

Mike Schaekermann

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OVERVIEW	My research focuses on developing methods to capture and utilize the structure of ambiguous classification problems in the context of human-centered machine learning and human-AI collaboration. My work has a special focus on medical data analysis.	
EDUCATION	Doctor of Philosophy , Computer Science University of Waterloo, ON, Canada Advisors: Edith Law and Kate Larson	2016 - 2020
	Bachelor of Science in Engineering , Media Informatics Salzburg University of Applied Sciences, Austria Thesis Supervisor: Lennart Nacke	2014
	State Examination I (equivalent to BSc), Medicine University of Marburg, Germany	2011
WORK EXPERIENCE	Applied Scientist , Amazon Augmented AI, Toronto, Canada	Since 2020
	Student Researcher , Google Health, Mountain View, CA	2018 - 2020
	Research Intern , Google Brain, Mountain View, CA	2018
	Visiting Researcher , Inria Bordeaux, France	2017
	Software Engineering Intern , Google, Mountain View, CA	2017
	Head of IT & Co-Founder , Stilnest.com, Berlin, Germany	2011 - 2015
	Visiting Researcher , Ontario Tech University, ON, Canada	2013 - 2014
	Research Assistant , University Medical Center, Marburg, Germany	2010 - 2011
AWARDS & HONOURS	Canadian Computer Science Distinguished Dissertation Award	2021
	Cheriton Distinguished Dissertation Award — UWaterloo	2021
	Harvard CRCS Postdoctoral Fellowship (declined)	2021
	Google PhD Fellowship (\$68,000/year)	2018-2020
	Best Paper, ACM CSCW	2018
	Graduate Excellence Scholarship (\$5,000) — UWaterloo	2017
	David R. Cheriton Graduate Scholarship (\$10,000) — UWaterloo	2016
	International Doctoral Student Award (\$11,760/year) — UWaterloo	2016
	Amazon Web Services Research Grant (\$7,000) — Amazon	2016
	Merit-based Scholarship — Salzburg University of Applied Sciences	2014
	Engineering Scholarship — Economic Chamber of Salzburg	2013
	Nominee for the German National Academic Foundation	2009

PUBLICATIONS

Peer-Reviewed Conference Proceedings

- [C.1] [Schaekermann, M.](#), Beaton, G., Sanoubari, E., Lim, A., Larson, K., & Law, E. **Ambiguity-aware AI Assistants for Medical Data Analysis.** CHI'20. Honolulu, HI.
- [C.2] [Schaekermann, M.](#), Cai, C. J., Huang, A. E., & Sayres, R. **Expert Discussions Improve Comprehension of Difficult Cases in Medical Image Assessment.** CHI'20. Honolulu, HI.
- [C.3] [Schaekermann, M.](#), Beaton, G., Habib, M., Lim, A., Larson, K., & Law, E. **Understanding Expert Disagreement in Medical Data Analysis through Structured Adjudication.** CSCW'19. Austin, TX.
- [C.4] Cohen, R., [Schaekermann, M.](#), Liu, S., & Cormier, M. **Trusted AI and the Contribution of Trust Modeling in Multiagent Systems.** AAMAS'19. Montréal, Canada.
- [C.5] [Schaekermann, M.](#), Goh, J., Larson, K., & Law, E. **Resolvable vs. Irresolvable Disagreement: A Study on Worker Deliberation in Crowd Work.** CSCW'18. New York City, NY. **Best Paper Award**
- [C.6] [Schaekermann, M.](#), Ribeiro, G., Wallner, G., Kriglstein, S., Johnson, D., Drachen, A., & Nacke, L. E. **Curiously Motivated: Profiling Curiosity with Self-Reports and Behaviour Metrics in the Game "Destiny".** CHI PLAY'17. Amsterdam, Netherlands.
- [C.7] Jaini, P., Chen, Z., Carbajal, P., Law, E., Middleton, L., Regan, K., [Schaekermann, M.](#), Trimponias, G., Tung, J., & Poupart, P. **Online Bayesian Transfer Learning for Sequential Data Modeling.** ICLR'17. Toulon, France.
- [C.8] Wehbe, R. R., Mekler, E. D., [Schaekermann, M.](#), Lank, E., & Nacke, L. E. **Testing Incremental Difficulty Design in Platformer Games.** CHI'17. Denver, CO.

Peer-Reviewed Journal Publications

- [J.1] Limwattanayingyong, J., Nganthavee, V., Seresirikachorn, K., Singalavaniya, T., Soonthornworasiri, N., Ruamviboonsuk, V., Rao, C., Raman, R., Grzybowski, A., [Schaekermann, M.](#), Peng, L. H., Webster, D. R., Semturs, C., Krause, J., Sayres, R., Hersch, F., Tiwari, R., Liu, Y., & Ruamviboonsuk, P. **Longitudinal Screening for Diabetic Retinopathy in a Nationwide Screening Program: Comparing Deep Learning and Human Graders.** In *Journal of Diabetes Research*. 2020.
- [J.2] Sokolov, E., Abdoul Bachir, D. H., Sakadi, F., Williams, J., Vogel, A. C., [Schaekermann, M.](#), Tassiou, N., Bah, A. K., Khatri, V., Hotan, G. C., Ayub, N., Leung, E., Fantaneanu, T. A., Patel, A., Vyas, M., Milligan, T., Villamar, M. F., Hoch, D., Purves, S., Esmaeili, B., Stanley, M., LehnSchioler, T., TellezZenteno, J., GonzalezGiraldo, E., Tolokh, I., Heidarian, L., Worden, L., Jadeja, N., Fridinger, S., Lee, L., Law, E., Fod Abass, C., & Mateen, F. J. **Tablet-based electroencephalography diagnostics for patients with epilepsy in the West African Republic of Guinea.** In *European Journal of Neurology*. 2020.
- [J.3] [Schaekermann, M.](#), Hammel, N., Terry, M., Ali, T. K., Liu, Y., Basham, B., Campana, B., Chen, W., Ji, X., Krause, J., Corrado, G. S., Peng, L., Webster, D. R., Law, E., & Sayres, R. **Remote Tool-Based Adjudication for Grading Diabetic Retinopathy.** In *Translational Vision Science & Technology*. 2019.

- [J.4] Williams, J., Cisse, F.A., [Schaekermann, M.](#), Sakadi, F., Tassiou, N.R., Hotan, G., Bah, A.K., Hamani, A.B.D., Lim, A., Leung, E.C.W., Fantaneanu, T.A., Milligan, T., Khatri, V., Hoch, D., Vyas, M., Lam, A., Cohen, J., Vogel, A., Law, E., & Mateen, F. **Smartphone EEG and remote online interpretation for children with epilepsy in the Republic of Guinea: Quality, characteristics, and practice implications.** In *Seizure*. 2019.
- [J.5] Phene, S. and Dunn, C. and Hammel, N. and Liu, Y. and Krause, J. and Kitade, N. and [Schaekermann, M.](#) and Sayres, R. and Wu, D. and Bora, A. and Semturs, C. and Misra, A. and Huang, A. and Spitze, A. and Medeiros, F. and Maa, A. and Gandhi, M. and Corrado, G. and Peng, L., & Webster, D. **Deep Learning and Glaucoma Specialists: The Relative Importance of Optic Disc Features to Predict Glaucoma Referral in Fundus Photographs.** In *Ophthalmology*. 2019.

Peer-Reviewed Workshop Papers and Abstracts

- [P.1] [Schaekermann, M.](#), Beaton, G., Habib, M., Lim, A., Larson, K., & Law, E. **crowdEEG: A Platform for Structured Consensus Formation in Medical Time Series Analysis.** 8th Workshop on Interactive Systems in Healthcare (WISH) at **CHI'19**. Glasgow, UK.
- [P.2] [Schaekermann, M.](#), Beaton, G., Habib, M., Lim, A., Larson, K., & Law, E. **Capturing Expert Arguments from Medical Adjudication Discussions in a Machine-readable Format.** 2nd Workshop on Subjectivity, Ambiguity and Disagreement in Crowdsourcing at **WebConf'19**. San Francisco, CA.
- [P.3] Williams, J., Cisse, F.A., [Schaekermann, M.](#), Sakadi, F., Tassiou, N.R., Bah, A.K., Hamani, A.B.D., Lim, A., Leung, E.C.W., Fantaneanu, T.A., Milligan, T., Khatri, V., Hoch, D., Vyas, M., Lam, A., Hotan, G., Cohen, J., Law, E., & Mateen, F. **Utilizing a wearable smartphone-based EEG for pediatric epilepsy patients in the resource poor environment of Guinea: A prospective study.** Annual Meeting of the American Academy of Neurology **AAN'19**. Philadelphia, PA.
- [P.4] [Schaekermann, M.](#), Lim, A., Larson, K., & Law, E. **Expert Disagreement in Sequential Labeling: A Case Study on Adjudication in Medical Time Series Analysis.** 1st Workshop on Subjectivity, Ambiguity and Disagreement (SAD) in Crowdsourcing at **HCOMP'18**. Zurich, Switzerland.
- [P.5] [Schaekermann, M.](#), Law, E., Williams, A. C., & Callaghan, W. **Resolvable vs. Irresolvable Ambiguity: A New Hybrid Framework for Dealing with Uncertain Ground Truth.** 1st Workshop on Human-Centered Machine Learning at **CHI'16**. San Jose, CA.

Theses

- [T.1] [Schaekermann, M.](#) **Human-AI Interaction in the Presence of Ambiguity: From Deliberation-based Labeling to Ambiguity-aware AI**
Ph.D. Thesis. 2014.
- [T.2] [Schaekermann, M.](#) **Implementation of a Collaborative Web Application for Annotating Gameplay Videos Based on Biometric Player Data**
Bachelor's Thesis. 2014.

Invited Articles

- [I.1] [Schackermann, M.](#), Homan, C. M., Aroyo, L., Paritosh, P., Bollacker, K., & Welty, C. **AI Bookie: Will Machine Learning Outgrow Human Labeling?** In *AI Magazine*. 2020.

FUNDING	Waterloo Citizen Science Laboratory	2016
	Prepared a grant application with Edith Law and Alex Williams to provide infrastructure for scientific crowdsourcing studies. \$144,703 awarded through the Canadian Foundation for Innovation (CFI).	
	Amazon Web Services Research Grant	2016
	Prepared a grant application with Alex Williams to secure funding for computing resources to support various crowdsourcing studies and online hybrid human-AI systems. \$7,000 awarded in credits through Amazon Web Services (AWS).	
PROGRAM DEVELOPMENT	Joint Master's Program in Human-Computer Interaction (HCI) <i>University of Salzburg & Salzburg University of Applied Sciences</i>	2019
	Contributed to the design and accreditation of a new Human-Computer Interaction (HCI) master's degree program in the role of student alumnus.	
INVITED TALKS	Apple , Seattle	2020
	"Human-AI Interaction in the Presence of Ambiguity"	
	Google PhD Fellowship Summit , Mountain View	2019
	"Deliberative Analysis of Ambiguous Cases in Human & Machine Learning"	
	NeuroTechX , Toronto	2016
	"CrowdEEG: Collaborative Annotation Platform for Clinical EEG Recordings"	
TEACHING	Interactive Machine Learning (CMPUT656), Guest Lecturer	Fall 2020
	Course instructor: Matthew E. Taylor University of Alberta, AB, Canada	
	Human-Computer Interaction (CS449), Teaching Assistant	Winter 2018
	University of Waterloo, ON, Canada	
	Introduction to Artificial Intelligence (CS486), Teaching Assistant	Fall 2017
	University of Waterloo, ON, Canada	
	Graduate Research Skills Seminar (CS697), Guest Lecturer	Fall 2017
	University of Waterloo, ON, Canada	
	Introduction to Computer Science II (CS116), Teaching Assistant	Spring 2017
	University of Waterloo, ON, Canada	
	Introduction to Artificial Intelligence (CS486), Teaching Assistant	Fall 2016
	University of Waterloo, ON, Canada	
	Applied Mathematics , Tutorial Class Instructor	2012-2013
	Salzburg University of Applied Sciences, Austria	

**CONFERENCE
WORKSHOPS
ORGANIZED**

Data Excellence Workshop (DEW 2020). Co-chaired with Lora Aroyo, Praveen Paritosh, & Matt Lease at **HCOMP'20**.

Subjectivity, Ambiguity and Disagreement (SAD) in Crowdsourcing (SAD 2019). Co-chaired with Chris Welty, Lora Aroyo, Praveen Paritosh, Anca Dumitrache, Jennimaria Palomaki, Alex Quinn, Olivia Rheinhart, & Michael Tseng at **WebConf'19**.

Designing for Curiosity: an Interdisciplinary Workshop. Co-organized with Edith Law, Pierre-Yves Oudeyer, Ming Yin, & Alex Williams at **CHI'17**.

**SERVICE &
LEADERSHIP**

Associate Chair: “Computational Interaction” at ACM CHI (2021, 2022), Applied Research Track at ACM CIKM (2020, 2021)

Session Chair: “Designing Decision Support” at ACM CHI (2019)

Journal Reviewer: International Journal of Human-Computer Studies (2021), ACM Transactions on Interactive Intelligent Systems (2017)

Conference Reviewer: ACM CHI (2017-2020), ACM CSCW (2018-2020), ACM UIST (2020), ACM DIS (2020), ACM CHI PLAY (2016)

Workshop Reviewer: CrowdBias (2018), HumBL (2019)

REFERENCES

Edith Law, PhD co-supervisor
Assistant Professor, Computer Science, University of Waterloo
Email: edith.law@uwaterloo.ca

Kate Larson, PhD co-supervisor
Professor, Computer Science, University of Waterloo
Email: kate.larson@uwaterloo.ca

Rory Sayres, Internship Mentor
Staff Researcher, Google Health Research & Innovations, Google
Email: sayres@google.com

Michael Terry, Fellowship Mentor
Staff Software Engineer, People+AI Research, Google
Previously *Associate Professor*, Computer Science, University of Waterloo
Email: michaelterry@google.com