## **Charles Delahunt CV**

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13 years' experience applying AI to global health challenges: My work focuses on understanding the requirements of the clinical use-case, and building these needs into the structure of AI solutions at every stage of AI development. That is, shaping AI solutions to deploy successfully.

### Global Health Labs, Bellevue, WA (2012 - present)

- Senior Research Engineer, AI for medical diagnostics
- Roles:
  - Research and develop AI algorithms for global health use cases, always focused on tailoring AI development to the specific needs of the clinical use case.
  - Collaborate with Gates Foundation teams (MNCH, NTDs) and grantees to provide technical assistance and guidance to move AI projects forward:
    - Guided a team at UC Berkeley to develop and improve detection algorithms for *S. haematobium*.
    - Worked with UNC on the complex LABOR dataset, especially ownership of cleaning, analyzing, and applying the sensor data.
  - Give talks and workshops on AI for global health at medical AI conferences.
- Projects: automated malaria detection; Neglected Tropical Disease diagnosis (schistosomiasis, *Loa loa*); pregnancy risk stratification; fetal monitoring; medical sensor data; vitamin A deficiency detection from pupillary response; obstetric and lung ultrasound; cervical cancer diagnosis; LLMs to classify conference abstracts on global health topics.

#### **Key skills**

- Analyze, interrogate, and understand data sets, in their functional medical context
- Research and develop end-to-end AI systems
- Develop techniques for tailoring AI to concrete clinical use cases
- Assess algorithm performance and results
- Collaborate with field experts and partners
- Write papers and present at conferences effective story telling
- Ask questions, in all contexts to clarify, open up avenues, and move work forward
- Take initiative

### Education

- Ph.D. Electrical and Computer Engineering, University of Washington, 2018
- B.S. Math and Music, MIT

### Languages

• English, French, Spanish (e.g. link)

### **Conference events on AI for global health**

- Invited talks: ML4H 2023; SPaM 2024; MICCAI 2024; SIPAIM (Guatemala) 2024; Phaw-AI (Peru) 2025.
- Tutorials, workshops, and special sessions: MICCAI 2022, 2023; IEEE GHTC 2020, 2022, 2024; IEEE New Era 2024; SIPAIM 2024, ML4H 2024, ASTMH 2024.

# Other work on AI for global health

- Scientific committee member (schistosomiasis subcommittee), ASTMH link
- Applied LLMs to vet abstracts submitted to annual ASTMH conference, 2024, 2025.
- Board member, RISE-MICCAI (Reinforcing inclusiveness & diversity and empowering MICCAI in low-to-middle income countries) link
- Advisor, WHO document on digital microscopy for malaria, 2023
- Peer Review:
  - Grant Reviewer (BARD)
  - Area Chair (ML4H, MICCAI), Academic Editor (PLOS Digital Health).
  - Reviewer (e.g. MICCAI, ML4H, PLOS NTD, PLOS Public Health, Malaria J, ASTMH, Trop Med, Frontiers Trop Diseases, NeurIPS, ICML, PREPSS).

### Selected papers on AI for global health

indicates lead author

- NTDscope: A multi-contrast portable microscope for disease diagnosis. In review, 2025. link
- Multi-contrast ML improves schistosomiasis diagnostic performance, In review, 2025. link
- A schistosomiasis dataset with bright- and darkfield images. MICCAI Open Data, 2024. link
- Reducing Poisson error can offset classification error: a technique to meet clinical performance requirements. ML4H, 2024. link
- Metrics to guide development of machine learning algorithms for malaria diagnosis, Frontiers Malaria, 2024. link
- Algorithms to predict moisture content of grain using relative humidity time-series. IEEE GHTC, 2020. link
- Fully automated patient-level malaria assessment on field-prepared thin blood film microscopy images. IEEE GHTC, 2019. link
- Limitations of haemozoin-based diagnosis of P. falciparum using dark-field microscopy, Malaria J, 2014. link
- Evaluation of an automated microscope using machine learning for the detection of malaria in travelers returned to the UK. Frontiers Malaria, 2023. link
- Performance of a fully-automated system on a WHO malaria microscopy evaluation slide set. Malaria J, 2021. link
- For more papers on AI for global health, and on basic AI research, please see https://charlesdelahunt.github.io
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