

# SRIJATA CHAKRAVORTI

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## Research Interests

I am a PhD candidate at Vanderbilt University working at the intersection of surgery and data science. Using image processing and machine learning on medical imaging data, my goal is to uncover insights from otological and neurosurgical outcomes that can change patient care. My recent work focuses on identifying optimal targets in laser ablation for epilepsy, and determining optimal cochlear implant insertion techniques for the best hearing outcomes.

## Education

2015 – 2021 (*exp*)      Ph.D., Electrical Engineering (GPA: 3.98/4.00)  
Advisors: Dr. Benoit Dawant and Dr. Jack Noble  
Vanderbilt University, Nashville, TN, USA

2011 – 2015              B.E., Electrical Engineering (GPA: 9.35/10.00)  
Jadavpur University, Kolkata, India

## Research Experience

2017 – present	Graduate Research Assistant	Vanderbilt University
2014 – 2015	Undergraduate Research Assistant	Jadavpur University
2014	Undergraduate Research Intern	Indian Institute of Science

## Teaching Experience

Fall 2016	EECE 4353/5353: Image Processing	Vanderbilt University
Spring 2016	CS 1103: Introduction to MATLAB	Vanderbilt University
Fall 2015	CS 1103: Introduction to MATLAB	Vanderbilt University

## Technical Skills

<b>Scripting</b>	MATLAB, JupyterLab, SQL
<b>Programming</b>	Python, C
<b>ML libraries</b>	Pandas, scikit-learn, Pytorch

## Conference Program Committees & Reviewing

- 2020 Technical Program Committee Member, The Fifth International Conference on Neuroscience and Cognitive Brain Information (BRAININFO 2020)
- 2019 Reviewer, Acta Oto-laryngologica

## Academic and Travel Awards

- 2017, 2018, 2019 Vanderbilt Graduate Student Travel Award
- 2015 University Gold Medal, Jadavpur University

## Peer-reviewed Journal Publications

(† signifies equal contributions)

- [1] Banalagay, R. A., Labadie, R. F., **Chakravorti, S.**, & Noble, J. H. (2020). “Insertion Depth for Optimized Positioning of Precurved Cochlear Implant Electrodes.” *Otology & Neurotology* 41(8), 1066-1071. <https://doi.org/10.1097/MAO.0000000000002726>
- [2] **Chakravorti, S.†**, Noble, J. H.†, Gifford, R. H., Dawant, B. M., O’Connell, B. P., Wang, J., & Labadie, R. F. (2019). “Further Evidence of the Relationship Between Cochlear Implant Electrode Positioning and Hearing Outcomes.” *Otology & Neurotology*, 40(5), 617–624. <https://doi.org/10.1097/MAO.0000000000002204>
- [3] Wu, C.†, Jermakowicz, W.J.†, **Chakravorti, S.†**,... & D’Haese, P.F. (2019). “Effects of surgical targeting in laser interstitial thermal therapy for mesial temporal lobe epilepsy: A multicenter study of 234 patients.” *Epilepsia* 60(6), 1171–1183. <https://doi.org/10.1111/epi.15565>
- [4] Zhao, Y., **Chakravorti, S.**, Dawant, B.M., & Noble, J.H. (2019). “Automatic graph-based method for localization of cochlear implant electrode arrays in clinical CT with sub-voxel accuracy.” *Medical Image Analysis*, 52 (2019), 1-12. <https://doi.org/10.1016/j.media.2018.11.005>
- [5] González, H.F.J., **Chakravorti, S.**, Goodale, S.E.,... & Englot, D. J. (2019). “Thalamic arousal network disturbances in temporal lobe epilepsy and improvement after surgery.” *Journal of Neurology, Neurosurgery & Psychiatry* 90(10), 1109-1116. <https://doi.org/10.1136/jnnp-2019-320748>
- [6] Petersen, K.J., Reid, J.A., **Chakravorti, S.**,... & Claassen, D.O. (2018). “Structural and functional connectivity of the nondecussating dentato-rubro-thalamic tract.” *NeuroImage*, 176, 364-371. <https://doi.org/10.1016/j.neuroimage.2018.04.074>
- [7] **Chakravorti, S.**, Bussey, B. J., Zhao, Y., Dawant, B. M., Labadie, R. F., & Noble, J.H. (2017). “Cochlear implant phantom for evaluating computed tomography acquisition parameters.” *Journal of Medical Imaging*, 4(4), <https://doi.org/10.1111/epi.15565>
- [8] Hunter, J. B., O’Connell, B. P., Wang, J., **Chakravorti, S.**,... & Wanna, G. B. (2016). “Correlation of Superior Canal Dehiscence Surface Area With Vestibular Evoked Myogenic Potentials, Audiometric Thresholds, and Dizziness Handicap.” *Otology & neurotology*, 37(8), 1104–1110. <https://doi.org/10.1097/MAO.0000000000001126>

## Conference Proceedings

- [1] Wang, J., **Chakravorti, S.**, Zhao, Y., Noble, J., & Dawant, B.M. (2020, March). “Validation of a metal artifact reduction method based on 3D conditional GANs for CT images of the ear.” In *Medical Imaging 2020: Image-Guided Procedures, Robotic Interventions, and Modeling*. (Vol. 11315, p. 1131507). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2549398>

- [2] **Chakravorti, S.**, Jermakowicz, W.J., Wu, C., Li, R., Wirz, R., Dawant, B.M., & D’Haese, P.F. (2019, March). “Evaluation of nonrigid registration around the hippocampus for the construction of statistical maps in a multicenter dataset of epilepsy laser ablation patients.” In *Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling* (Vol. 10951, p. 109511J). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2512587>
- [3] **Chakravorti, S.**, Li, R., Rodriguez, W., Shults, R., Sharan, A., Englot, D.J., Konrad, P.E., D’Haese, P.F., & Dawant, B.M. (2019, March). “Validation of an automatic algorithm to identify NeuroPace depth leads in CT images.” In *Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling* (Vol. 10951, p. 109512D). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2512580>
- [4] **Chakravorti, S.**, Morgan, V.L., Trujillo, P., Wirz, R., & Dawant, B.M. (2018, March). “A structural connectivity approach to validate a model-based technique for the segmentation of the pulvinar complex.” In *Medical Imaging 2018: Biomedical Applications in Molecular, Structural, and Functional Imaging* (Vol. 10578, p. 105780T). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2293685>
- [5] **Chakravorti, S.**, Bussey, B. J., Zhao, Y., Dawant, B. M., Labadie, R. F., & Noble, J. H. (2017, March). “A cochlear implant phantom for evaluating CT acquisition parameters.” In *Medical Imaging 2017: Image-Guided Procedures, Robotic Interventions, and Modeling* (Vol. 10135, p. 101350N). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2255742>

## Presentations

- [1] **Chakravorti, S.**, Dawant, B.M., Gifford, R., Sunderhaus, L., Labadie, R. F., & Noble, J.H. (2020, December). “Effect of cochlear implant position on open-set word recognition outcomes”. (Video Presentation) Accepted for presentation at *VISE 9<sup>th</sup> Annual Surgery, Intervention, and Engineering Symposium, Vanderbilt University*.
- [2] **Chakravorti, S.**, Jermakowicz, W.J., Wu, C., Li, R., Wirz, R., Dawant, B.M., & D’Haese, P.F. (2019, February). “Evaluation of nonrigid registration around the hippocampus for the construction of statistical maps in a multicenter dataset of epilepsy laser ablation patients.” (Oral Presentation) *Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling*. International Society for Optics and Photonics. <https://doi.org/10.1117/12.2512587>
- [3] **Chakravorti, S.**, Morgan, V.L., Trujillo, P., Wirz, R., & Dawant, B.M. (2018, February). “A structural connectivity approach to validate a model-based technique for the segmentation of the pulvinar complex.” (Oral Presentation) *Medical Imaging 2018: Biomedical Applications in Molecular, Structural, and Functional Imaging*. International Society for Optics and Photonics. <https://doi.org/10.1117/12.2293685>
- [4] **Chakravorti, S.** (2017, July), “Multimodal Validation of Intrathalamic Nuclei Segmentation in 3T T1 images.” (Oral Presentation) Presented as part of the *VISE Research in Progress* seminar series
- [5] **Chakravorti, S.**, Bussey, B. J., Zhao, Y., Dawant, B. M., Labadie, R. F., & Noble, J. H. (2017, February). “A cochlear implant phantom for evaluating CT acquisition parameters.” (Oral Presentation) *Medical Imaging 2017: Image-Guided Procedures, Robotic Interventions, and Modeling*. International Society for Optics and Photonics. <https://doi.org/10.1117/12.2255742>

## Posters

- [1] **Chakravorti, S.**, Li, R., Rodriguez, W., Shults, R., Sharan, A., Englot, D.J., Konrad, P.E., D’Haese, P.F., & Dawant, B.M. (2019, February). “Validation of an automatic algorithm to identify NeuroPace depth leads in CT images.” Poster presented at *Medical Imaging 2019: Image-Guided Procedures, Robotic Interventions, and Modeling*
- [2] **Chakravorti, S.**, Trujillo, P., Claassen, D.O., & Dawant, B.M. (2019, December). “Optimization of k-means clustering on quantitative susceptibility mapping images to validate automatic thalamic nuclei segmentation”. Poster presented at *VISE 8th Annual Surgery, Intervention, and Engineering Symposium 2019, Vanderbilt University*.

- [3] **Chakravorti, S.**, Jermakowicz, W.J., Wu, C., Li, R., Wirz, R., Dawant, B.M., & D’Haese, P.F. (2018, December). “Evaluation of nonrigid registration around the hippocampus for the construction of statistical maps in a multicenter dataset of epilepsy laser ablation patients.” (Oral Presentation) Poster presented at *VISE 7th Annual Surgery, Intervention, and Engineering Symposium 2018, Vanderbilt University*.
- [4] **Chakravorti, S.**, Morgan, V.L., Trujillo, P., Wirz, R., & Dawant, B.M. (2017, December). “A Structural Connectivity Approach to Validate a Model-based Technique for the Segmentation of the Pulvinar Complex”. Poster presented at *VISE 6th Annual Surgery, Intervention, and Engineering Symposium 2017, Vanderbilt University*.
- [5] **Chakravorti, S.**, Bussey, B. J., Zhao, Y., Dawant, B. M., Labadie, R. F., & Noble, J. H. (2016, December). “A cochlear implant phantom for evaluating CT acquisition parameters.” Poster presented at *VISE 5th Annual Surgery, Intervention, and Engineering Symposium 2016, Vanderbilt University*.
- [6] Wang, J., **Chakravorti, S.**, Hunter, J. B.,... & Wanna, G. B. (2015, December). “Correlation of Superior Canal Dehiscence Surface Area With Vestibular Evoked Myogenic Potentials and Audiometric Thresholds.” Poster presented at *VISE 4th Annual Surgery, Intervention, and Engineering Symposium 2015, Vanderbilt University*.

## Press Coverage and Interviews

- [1] Newswise (16 May 2019). [What’s the Right Amount of ‘Zapping’ in Epilepsy Laser Surgery?](#) (coverage of journal publication [3])
- [2] VISE Project Vault (18 February 2019). [VISE Project Vault - Srijata Chakravorti](#) (ongoing work on conference abstract [2] and journal publication [3])

## Invited Talks and Panels

2019	Invited panelist, Graduate School Applications Panel, Women of VISE, Vanderbilt University
2018	Invited speaker, Women In STEM Education, University School of Nashville
2017	Invited panelist, College Applications Panel, Glencliff High School, Nashville
2016, 2017	Invited panelist, Teaching Assistant Orientation, Vanderbilt University Center for Teaching

## Leadership and Outreach Activities

2017 – present	Founder and Steering Committee Member, Women of VISE, Vanderbilt University
2019 – present	Committee Member, VISE Vision, Vanderbilt University
2017 – 2018	Graduate Student Recruiter for Vanderbilt University, the Annual Conference of the Society for Women Engineers
2016 – 2017	Session coordinator for Electrical Engineering, Engineering Into Space, Engineering Ambassador Network, Vanderbilt University

**Professional Societies and Memberships**

2020 – 2021	Student Member, MICCAI Society
2017 – 2021	Student Member, The International Society for Optics and Photonics (SPIE)
2017 – 2021	Member, Society of Women Engineers (SWE)