

LAWRENCE CHILLRUD

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🏠 PhD candidate researching & developing ML & AI models for medical image analysis at Northwestern University

Education

- 9/2022 – Present **Ph.D. in Electrical Engineering: Northwestern University** *Evanston, IL*
Advisors: [Aggelos Katsaggelos, Ph.D.](#) and [Lee Cooper, Ph.D.](#)
- 9/2016 – 5/2020 **B.A. in Computer Science: Columbia University** *New York, NY*
Specialization in Intelligent Systems

Awards

- 9/2024 – Present **National Science Foundation Graduate Research Fellowship**
\$159,000 in funding over three years. Proposal [on deep ensembles & Bayesian inference in medical imaging](#)

Research Experience

- 9/2022 – Present **Research Fellow: Digital Pathology Modeling** *Chicago, IL*
Northwestern University, Feinberg School of Medicine
Advisor: [Lee Cooper, Ph.D.](#)
- Developing novel loss function to solve deep learning biomarker screening tasks
 - Building transformer MIL models for lesion scoring, survival analysis, stain normalization
 - Engineering scalable pipelines, APIs for massive pathology datasets, improving performance
- 9/2022 – Present **Research Fellow: Radiology Modeling** *Evanston, IL*
Northwestern University, McCormick School of Engineering
Advisor: [Aggelos Katsaggelos, Ph.D.](#)
- Creating MRI-based models improving glioblastoma, meningioma biomarker prediction
 - Investigating rigorous training schema to learn interpretable models from limited data
 - Fusing radiomics, DL, SSL pretraining & model ensembling for robust performance
- 6/2025 – 8/2025 **Intern: Machine Learning & Digital Biomarkers** *Cambridge, MA*
Takeda Pharmaceuticals, Oncology Precision & Translation Medicine
Manager: [Melinda Chen, Ph.D.](#)
- Authored Python package for tumor microenvironment analysis of H&E, IHC images
 - Wrote comparative landscape analysis, lecture series on digital path foundation models
 - Piloted virtual-staining tech for clinical trial biomarker discovery, spatial profiling
- 6/2020 – 8/2022 **Senior Programmer: Environmental Health Sci** *New York, NY*
Columbia University, Mailman School of Public Health
Advisor: [Marianthi-Anna Kioumourtzoglou, Sc.D.](#)
- Authored R package implementing pattern recognition tool for use in public health
 - Developed Bayesian non-parametric ensemble model for uncertainty characterization
 - Conducted extensive code reviews for environmental health studies, reviewed 9,000+ lines

- o Designed transformer-based fact-checking model & pipeline w/unsupervised data aug
- o Scraped millions of news articles, scientific abstracts, constructing massive paired dataset
- o Wrote, implemented, oversaw IRB protocol for human annotation of fact-checking dataset

Selected Publications, Software, Talks

For a complete list please see my [Google scholar page](#).

Publications

9. Ayad MA, Nateghi R, Sharma A, **Chillrud LG**, Seesillapachai T, Chou T, Cooper LAD, Goldstein JA. [Deep learning for fetal inflammatory response diagnosis in the umbilical cord](#). *Placenta*, 2025.
8. Cerna-Turoff I, **Chillrud LG**, Rudolph KE, Casey JA. [Standards in responsibly sharing cohort data for transparency and reproducibility: response to The Young Lives study](#). *International Journal of Epidemiology*, 2023 Oct 5;52(5):1666-1669.
7. Tao RH, **Chillrud LG**, Nunez Y, Rowland ST, Boehme AK, Yan J, Goldsmith J, Kioumourtzoglou M-A. [Applying Principal Component Pursuit to investigate the association between source-specific fine particulate matter and myocardial infarction hospitalizations in New York City](#). *Environmental Epidemiology* 7(2):p e243, April 2023.
6. Rowland ST, **Chillrud LG**, Boehme AK, Wilson A, Rush J, Just AC, Kioumourtzoglou M-A. [Can Weather Help Explain 'Why Now?': The Potential Role of Hourly Temperature as a Stroke Trigger](#). *Environmental Research*. 2022 May 1;207:112229.
5. Wang G, **Chillrud LG**, McKeown KR. [Evidence based Automatic Fact-Checking for Climate Change Misinformation](#). *SocialSens Workshop on The International AAAI Conference on Web and Social Media*, 2021.

Software

4. **Chillrud LG**, Benavides J, Gibson EA, Zhang J, Yan J, Wright JN, Goldsmith J, Kioumourtzoglou M-A. [pcpr: Principal Component Pursuit for Environmental Epidemiology](#). *CRAN R package v1.0.0*, 2025.
3. McBrien H, Casey JA, **Chillrud LG**, Flores NM, Wilner LB. [popexposure: Estimate population exposure to near environmental hazards](#). *Python package v1.0.0*, 2025.

Talks

2. **Chillrud LG**, Gibson EA, Nunez Y, Colgan R, Tao RH, Zhang J, Yan J, Wright J, Goldsmith J, Kioumourtzoglou M-A. [Principal Component Pursuit for Pattern Recognition from Incomplete Environmental Data](#). *ENAR 2022*, Houston, TX.
1. **Chillrud LG**. [Parallel computation in R with the foreach package: A brief introduction](#). *RClub*, Columbia Mailman School of Public Health, New York, NY, April 7, 2022.

Technical Skills

Developer tools:

Python, R, \LaTeX , Bash, Zsh, UNIX, macOS, Git, GitHub, NoSQL, Visual Studio Code, iTerm2, Vim, GNU Screen, tmux, RStudio, Jupyter, Google Cloud Platform, Docker, Conda

ML/AI libraries:

TensorFlow, Keras, PyTorch, Scikit-learn, Hugging Face Transformers, NumPy, SciPy, Pandas, Matplotlib, Seaborn

References, Transcripts

References are available upon request. Academic transcripts are available upon request.