# 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*)
- Concentation in Scientific Computing; Minor in Biology

## Research Experience

**The University of Texas at Austin**, Austin, TX
***V**isual **I**nformatics @ U**T** **A**ustin (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**, 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.

[2] 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

**Charles W. & Margaret A. Tolbert Endowed Scholarship** **Aug.2021-present**
*UT Austin Cockrell School of Engineering scholarship for top incoming engineering students*

**Phi Beta Kappa** **May 2020-present**
*Elected to Kenyon College's chapter of the national honor society*

**Sigma Xi** **Feb. 2020-present**
*Inducted into the Kenyon-Denison chapter of the national science research honor society*

**Pi Mu Epsilon** **Apr. 2018-present**
*Elected to the Ohio Pi chapter of the national mathematics society*

**Wendell D. Lindstrom Memorial Prize** **Apr. 2018**
*One of 12 students given prize for outstanding mathematics students at Kenyon College*

**Kenyon College Merit List (8x)** **every semester**

## Oral Presentations

**Multi-class semantic segmentation of pediatric radiographs**
*SPIE Medical Imaging: Image Processing, Houston, TX* **Feb. 2020**

## Invited Talks

**Fusing imaging and clinical information for improved automatic breast cancer detection**
*MSU Virtual Imaging Research Symposium, East Lansing, MI* **Feb. 2021**

**Automatic segmentation of pediatric chest radiographs**
*Kenyon College Math Monday, Gambier, OH* **Nov. 2019**

## Scientific Abstracts

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

**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**