

# Gregory I. Holste

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## EDUCATION

**The University of Texas at Austin**, Austin, TX

*M.S.E, Ph.D. in Electrical Engineering*

**Aug. 2021-present**

- Ph.D. student in DICE track of ECE department
- Advisor: Zhangyang (Atlas) Wang

**Kenyon College**, Gambier, OH

*B.A. in Mathematics & Statistics*

**Aug. 2016-May 2020**

- GPA: 3.91 / 4.00 (*summa cum laude*)
- Concentration in Scientific Computing; Minor in Biology

## RESEARCH EXPERIENCE

**The University of Texas at Austin**, Austin, TX

*Visual Informatics @ UT Austin (VITA) Group*

**Jul. 2021-present**

- Methods for expert-level analysis of echocardiogram videos
- Advisor: Zhangyang (Atlas) Wang

**Michigan State University**, East Lansing, MI

*Medical Imaging & Data Integration Lab*

**Aug. 2019-Jul. 2021**

- Developed and compared multimodal fusion models that learn jointly from breast MRI images and associated non-image clinical data
- Applied novel ensemble methods to pediatric rib fracture detection in radiographs
- Submitted solutions to RSNA Pulmonary Embolism Detection Challenge and MICCAI 2020 RibFrac Challenge (top 8-performing solution)
- Advisor: Adam Alessio

**Michigan State University**, East Lansing, MI

*ACRES Research Experience for Undergraduates (REU)*

**Summer 2019**

- Implemented methods to segment eight regions of the chest in pediatric radiographs
- Compared methods to improve anatomic segmentation with  $10^5$ -fold imbalance between classes, including custom pixel weight maps and loss functions [1]
- Presented work at Mid-SURE 2019 and as an oral at SPIE Medical Imaging 2020
- Advisor: Adam Alessio

**Kenyon College**, Gambier, OH

*Kerkhoff Macroecology Lab*

**Jan. 2017-May 2019**

- Studied distribution patterns of crop wild relatives (CWRs) in the Americas
- Compared spatial patterns of CWR diversity and range size to those of plants overall using millions of species occurrence records
- Discovered regions significantly more CWR-rich than would be expected by chance via Monte Carlo simulation in R

- PUBLICATIONS
- [1] **G. Holste**, S. Partridge, H. Rahbar, D. Biswas, C. Lee, A. Alessio. “End-to-End Learning of Fused Image and Non-Image Features for Improved Breast Cancer Classification from MRI” in *Proc. International Conference on Computer Vision (ICCV) Workshops*. 31 October 2021.
  - [2] **G. Holste**, R. Sullivan, M. Bindschadler, N. Nagy, A. Alessio. “Multi-class semantic segmentation of pediatric chest radiographs” in *Proc. SPIE Medical Imaging 2020: Image Processing*. 10 March 2020.
  - [3] R. Sullivan, **G. Holste**, J. Burkow, A. Alessio. “Deep learning methods for segmentation of lines in pediatric chest radiographs” in *Proc. SPIE Medical Imaging 2020: Computer-Aided Diagnosis*. 16 March 2020.

HONORS/ AWARDS	<b>Charles W. &amp; Margaret A. Tolbert Endowed Scholarship</b>	<b>Aug.2021-present</b>
	<i>UT Austin Cockrell School of Engineering scholarship for top incoming engineering students</i>	
	<b>Phi Beta Kappa</b>	<b>May 2020-present</b>
	<i>Elected to Kenyon College’s chapter of the national honor society</i>	
	<b>Sigma Xi</b>	<b>Feb. 2020-present</b>
	<i>Inducted into the Kenyon-Denison chapter of the national science research honor society</i>	
	<b>Pi Mu Epsilon</b>	<b>Apr. 2018-present</b>
	<i>Elected to the Ohio Pi chapter of the national mathematics society</i>	
	<b>Wendell D. Lindstrom Memorial Prize</b>	<b>Apr. 2018</b>
	<i>One of 12 students given prize for outstanding mathematics students at Kenyon College</i>	
	<b>Kenyon College Merit List (8x)</b>	<b>every semester</b>

ORAL PRESENTATIONS	<b>Multi-class semantic segmentation of pediatric radiographs</b>	
	<i>SPIE Medical Imaging: Image Processing, Houston, TX</i>	<b>Feb. 2020</b>

INVITED TALKS	<b>Fusing imaging and clinical information for improved automatic breast cancer detection</b>	
	<i>MSU Virtual Imaging Research Symposium, East Lansing, MI</i>	<b>Feb. 2021</b>
	<b>Automatic segmentation of pediatric chest radiographs</b>	
	<i>Kenyon College Math Monday, Gambier, OH</i>	<b>Nov. 2019</b>

SCIENTIFIC ABSTRACTS	<b>Rib fracture detection in pediatric radiographs via deep convolutional neural networks</b>	
	J. Burkow, <b>G. Holste</b> , F. Perez, J. Junewick, A. Zbojniewicz, J. Frost, E. Romberg, S. Menashe, J. Otjen, A. Alessio	
	<i>International Pediatric Radiology Congress, Milan, Italy</i>	<b>Oct. 2021</b>

**Automatic segmentation of chest radiographs with deep learning**

**G. Holste**, R. Sullivan, N. Nagy, M. Bindschadler, A. Alessio

*Mid-SURE Symposium, East Lansing, MI*

**Jul. 2019**

**Deep learning methods for automatic evaluation of lines in chest radiographs**

R. Sullivan, **G. Holste**, A. Alessio

*Mid-SURE Symposium, East Lansing, MI*

**Jul. 2019**