

# Charlie Marx

CURRICULUM VITAE - MARCH 2021

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EDUCATION	<b>Stanford University</b> Ph.D. Student in Computer Science	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="#">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 Assistant in Machine Learning</b> <i>Harvard University</i> 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:</i> Flavio Calmon and Berk Ustun	SUMMER 2019
	<b>Research Assistant in Machine Learning</b> <i>Haverford College</i> Designed new methods to quantify indirect feature influence in machine learning models using disentangled representations and adversarial learning. <i>Advisor:</i> Sorelle Friedler	2017 – 2019
	<b>Research Assistant in Chemistry</b> <i>Haverford College</i> Designed machine learning tools to optimize model performance, robustness, and interpretability for on-site oil identification. <i>Advisor:</i> Helen White	2017 – 2018
	<b>Summer Research Intern</b> <i>Prince William Sound Science Center</i> Automated salmon and herring tracking in Alaska using machine learning and sonar data. <i>Advisor:</i> Scott Pegau	SUMMER 2018

ACADEMIC ACTIVITIES	<b>Teaching Assistant in Machine Learning</b>	2019 – 2020
	Held weekly office hours and graded for an upper-level machine learning course.	
	<b>Peer Tutor</b>	2018 – 2019
	Tutored students in statistics, linear algebra, and machine learning.	
	<b>Computer Science Faculty Search Committee</b>	2018 – 2019
	Student representative on the computer science tenure-track faculty search committee.	
INVITED & CONTRIBUTED TALKS	<b>Simons Institute for the Theory of Computing</b> <i>Berkeley, CA</i>	2019
	Disentangling Influence (45-minute talk)	
	<b>INFORMS Annual Meeting</b> <i>Seattle, WA</i>	2019
	Predictive Multiplicity in Classification (20-minute talk)	
	<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 (15-minute talk)	
POSTER PRESENTATIONS	<b>ICML Conference</b> <i>Vienna, Austria</i>	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	
	<b>Program Committee:</b> NeurIPS '20 Workshop on Fair AI in Finance	
EXTRA- CURRICULAR ACTIVITIES	<b>Captain of Haverford College Men's Club Soccer</b>	2018 – 2019
	<b>Leader of Haverford College Outdoors Club</b>	2017 – 2018
	<b>President of Furniture for Newly Housed Families Organization</b>	2015 – 2017
SKILLS & INTERESTS	<b>Languages:</b> <i>Fluent:</i> Python, R, LaTeX · <i>Familiar:</i> SQL, C, Unix	
	<b>Tools:</b> PyTorch, Tensorflow, Pandas, CPLEX	
	<b>Interests:</b> Backpacking, Gardening, Soccer, Folk Music, Cooking	