

# Charlie Marx

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EDUCATION	<b>Stanford University</b> Ph.D. in Computer Science Advisor: Stefano Ermon	2020 - PRESENT
	<b>Haverford College</b> B.S. in Computer Science, <i>highest honors</i> B.S. in Mathematics, <i>highest honors</i> GPA: 3.96/4.0, <i>magna cum laude</i>	2016 - 2020
AWARDS & HONORS	<b>NSF Graduate Research Fellowship</b> <b>Stanford School of Engineering Fellowship</b> <b>Phi Beta Kappa</b> <b>CRA Outstanding Undergraduate Researcher Runner-Up</b> <b>Arnold and Mabel Beckman Foundation Award</b> <b>Farmers Insurance Standout Student of the Year</b>	2021 2020 2020 2019 2018 2016
PUBLICATIONS	<b>MACHINE LEARNING METHODS</b> <ol style="list-style-type: none"><li><a href="#">Calibration by Distribution Matching: Trainable Kernel Calibration Metrics</a> <b>Charles T. Marx*</b>, Sofian Zalouk*, Stefano Ermon NeurIPS – <i>Conference on Neural Information Processing Systems</i>, 2023</li><li><a href="#">But Are You Sure? An Uncertainty-Aware Perspective on Explainable AI</a> <b>Charles T. Marx</b>, Youngsuk Park, Hilaf Hasson, Yuyang Wang, Stefano Ermon, Jun Huan AISTATS – <i>Artificial Intelligence and Statistics</i>, 2023</li><li><a href="#">Modular Conformal Calibration</a> <b>Charles T. Marx*</b>, Shengjia Zhao*, Willie Neiswanger, Stefano Ermon ICML – <i>International Conference on Machine Learning</i>, 2022</li><li><a href="#">Predictive Multiplicity in Classification</a> <b>Charles T. Marx</b>, Flavio du Pin Calmon, Berk Ustun ICML – <i>International Conference on Machine Learning</i>, 2020 Previously Selected for Oral Presentation at 2019 NeurIPS HCML Workshop</li><li><a href="#">Disentangling Influence: Using Disentangled Representations to Audit Model Predictions</a> <b>Charles T. Marx</b>, Richard L. Phillips, Sorelle A. Friedler, Carlos Scheidegger, Suresh Venkatasubramanian NeurIPS – <i>Conference on Neural Information Processing Systems</i>, 2019</li></ol> <b>MACHINE LEARNING APPLICATIONS</b> <ol style="list-style-type: none"><li><a href="#">Examining Inputs of Biogenic and Oil-Derived Hydrocarbons in Surface Waters Following the Deepwater Horizon Oil Spill</a> Helen White, <b>Charles T. Marx</b>, David Valentine, Charles Sharpless, Christoph Aeppli, Kelsey Gosselin, Veronika Kivenson, Rachel Liu, Robert Nelson, Sean Sylva, Christopher Reddy <i>ACS Earth and Space Chemistry</i>, 2019</li><li><a href="#">Rapid Identification of Deepwater Horizon Oil Residues Using X-Ray Fluorescence</a> Anna Michel, Alexandra E. Morrison, <b>Charles T. Marx</b>, Helen White <i>ACS Environmental Science &amp; Technology Letters</i>, 2018</li></ol>	
RESEARCH EXPERIENCE	<b>Research Intern</b> <i>Amazon Web Services</i> Designed algorithms for detecting hallucinations in large language models. <i>Advisors:</i> Wooseok Ha and Christian Bock	SUMMER 2023

	<b>Research Intern</b> <i>Amazon Web Services</i>	SUMMER 2022
	Designed methods for quantifying uncertainty in model explanations. <i>Advisors: Youngsuk Park and Hilaf Hasson</i>	
	<b>Summer Intern</b> <i>International Food Policy Research Institute</i>	SUMMER 2020
	Developed machine learning tools to classify land usage in Africa using satellite images. <i>Advisors: Channing Arndt and Zhe Guo</i>	
	<b>Research Assistant in Machine Learning</b> <i>Harvard University</i>	SUMMER 2019
	Studied predictive multiplicity: the ability for datasets to admit multiple equally accurate models with conflicting predictions. Developed integer programming tools and software to measure the severity of multiplicity. Compiled findings into first-author conference and workshop paper. <i>Advisors: Flavio Calmon and Berk Ustun</i>	
	<b>Summer Research Intern</b> <i>Prince William Sound Science Center</i>	SUMMER 2018
	Automated salmon and herring tracking in Alaska using machine learning with sonar data. <i>Advisor: Scott Pegau</i>	
INVITED & CONTRIBUTED TALKS	<b>Data for Sustainability Conference</b> <i>Stanford, CA</i>	2023
	Probabilistic Forecasting for Science <i>Best Talk Award</i>	
	<b>ICML Conference</b> <i>Baltimore, MD</i>	2022
	Modular Conformal Calibration	
	<b>Simons Institute for the Theory of Computing</b> <i>Berkeley, CA</i>	2019
	Disentangling Influence	
	<b>INFORMS Annual Meeting</b> <i>Seattle, WA</i>	2019
	Predictive Multiplicity in Classification	
	<b>FAT* Conference</b> <i>New York, NY</i>	2018
	Auditing Black Box Models (60-minute tutorial) <i>with Carlos Scheidegger and Suresh Venkatasubramanian</i>	
	<b>GOMOSSES Conference</b> <i>New Orleans, LA</i>	2018
	Examining Inputs of Biogenic and Oil-Derived Hydrocarbons	
POSTER PRESENTATIONS	<b>NeurIPS Conference</b> <i>New Orleans, LA</i>	2023
	Calibration by Distribution Matching: Trainable Kernel Calibration Metrics	
	<b>ICML Conference</b> <i>Baltimore, MD</i>	2022
	Modular Conformal Calibration	
	<b>ICML Conference</b> <i>Vienna, Austria</i> (virtual)	2020
	Predictive Multiplicity in Classification	
	<b>NeurIPS Conference</b> <i>Vancouver, Canada</i>	2019
	Disentangling Influence: Using Disentangled Representations to Audit Model Predictions	
	<b>NeurIPS Workshop on Human-Centric Machine Learning</b> <i>Vancouver, Canada</i>	2019
	On the Multiplicity of Predictions in Machine Learning	
	<b>Beckman National Symposium</b> <i>Irvine, CA</i>	2019
	Indirect Influence in Machine Learning Models	
	<b>Beckman Regional Symposium</b> <i>New York, NY</i>	2018
	Mitigating Social Discrimination in Deep Learning	
	<b>KINSC Undergraduate Research Symposium</b> <i>Haverford, PA</i>	2017
	Examining Biogenic Hydrocarbons After the Deepwater Horizon Oil Spill	
FIELDWORK	<b>Alaska Prince William Sound Research Charter</b>	2018
	<b>Gulf of Mexico Shoreline Research Tour</b>	2017
ACADEMIC SERVICE	<b>Reviewing:</b> KDD '20, ICML '22, NeurIPS '22, IEEE JSAIT '23, ACM JRC '23	

**Program Committee:** NeurIPS '20 Workshop on Fair AI in Finance, FAccT '22

EXTRA-  
CURRICULAR  
ACTIVITIES

**Captain of Haverford College Men's Club Soccer**  
**Leader of Haverford College Outdoors Club**  
**President of Furniture for Newly Housed Families Organization**

2018 – 2019  
2017 – 2018  
2015 – 2017

SKILLS &  
INTERESTS

**Languages:** *Fluent:* Python, R, Unix · *Familiar:* SQL, C  
**Tools:** PyTorch, Tensorflow, Pandas, CPLEX  
**Interests:** Backpacking, Basketball, Cooking, Soccer