

Thomas “Hastings” Greer

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Google Scholar profile: <https://scholar.google.com/citations?user=O1xhOIUAAAAJ&hl=en>

EDUCATION

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, August 2020 - 2025 (anticipated)

PhD in Computer Science

Studying the importance of Inverse Consistency to the correspondence problem in Computer Vision

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, May 2017

Bachelor of Science in Computer Science, Second Major in Mathematics

WORK EXPERIENCE

University of North Carolina at Chapel Hill Dept of CS

Research Assistant, August 2020 - Present

I am developing and publishing the library icon_registration:

<https://github.com/uncbiag/ICON>

- Python library for medical image registration using deep learning.
- In use at Kitware Inc for Knee MRI analysis, Brigham Woman’s Hospital for Lung CT analysis, University of North Carolina for Brain CT analysis and basic concepts research.
- Available on [pypi](#), with [demo](#) on google colab.
- Continuous integration using github actions, with self hosted CI server for tests that require GPU
- Documentation using Sphinx: icon.readthedocs.io

“ICON: Learning Regular Maps Through Inverse Consistency”

ICCV 2021 <https://arxiv.org/pdf/2105.04459>

“GradICON: Approximate Diffeomorphisms via Gradient Inverse Consistency.”

Arxiv preprint 2022 <https://arxiv.org/abs/2206.05897>

Kitware Inc. in Carrboro, NC

R&D Engineer, May 2017 - August 2020

Key Personnel on the grant NIH Slicer+PLUS R01

- Researched application of Deep Learning to the task of diagnosing scoliosis using ultrasound
- “Scoliosis screening and monitoring using self contained ultrasound and neural networks”

ISBI 2018 <https://ieeexplore.ieee.org/document/8363857>

“Automatic spine ultrasound segmentation for scoliosis visualization and measurement”

IEEE. Trans. Biomed. Eng. 2020 <http://perk.cs.queensu.ca/sites/perkd7.cs.queensu.ca/files/Ungi2020.pdf>

- Developed computer vision algorithms for commercial clients (C++, DearIMGUI, OpenCV. Details NDA)
- Developed features and bug fixes for core Kitware products (Slicer, ITK, itk.js, paraview-glance) with a focus on improving the usability of the Python wrappings for ITK
- Developed C++ ultrasound applications for clinicians at Children’s National and Duke Hospitals

Intern, June 2016 - May 2017

- Found bugs and pushed patches to cmake, VTK, ITK, and 3-D Slicer
- Researched application of AR and live 3-D scanning tech to ultrasound- hand soldered hardware

“Ultrasound Augmentation: Rapid 3-D Scanning for Tracking and On-Body Display”

Miccai 2017 <https://pubmed.ncbi.nlm.nih.gov/29984364/>

TECHNICAL SKILLS

- **Programming Languages:** Python (tensorflow, torch, numpy), JavaScript, C, C++ (ITK, VTK), Julia, Bash, CUDA, OpenCL, CMAKE
- **Neural Network architectures used:** UNET, GAN (W-GAN, BI-GAN, cycleGAN), Transformers, LSTM, Q-Learning, Auto encoder (variational)