

Research Director (Machine Learning)

About the Unit:

The University of Chicago Crime Lab is a faculty-driven research center that tries to improve social conditions in American cities by partnering closely with local, state and federal government agencies to carry out the highest-quality scientific studies. The Lab is led by Jens Ludwig and Harold Pollack of the University of Chicago, Jonathan Guryan of Northwestern University and Pat Sharkey of New York University, and carries out research projects in collaboration with a national network of leading experts in fields such as economics, public policy, sociology, behavioral science, and computer science. Examples of some of our past projects include: several randomized controlled trials (RCTs) of behavioral science interventions to reduce crime and dropout in Chicago (Heller, Shah, Guryan, Ludwig, Mullainathan and Pollack, 2017, *Quarterly Journal of Economics*), the results of which were cited by the *Washington Post* as one inspiration for President Obama's My Brother's Keeper initiative; a RCT of a large-scale summer jobs programs for disadvantaged youth in Chicago (Heller, 2015, *Science*), which has helped inform Mayor Rahm Emanuel's anti-violence initiatives; and a study that highlights the potential for improving the criminal justice system using machine learning methods, but also the new social science-type challenges that arise in exporting those tools to policy applications (Kleinberg, Lakkaraju, Leskovec, Ludwig and Mullainathan, 2018, *Quarterly Journal of Economics*), which has led to a partnership with New York City government to build a new citywide system to help judges make bail decisions.

We have a full-time staff of nearly 70 in offices located in downtown Chicago (across from city hall) and New York City (also across from city hall), which includes PhD-level research directors, data scientists, and program managers. We are funded by research grants from foundations such as the Arnold, Joyce, MacArthur, McCormick, and Pritzker foundations, federal government agencies such as the National Institutes of Health, US Department of Education and US Department of Justice, and private individuals, as well as ongoing core operating support from the University of Chicago. Previous Crime Lab projects have been featured in national news outlets such as the *New York Times*, *Wall Street Journal*, PBS News Hour, and National Public Radio.

The Crime Lab is part of the University of Chicago's Urban Labs, a set of highly synergistic labs focused on undertaking inquiry and having impact on five areas of urban life: crime, education, health, poverty, and energy & environment (<https://urbanlabs.uchicago.edu/>).

About our Machine Learning Portfolio:

The success of machine learning in the commercial sector raises the promising idea that the combination of machine learning and large administrative datasets can lead to similar benefits in the public sector. At the same time, machine learning is fundamentally different than the causal inference questions that have been the main stay of empirical policy research, resulting in hesitation and uncertainty about how and when to use these new techniques. This uncertainty is compounded by concerns that the naïve use of historical data will result in tools that will perpetuate biases and aggravate problems rather than solve them. Crime Lab's goal is to identify problems where machine learning can provide a significant social benefit¹, and to solve the resulting conceptual challenges associated with the creation, evaluation, and deployment of predictive models. We believe that proper and judicious application of machine learning can yield the benefits of these techniques while mitigating harms, but that doing so will require careful thinking and new research at the intersection of computer science and the social sciences. We are

¹ We call these problems "prediction policy problems" (Kleinberg et al, 2015, *American Economic Review*)

particularly interested in novel approaches to prediction and evaluation in the presence of biased and censored data², and in approaches to optimally combining the prediction from a machine learning algorithm with the expertise and private information of a human decision-maker.

Crime Lab offers a unique opportunity to work on these conceptual challenges in the context of problems faced by policy makers every day. We work with our partners to develop a project all the way from the basic research question to implementation and ultimate evaluation. Through this work, we hope to contribute to the development of best practices on how to effectively and responsibly implement predictive tools in public policy.

Unit Job Summary:

The University of Chicago Crime Lab is seeking a full-time Research Director to contribute scientific and intellectual leadership to the organization and our work. The primary role of the Research Director is to direct a portfolio of applied machine learning projects in association with faculty members and research teams. These projects will focus on reducing crime and violence and improving educational performance, attainment, and other life outcomes for disadvantaged youth in addition to facilitating technical assistance work for government and strategic partners. In this role, the Research Director will provide scientific direction on all projects, ensure the rigor and quality of all work, manage and mentor research and project staff, and help to set and contribute to organizational priorities as part of the management team. The Research Director is a leadership-level position and will work collaboratively with senior faculty members at the University of Chicago and elsewhere, other research directors, and with partner agencies. The Research Director will contribute to the scientific content of research proposals and will assist the ED and other faculty affiliates in supporting fundraising, dissemination and policymaker outreach activities. The Research Director will also contribute to strategic conversations about which new projects and initiatives the Crime and Education Lab should take on as well as management of staff and leadership on organizational initiatives.

This position is based in Chicago, IL.

Education:

Applicants must have a Ph.D. in computer science, statistics, economics, public policy, or other related field with substantial machine learning/ data science research experience.

Experience:

The ideal candidate will have a strong background in machine learning, a track record of publishing, and a good understanding of causal inference. We strongly prefer candidates who have experience in research design and evaluation, particularly in evaluating a predictive model's performance in real-world settings. Preference will be given to those with prior experience working with interdisciplinary teams and external stakeholders.

Competencies

- Advanced knowledge of machine learning and statistics required.
- Experience and knowledge of causal inference preferred.

² A challenge sometimes known as the “selective labels problem” (Kleinberg, Lakkaraju, Leskovec, Ludwig and Mullainathan, 2018, *Quarterly Journal of Economics*)

- Experience developing reproducible and maintainable code required.
- Excellent written and verbal communication skills, with the ability to present data in a simple and straightforward way for non-technical audiences required.
- Strong interpersonal skills required.
- Supervisory skills required.
- Ability to work independently and part of a team required.
- Organization skills required.
- Attention to detail required.

Responsibilities

- Provide scientific direction on all projects, ensure the rigor, and quality of all work
- Manage and mentor research and project staff
- Help set and contribute to organizational priorities as part of the management team
- Report to the Executive Director
- Work collaboratively with senior faculty members at the University of Chicago and elsewhere, other research directors, and with partner agencies
- Contribute to the scientific content of research proposals
- Assist the Executive Director and other faculty affiliates in supporting fundraising, dissemination, and policymaker outreach activities
- Contribute to strategic conversation about which new projects and initiatives the Crime and Education Lab should take on
- Management of staff and leadership on organizational initiatives

Required Job Seeker Documents

- CV
- Cover Letter
- 1-2 Research Papers (working papers and drafts are acceptable)
- Reference Contact Information

To Apply: Please submit CV, Cover Letter, 1-2 Research Papers, and Reference Contact Information to UChicago's Workday System. Search requisition number, **JR06314**. Please note, when applying, all documents **MUST** be uploaded under the Resume/CV section of the application. Please be advised that if you have an active UChicago Workday employee account, you will need to complete the Internal Candidate application process.

- Internal Candidate instructions: Log into Workday and select the career worklet.
- External Candidates should apply to the position at https://uchicago.wd5.myworkdayjobs.com/en-US/External/job/Illinois-Chicago/Project-Associate_JR05639
- If you have questions about the Workday application system, please contact: https://uchicago.service-now.com/sso?id=ssc_sc_cat_item&sys_id=cf359d671316660030c0bc3244b02d.

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Staff Job seekers in need of a reasonable accommodation to complete the application process should call 773-702-5800 or submit a request via Applicant Inquiry Form.