

ADRIAN CELAYA

+1 (956) 346-6109 | aecelaya@rice.edu | <https://aecelaya.github.io>

EDUCATION

Rice University Ph.D. Computational and Applied Mathematics Advisors: Beatrice Riviere and David Fuentes	2026 (expected) Houston, TX
Rice University M.A. Computational and Applied Mathematics Advisors: Beatrice Riviere and David Fuentes Thesis: PocketNet: A Smaller Neural Network for Medical Image Analysis	2023 (expected) Houston, TX
Rice University B.A. Computational and Applied Mathematics Overall GPA: 3.70/4.00	May 2016 Houston, TX

PROFESSIONAL EXPERIENCE

Research Intern <i>TotalEnergies, Advisor: Mauricio Araya-Polo</i>	May. 2022 - Aug. 2022 Houston, TX
<ul style="list-style-type: none">Developed novel, state-of-the-art deep learning methods for the inversion of surface gravity data for CO₂ sequestration monitoring	
Research Assistant <i>MD Anderson Cancer Center, Advisor: David Fuentes</i>	Sept. 2020 - July 2021 Houston, TX
<ul style="list-style-type: none">Developed novel, computationally efficient deep learning architectures for 3D medical image segmentation and classificationCreated Docker images for containerizing complex neuroimaging analysis pipelines, allowing the work of previous researchers to be easily integrated into ongoing and future projectsMentored two summer students through the Cancer Prevention & Research Institute of Texas (CPRIT)-CURE Summer Undergraduate Program	
Information System Security Manager <i>U.S. Navy, USS Carl Vinson</i>	Aug. 2016 - Aug. 2020 San Diego, CA
<ul style="list-style-type: none">Led a team of 9 highly talented cybersecurity analysts who oversaw the security and integrity of a \$20,000,000 computer network consisting of roughly 4,000 assets with zero intrusions or major incidentsImplemented a comprehensive network security program that resulted in the organization's highest ever cybersecurity score when evaluated by external security auditorsReceived extensive training on computer and communication networks, cryptographic key management, and computer network defense	

GRANTS AND FELLOWSHIPS

National Defense Science and Engineering Fellowship
Department of Defense

Sep. 2022 - May 2025
Houston, TX

Loewenstern Fellowship
Rice University

Aug. 2021 - Oct. 2022
Houston, TX

PEER-REVIEWED PUBLICATIONS

1. **A. Celaya**, A. Diaz, A. Balsells, B. Riviere, and D. Fuentes. "A Weighted Normalized Boundary Loss for Reducing the Hausdorff Distance in Medical Imaging Segmentation," submitted to *26th International Conference on Medical Image Computing and Computer Assisted Intervention*, under review, 2023.
2. **A. Celaya**, B. Denel, Y. Sun, M. Araya-Polo, and A. Price. "Inversion of Time-Lapse Surface Gravity Data for Detection of 3D CO₂ Plumes via Deep Learning," submitted to *IEEE Transactions on Geosciences and Remote Sensing*, under review, 2022.
3. R. Muthusivarajan, **A. Celaya**, J. Yung, S. Viswanath, D. Marcus, C. Chung, and D. Fuentes. "Evaluating the relationship between magnetic resonance image quality metrics and deep learning-based segmentation accuracy of brain tumors," submitted to *Medical Physics*, under review, 2022.
4. **A. Celaya**, J. A. Actor, R. Muthusivarajan, E. Gates, C. Chung, D. Schellingerhout, B. Riviere, and D. Fuentes. "PocketNet: A Smaller Neural Network For Medical Image Analysis," in *IEEE Transactions on Medical Imaging*, doi: 10.1109/TMI.2022.3224873.
5. E. Gates, D. Suki, **A. Celaya**, J. Weinberg, S. Prabhu, R. Sawaya, J. Huse, J. Long, D. Fuentes, and D. Schellingerhout. "Cellular Density in Adult Glioma, Estimated with MR Imaging Data and a Machine Learning Algorithm, Has Prognostic Power Approaching World Health Organization Histologic Grading in a Cohort of 1181 Patients," in *American Journal of Neuroradiology*, doi: 10.3174/ajnr.A7620.
6. E. Gates, **A. Celaya**, D. Suki, D. Schellingerhout, and D. Fuentes. "Technical Note: An efficient MR image data quality screening dashboard," in *Journal of Applied Clinical Medical Physics*, doi: 10.1002/acm2.13557.

CONFERENCE PRESENTATIONS

1. **A. Celaya**. "PocketNet: A Smaller Neural Network For Medical Image Analysis," in *5th Annual SIAM Texas-Louisiana Section Meeting*. Invited Minisymposium Presentation. Houston, TX. November 2022.
2. **A. Celaya**. "Small Convolutional Neural Networks for Efficient 3D Medical Image Segmentation," in *63rd American Association of Physicists in Medicine Annual Meeting*. Virtual. July 2021.

CONFERENCE POSTERS

1. A. Balsells, B. Riviere, D. Fuentes, and **A. Celaya**. "Interactive Brain Tumor Image Segmentation," in *5th Annual SIAM Texas-Louisiana Section Meeting*, Houston, TX. October 2022.
2. A. Balsells, B. Riviere, D. Fuentes, and **A. Celaya**. "Interactive Brain Tumor Image Segmentation," in *32nd Keck Annual Research Conference*, Houston, TX. October 2022.

3. R. Muthusivarajan, **A. Celaya**, J. Yung, S. Viswanath, D. Marcus, C. Chung, and D. Fuentes. “Evaluating the relationship between magnetic resonance image quality metrics and deep learning-based segmentation accuracy of brain tumors,” in *64th American Association of Physicists in Medicine Annual Meeting*. Washington, DC. July 2022.
4. E. Gates, **A. Celaya**, D. Schellingerhout, and D. Fuentes. “Automated Cerebrospinal Fluid ROI Selection on Brain Magnetic Resonance Images,” in *30th Keck Annual Research Conference*. Virtual. October 2020.

HONORS AND AWARDS

Navy Marine Corps Commendation Medal
U.S. Navy

Aug. 2020
San Diego, CA

President’s Honor Roll
Rice University

May 2016
Houston, TX

SKILLS

Languages Spoken: English (native), Spanish (conversant)

Programming Languages and Software: Python, Matlab, C/C++, TensorFlow, Keras, PyTorch, Docker, L^AT_EX