2] S. Schuler, J. D. Tate, T. F. Oostendorp, R. S. MacLeod, O. Dössel, Spatial downsampling of surface sources in the forward problem of electrocardiography, in: *Functional Imaging and Modeling of the Heart*, Springer International Publishing, Cham, 2019, pp. 29–36.
- [3] J. A. Bergquist, W. W. Good, B. Zenger, J. D. Tate, R. S. MacLeod, GRÖMeR: A pipeline for geodesic refinement of mesh registration, in: *Functional Imaging and Modeling of the Heart*, Springer International Publishing, Cham, 2019, pp. 37–45.
- [4] A. Warner, J. Tate, B. Burton, C. R. Johnson, A high-resolution head and brain computer model for forward and inverse EEG simulation, *bioRxiv*doi: 10.1101/552190.
URL <https://www.biorxiv.org/content/early/2019/02/18/552190>
- [5] J. D. Tate, N. Zemzemi, W. W. Good, P. van Dam, D. H. Brooks, R. S. MacLeod, Effect of segmentation variation on ECG imaging, in: *Computing in Cardiology*, Vol. 45, 2018. doi:10.22489/CinC.2018.374.
- [6] J. Tate, K. Gillette, B. Burton, W. Good, B. Zenger, J. Coll-Font, D. Brooks, R. MacLeod, Reducing error in ECG forward simulations with improved source sampling, *Front. Physiol.* 9 (2018) 1304. doi:10.3389/fphys.2018.01304.
- [7] J. Tate, J. Stinstra, T. Pilcher, A. Poursaid, M. A. Jolley, E. Saarel, J. Triedman, R. S. MacLeod, Measuring defibrillator surface potentials: The validation of a predictive defibrillation computer model, *Comp. in Biol. & Med.* 102 (2018) 402–410. doi:10.1016/j.compbiomed.2018.08.025.
- [8] B. Burton, K. Aras, W. Good, J. Tate, B. Zenger, R. MacLeod, A framework for image-based modeling of acute myocardial ischemia using intramurally recorded extracellular potential, *Annal. Biomed. Eng.* 46 (9) (2018) 1325–1336.
- [9] B. Burton, K. Aras, W. Good, J. Tate, B. Zenger, R. MacLeod, Image-based modeling of acute myocardial ischemia using experimentally derived ischemic zone source representations, *J. Electrocardiol.* 51 (4) (2018) 725–733.

- [10] M. Chuitmans, S. Ghimire, J. Dhamala, J. Coll-Font, J. Tate, S. Giffard-Roisin, J. Svehlikova, O. Doessel, M. S. Guillem, D. Brooks, R. MacLeod, L. Wang, Non-invasive localization of premature ventricular complexes: A research-community-based approach, in: European Heart Rhythm Meeting, European Heart Rhythm Society, 2018.
- [11] A. Rodenhauer, W. Good, B. Zenger, J. Tate, K. Aras, B. Burton, R. MacLeod, PFEIFER: Preprocessing framework for electrograms intermittently fiducialized from experimental recordings, *J. Open Source Software* 3 (21) (2018) 472.
- [12] S. Ghimire, J. Dhamala, J. Coll-Font, J. D. Tate, M. S. Guillem, B. H. Brooks, R. S. MacLeod, L. Wang, Overcoming barriers to quantification and comparison of electrocardiographic imaging methods: A community-based approach, in: Computing in Cardiology Conference (CinC), 2017, Vol. 44, 2017, pp. 1–4.
- [13] J. Coll-Font, J. Dhamala, D. Potyagaylo, W. Schulze, J. Tate, M. Guillem, P. van Dam, O. Dossel, D. Brooks, R. MacLeod, The Consortium for Electrocardiographic Imaging., in: *IEEE Computers in Cardiology*, Vol. 43, 2016.
- [14] K. Gillette, J. Tate, B. Kindall, W. Good, J. Wilkinson, N. Simha, R. MacLeod, Temporal dilation of animal cardiac recordings registered to human torso geometries, in: *IEEE Computers in Cardiology*, Vol. 43, 2016, pp. DOI:10.22489/CinC.2016.095–426.
- [15] B. Burton, K. Aras, J. Tate, W. Good, R. MacLeod, The role of reduced left ventricular, systolic blood volumes in ST segment potentials overlying diseased tissue of the ischemic heart, in: *IEEE Computers in Cardiology*, Vol. 43, 2016, pp. 1–4.
- [16] K. Aras, W. Good, J. Tate, B. Burton, D. Brooks, J. Coll-Font, O. Doessel, W. Schulze, D. Patyogaylo, L. Wang, P. van Dam, R. MacLeod, Experimental data and geometric analysis repository: EDGAR, *J. Electrocardiol.* 48 (6) (2015) 975–981.
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- [21] J. Tate, J. Stinstra, T. Pilcher, A. Poursaid, E. Saarel, R. MacLeod, Measuring defibrillator surface potentials for simulation verification., *Proceedings of the IEEE Engineering in Medicine and Biology Society 33rd Annual International Conference* 2011 (2011) 239–242.
- [22] B. Burton, J. Tate, B. Erem, D. Swenson, D. Wang, D. Brooks, P. van Dam, R. MacLeod, A toolkit for forward/inverse problems in electrocardiography within the scirun problem solving environment., in: *Proceedings of the IEEE Engineering in Medicine and Biology Society 33rd Annual International Conference, IEEE Eng. in Med. and Biol. Soc.*, 2011, pp. 1–4.

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- [26] T. A. Pilcher, J. S. Stinstra, J. D. Tate, E. V. Saarel, M. D. Puchalski, R. S. MacLeod, Partially extracted defibrillator coils and pacing leads alter defibrillation thresholds, in: *15th World Congress on Heart Disease*, 2010.
- [27] J. D. Tate, J. G. Stinstra, T. A. Pilcher, R. S. MacLeod, Measuring implantable cardioverter defibrillators (ICDs) during implantation surgery: Verification of a simulation, in: *Computers in Cardiology*, 2009.
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