

# Clinton J. Wang

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**Summary** My research focuses on computer vision, particularly representations of 3D scenes. I also work on medical image analysis, including robust and interpretable techniques for both generative and discriminative models.

## EDUCATION

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<b>Ph.D. Candidate, Massachusetts Institute of Technology</b>	2020 – present
Electrical Engineering and Computer Science	
Proposed Thesis: 3D Representations with Neural Fields (Committee: Polina Golland, Vincent Sitzmann, Andrea Tagliasacchi)	
<b>S.M. Massachusetts Institute of Technology</b>	2018 – 2020
Electrical Engineering and Computer Science, GPA: 5.0/5.0	
Thesis: High fidelity medical image-to-image translation (Advisor: Polina Golland)	
Coursework: Computer Vision, Inference and Information Theory, Natural Language Processing, Digital Image Processing, Analysis on Manifolds, Fourier Analysis	
<b>B.Sc. Yale University, <i>Magna Cum Laude</i></b>	2011 – 2015
Biomedical Engineering, GPA: 3.9/4.0	

## RESEARCH EXPERIENCE

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<b>MIT Computer Science &amp; Artificial Intelligence Laboratory</b>	2018 – present
<i>Advised by Polina Golland</i>	
Robust, interpretable GANs for image-to-image translation on brain MRIs; few-shot segmentation of fetal MRI; discretization invariant learning on neural fields.	
<b>Iterative Scopes</b>	2022 summer
Self-supervised trajectory estimation in monocular endoscopy videos.	
<b>Yale Radiology Research Lab</b>	2017 – 2018
<i>Advised by Jim Duncan</i>	
Interpretable deep learning for hepatic lesion classification on MRI; tumor segmentation; statistical analysis of longitudinal image-derived features; PACS integration.	
<b>PwC (Analytics &amp; Technology Consultant)</b>	2015 – 2017
Semi-supervised keyword extraction and topic classification on social media feeds with LSTMs; logic and code for cleansing, matching and merging customer data for a major airline.	
<b>Yale School of Engineering &amp; Applied Science</b>	2014 – 2016
<i>Advised by Stuart Campbell</i>	
Multi-scale computational model of heart muscle contraction using interacting Markov models.	

## SELECTED HONORS AND AWARDS

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• Takeda Fellowship	2021 – 2022
• Siebel Foundation Scholar	2020
• Yale Department of Biomedical Engineering Prize	2015
• Tau Beta Pi Engineering Honor Society	2015
• International Biology Olympiad, silver medalist	2009

## SELECTED JOURNAL ARTICLES & CONFERENCE PROCEEDINGS

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\*equal contribution

- **Pre-Trained Language Models for Interactive Decision-Making**  
Shuang Li, Xavier Puig, Chris Paxton, Yilun Du, Clinton Wang, Linxi Fan, Tao Chen, De-An Huang, Ekin Akyürek, Anima Anandkumar, Jacob Andreas, Igor Mordatch, Antonio Torralba, Yuke Zhu  
[NeurIPS 2022 Oral](#) [[Paper](#)] [[Project](#)] [[Code](#)]
- **Deep learning–assisted differentiation of pathologically proven atypical and typical hepatocellular carcinoma (HCC) versus non-HCC on contrast-enhanced MRI of the liver**  
Paula Oestmann, Clinton Wang, Lynn J. Savic, Charlie A. Hamm, Sophie Stark, Isabel Schobert, Bernhard Gebauer, Todd Schlachter, MingDe Lin, Jeffrey Weinreb, Ramesh Batra, David Mulligan, Xuchen Zhang, James Duncan, Julius Chapiro  
European Radiology 2021 [[Paper](#)]
- **Spatial-Intensity Transform GANs for High Fidelity Medical Image-to-Image Translation**  
Clinton Wang, Natalia Rost, and Polina Golland  
MICCAI 2020 [[Paper](#)] [[Project](#)] [[Video](#)] [[Code](#)]
- **Automated feature quantification of Lipiodol as imaging biomarker to predict therapeutic efficacy of conventional transarterial chemoembolization of liver cancer**  
Sophie Stark, Clinton Wang, Lynn Jeanette Savic, Brian Letzen, Isabel Schobert, Milena Miszczuk, Nikitha Murali, Paula Oestmann, Bernhard Gebauer, MingDe Lin, James Duncan, Todd Schlachter, Julius Chapiro  
Scientific Reports 2020 [[Paper](#)] [[Code](#)]
- **A probabilistic approach for interpretable deep learning in liver cancer diagnosis**  
Clinton Wang, Charlie Hamm, Brian Letzen, James Duncan  
[SPIE Medical Imaging 2019 Oral](#) [[Paper](#)] [[Project](#)] [[Video](#)] [[Code](#)]
- **Deep learning for liver tumor diagnosis part II: interpretable deep learning to characterize tumor features**  
Clinton Wang\*, Charlie Hamm\*, Marc Ferrante, Isabel Schobert, Todd Schlachter, MingDe Lin, Jeffrey Weinreb, James Duncan, Julius Chapiro, Brian Letzen  
European Radiology 2019 [[Paper](#)] [[Project](#)] [[Code](#)]
- **Deep learning for liver tumor diagnosis part I: development of a convolutional neural network classifier for multi-phasic MRI**  
Charlie Hamm\*, Clinton Wang\*, Marc Ferrante, Isabel Schobert, Todd Schlachter, MingDe Lin, James Duncan, Jeffrey Weinreb, Julius Chapiro, Brian Letzen  
European Radiology 2019 [[Paper](#)] [[Code](#)]
- **The Role of Artificial Intelligence in Interventional Oncology: A Primer**  
Brian Letzen, Clinton Wang, Julius Chapiro  
Journal of Vascular and Interventional Radiology 2019 [[Paper](#)]
- **Slowing of contractile kinetics by myosin-binding protein C can be explained by its cooperative binding to the thin filament**  
Clinton Wang, Jonas Schwan, Stuart Campbell  
Journal of Molecular and Cellular Cardiology 2016 [[Paper](#)]

## WORKSHOPS AND PREPRINTS

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- **Interpolating between Images with Diffusion Models**  
Clinton Wang, Polina Golland  
Paper under review [[Project](#)] [[Code](#)]
- **Operator-Theoretic Implicit Neural Representations**  
Sourav Pal, Harshavardhan Adepur, Clinton Wang, Polina Golland, Vikas Singh  
Paper under review

- **Approximate Discretization Invariance for Deep Learning on Neural Fields**

Clinton Wang, Polina Golland

ICLR Workshop on Neural Fields 2023

[New England Computer Vision Workshop 2022 Oral](#)

NeurIPS Symmetry and Geometry in Neural Representations 2022 [[Paper](#)] [[Project](#)] [[Video](#)] [[Code](#)]

- **High Fidelity Medical Image-to-Image Translation with Spatial-Intensity Transforms**

Clinton Wang, Natalia Rost, Polina Golland

MIT MGB AI Cures Conference 2022 [[Project](#)] [[Code](#)]

- **Automatic Segmentation of the Placenta in BOLD MRI Time Series**

Mazdak Abulnaga, Sean Young, Katherine Hobgood, Eileen Pan, Clinton Wang, Ellen Grant, Esra Abaci Turk, Polina Golland

MICCAI Preterm, Perinatal and Paediatric Image Analysis Workshop 2022 [[Paper](#)] [[Code](#)]

## TEACHING

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### Courses

- Teaching Assistant, 6.819/6.869 Advances in Computer Vision, MIT 2021
- Guest Presenter, 6.4400 Intro to Computer Graphics, MIT 2022

### Invited Talks

- University of Wisconsin-Madison (Host: Vikas Singh) 2023  
*Neural Fields for Representing 3D Data*
- Google Brain, Toronto 2022  
*Deep Learning on Neural Fields*
- Boston Medical Imaging Workshop 2022  
*Robust counterfactual image generation with spatial-intensity transforms*
- MIT-Takeda Presentation Series 2022  
*Identifying radiological biomarkers with generative models*

### Research Mentorship

- Mentored one master's student and three undergraduate students

## SERVICE

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### Academic Service

- Program Committee, Medical Imaging Meets NeurIPS Workshop (MedNeurIPS)
- Reviewer, International Conference on Machine Learning (ICML)
- Reviewer, Conference on Neural Information Processing Systems (NeurIPS)
- Reviewer, Medical Image Analysis (MedIA)
- Reviewer, Information Processing in Medical Imaging (IPMI)
- Reviewer, Medical Image Computing and Computer Assisted Intervention (MICCAI)

### Community Service

- EECS PhD Admissions Reviewer, MIT 2022
- Graduate Student Advisory Group for Engineering (GradSAGE), MIT 2019 – 2021  
Advised the Dean of the School of Engineering on policies and initiatives for graduate students. Developed and organized leadership workshops, a leadership minor, and a leadership certificate program.

- Controller, Sidney-Pacific Graduate Residence 2019 – 2021  
Managed internal budgeting, reimbursements, accounting, and financial reporting for MIT's largest graduate dormitory (749 students).

## OTHER INTERESTS

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- AI-Generated Art [[Portfolio](#)]  
[Submission](#) accepted to the CVPR 2023 Art Gallery
- Music Composition [[Portfolio](#)]  
Won Honorable Mention (2012) and was finalist (2013) at ASCAP Morton Gould Young Composer Awards