Hallee Wong

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Education	Massachusetts Institute of Technology, Cambridge, MAPhD in Electrical Engineering and Computer Science2022 – May 2026 (expected)Topics: Computer Vision, Deep Learning, Human-Computer Interaction, Medical Image AnalysisAdvisors: John Guttag and Adrian Dalca		
	SM in Electrical Engineering and Computer Science2020 – 2022Thesis: Evaluating Learned and Rule-Based Policies for Hospital Bed AssignmentAdvisor: John Guttag		
	Williams College, Williamstown, MA		
	BA with highest honors in Mathematics, magna cum laude2014 - 2018Thesis: Using Data to Predict Hospital Readmissions at Berkshire Medical CenterAdvisors: Steven Miller and Brianna Heggeseth		
Experience	MIT CSAIL Clinical and Applied Machine Learning GroupSep 2020 – PresentGraduate Research AssistantSep 2020 – Present		
	 Interactive Segmentation for any Medical Image [project page] Developed efficient deep learning models to enable human annotators to segment new (unseen) structures in medical images using a few clicks, bounding boxes or scribbles [online demo] Designed algorithms for simulating realistic scribble interactions for model training and evaluation Prototyped three web apps and conducted user studies to understand the experience of expert annotators Reduced annotation time by 28% while improving accuracy by 15% compared to previous methods 		
	 Generative Models for Stochastic Segmentation In medical imaging, there are often multiple plausible segmentations for the same region of interest Devised generative models for making multiple plausible stochastic predictions, with applications to interactive segmentation and uncertainty-aware in-context learning 		
	 <i>Reinforcement Learning for Resource Allocation</i> Adapted offline reinforcement learning methods to learn and evaluate policies to address a sequential resource allocation problem: reducing healthcare acquired infections through hospital bed assignment 		
	Spatial Regularization for Neural NetworksExplored the effects of using random deformation fields to regularize convolutional neural networks		
	Analysis Group, Boston, MA Sep 2018 – Jun 2020 Analyst (Sep 2018 – Dec 2019) → Senior Analyst (Jan 2020 - Jun 2020) Sep 2018 – Dec 2019		
	 Contabolated with indiffedscipinally teams on neurin economics and outcomes research projects for Fortune 500 healthcare clients. Co-authored 2 journal publications and 8 clinical abstracts Built core features for a multi-million dollar analytics platform to support pricing decisions for a blockbuster cancer drug, creating multi-million dollar cost-savings opportunities for the client Developed and maintained functions for an internal R package used in over 100 healthcare cases per year to improve the efficiency of statistical data analysis, reducing case budgets by up to 70% 		
	UCLA Research in Industrial Projects for Students REU Program Summer 2018 Project Manager / Researcher		
	Lea student team and managed collaboration with research scientists from sponsor. Gum Gum Inc.		

Led student team and managed conaboration with research scientists from sponsor, Gum Gum Inc.
 Developed a robust computer vision pipeline for automatically augmenting crowds with advertisement in sports broadcast videos. Published an ACCV 2018 workshop paper and won best poster award

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Williams College Department of Mathematics and Statistics Undergraduate Researcher

- Developed methods and released an R package for analyzing the clustering of high dimensional variables in random forest models
- Identified predictors of hospital readmissions from electronic medical records, enabling Berkshire Medical Center to identify patients to prioritize for follow-up care

Athenahealth, Watertown, MA

Data Science Intern

• Developed a deployable LSTM neural network to automate the detection of lab tests in doctors' notes

Williams College Department of Physics

Research Assistant

Built lasers with custom circuitry and designed optical equipment for atomic physics experiments

Williams College Department of Astronomy

Research Assistant

• Operated telescopes to record images of star clusters and processed high-frequency image data to track light emissions. Identified two previously unknown eclipsing binary stars.

PublicationsHallee Wong, Marianne Rakic, John Guttag, Adrian Dalca. "ScribblePrompt: Fast and FlexibleGoogle ScholarInteractive Segmentation for any Medical Image." In Submission – ArXiv Preprint arXiv:2312.07381.

Marianne Rakic, **Hallee Wong**, Jose Javier Gonzalez Ortiz, John Guttag, Adrian Dalca. "Tyche: Stochastic In-Context Learning for Universal Medical Image Segmentation." *In Submission*.

Ibrahima Dieye, **Hallee Wong**, Margaret McNairy, Hari Iyer, Gugulethu Tshabalala, Amanda Fata, Jacob Bor, Serena Koenig, Kennedy Otwombe, Ingrid Katz. "A Risk Prediction Model to Identify People Living with HIV who are High-risk for Disengagement from Care after HIV Diagnosis in South Africa." *In Submission*.

Marianne Rakic, Jose Javier Gonzalez Ortiz, **Hallee Wong**, John Guttag, Adrian Dalca. "Tyche: In-Context Learning for Stochastic Medical Image Segmentation." *Uncertainty Quantification for Computer Vision Workshop*, *ICCV 2023. Extended Abstract*.

Hallee Wong, John Guttag, Adrian Dalca. "Probabilistic Interactive Segmentation for Medical Images." *Medical Imaging Meets NeurIPS Workshop, NeurIPS 2022. Extended Abstract.*

Meredith Mowitz, Wei Gao, Heather Sipsma, Pete Zuckerman, **Hallee Wong**, Rajeev Ayyagari, *et al.* "Long-term burden of respiratory complications associated with extreme prematurity: An analysis of US Medicaid claims." *Pediatrics & Neonatology*, 2022

Francesco Muntoni, James Signorovitch, Gautam Sajeev, Nathalie Goemans, Brenda Wong, Cuixia Tian, Eugenio Mercuri, Nicolae Done, **Hallee Wong**, *et al.* "Real-world and natural history data for drug evaluation in Duchenne muscular dystrophy: suitability of the North Star Ambulatory Assessment for comparisons with external controls." *Neuromuscular Disorders*, 2022.

Hallee Wong, Brianna Heggeseth, Steven J. Miller. "Categorical Co-Frequency Analysis: Clustering Diagnosis Codes to Predict Hospital Readmissions." *ArXiv Preprint arXiv:1909.00306*, 2019

Hallee Wong, Osman Akar, Emmanuel Antonio Cuevas, Iuliana Tabian, Divyaa Ravichandran, Iris Fu, Cambron Carter. "Markerless Augmented Advertising for Sports Videos." *Advanced Machine Vision for Real-life and Industrially Relevant Applications Workshop, ACCV 2018.*

Talks

- "ScribblePrompt: Fast and Flexible Interactive Segmentation for any Medical Image"
- Sabuncu Lab, Cornell Tech, October 2023
- NoBrainer Collaboration, MIT McGovern Institute, January 2024

Summer 2016

Summer 2015

Summer 2017

Poster Presentations	Stochastic Interactive Segmentation for Medical Images Women in Computer Vision Workshop, CVPR 2023		
	Probabilistic Interactive Segmentation for Medical Images Women in Machine Learning Workshop, NeurIPS 2022 Medical Imaging meets NeurIPS Workshop, NeurIPS 2022 MIT-MGB AI Cures Conference, April 2023		
	<i>Sequential Decision Making with Limited Resources</i> Women in Machine Learning Workshop, NeurIPS 2021		
	<i>Markerless Augmented Advertising for Sports Videos</i> (Best Poster Award) Workshop on Advanced Machine Vision for Real-life and Industrially Relevant Applications, ACCV 2018		
Reviewing	Machine Learning for Health (ML4H) Healthcare AI and COVID-19 Workshop at ICML	2022, 2023 2022	
Teaching	Graduate Teaching Assistant, MIT ■ 6.8301 Advances in Computer Vision	Spring 2023	
	 Teaching Assistant, Williams College MATH 310 Mathematical Biology MATH 307 Computational Linear Algebra MATH 210 Math Methods for Scientists PHYS 130 Introduction to Mechanics 	Spring 2018 Fall 2017 Spring 2016 Fall 2015	
Service & Outreach	Reviewer , MIT AI+D PhD Admissions Mentor , MIT EECS Graduate Application Assistance Program President , MIT Graduate Women in Course 6 (EECS) Mentor , AI Mentorship Program	2023 2020, 2021, 2022 2021 2020	
Honors & Awards	Women in Computer Vision Travel Grant Women in Machine Learning Travel Grant Jae S. Lim Graduate Fellowship, MIT EECS Best Poster Award, ACCV 2018 AMV Workshop Robert M. Kozelka Prize in Statistics, Williams College Sigma Xi Honor Society 1st Place, Athenahealth Intern Hackathon 2nd Place, 7th Annual Venture Pitch Competition at Williams College Clare Boothe Luce Undergraduate Research Fellowship NSLI-Y Scholarship, U.S. Department of State	2023 2023 2020 2018 2018 2018 2018 2017 2017 2016 – 2018 2013	
Technical	• Programming: <i>Fluent</i> : Python, R · <i>Familiar</i> : C/C++, Javascript, HTML	. SAS. SOL. Java. MATLAB	

Skills

Programming: *Fluent:* Python, R · *Familiar:* C/C++, Javascript, HTML, SAS, SQL, Java, MATLAB
 Tools: Pytorch, OpenCV, Tensorflow, Kornia, Gradio, Streamlit, R Shiny, Git