

Applied Machine Learning Pre-Doctoral Research Professional

Chicago Booth | Center for Applied AI

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Are you interested in economic or social science applications of machine learning?

Are you contemplating a PhD in economics, social sciences, computer science, or a related field, but want to take two years to develop research skills?

You might be a good fit for our pre-doc position.

The kind of work we do:

CAAI works with faculty at the cutting edge of empirical science across many areas – economics, finance, social policy, behavioral science. Here are a few of the problems we are tackling and the kind of project you could help work on:

- Our [recent paper in Science](#) talks about how we found bias in an algorithm in health care that affected lives of over a hundred million people, and, more importantly, how we helped make it better.
- We are using a notoriously biased technology, facial recognition, for a good purpose. Using unique data, we are building algorithms that predict how *human* decisions depend on faces in ways they ought not to - in the process uncovering flaws in existing decision-making systems.
- The covid-19 pandemic has shown us how important it is to get research insights into the hands of practitioners, policymakers, and the general public as quickly as possible. [Like the example in this op-ed](#), we are working to build dashboards and tools to make research accessible to those who can use it to achieve impact.

The projects are diverse in scope and methods – from observational data to quasi-experimental methods to large-scale field experiments.

Who we work with:

You'll get the benefit of working closely with a faculty member on one set of projects while learning about many others in a community of researchers.

Some previous faculty we've worked with:

- [Jens Ludwig, UChicago Crime Lab](#)
- [Kate Baicker, Harris School of Public Policy](#)
- [Ziad Obermeyer, Berkeley School of Public Health](#)
- [Jon Kleinberg, Cornell University](#)
- [Jure Leskovec, Stanford University](#)
- [Mukund Sundararajan, Google](#)
- [Emma Pierson, Cornell Tech](#)
- [Himabindu Lakkaraju, Harvard Business School](#)
- [Devin Pope, Chicago Booth](#)
- [Oeindrila Dube, Harris School of Public Policy](#)

Who you are:

You have a bachelor's or master's degree. You have some interest in a PhD, enough to invest in or explore that interest, whether in economics, social science, data science, computer science, or other related fields.

Our experience has taught us that cross-cutting work requires “bilingual” data scientists. You need to excel at the latest computational tools. You also need to know the micro-econometric issues that arise with social science data. Our experience has also taught us that even the best universities are not producing bilingual people. So, you’re a good fit if you know one language and are willing to commit to learn the other.

Are you *excellent* at one of these skills and *humble* enough to want to learn the others?

- Empirical micro-econometrics – do you know what a regression discontinuity is or what LATE is? More importantly have you had experience in class (or ideally on some project work) applying these ideas and seeing the subtleties of social data?
- Computer science / data science – do you know what LDA is or have you built a pipeline that tackled a big hairy dataset? Do you feel some expertise in either a single methodology (e.g. convolutional nets or generative models) or a single modality (such as images or language)?

What you will do:

The position will span the spectrum as any data science role does. In addition, we will view this as in part an apprenticeship to learn the trade-craft of research.

- Contribute to the design and implementation of an efficient and reproducible data processing pipeline.
- Build and rigorously evaluate statistical models using best practices of machine learning and statistical inference.
- Prepare project memos, summaries, presentations, reports, and other work products for dissemination to academic researchers, policymakers and other stakeholders, as needed.

What we will do for you:

As part of your development as a researcher, you will enjoy being part of a community of scholars learning and pursuing research together, as well as:

- Joint lab meetings, so various research teams can collaborate and learn from each other.
- Interactive seminars with Booth and University faculty to investigate new research and possible challenges associated with the research trade.
- Academic advising to prepare you for your PhD career.
- Opportunities to connect with visiting experts and external collaborators.

Some formalities

Competencies:

- Advanced knowledge of data science techniques OR applied micro-econometrics OR theoretical statistics, math, physics or related field.
- Strong initiative and a resourceful approach to problem solving and learning required.
- Ability to work independently and as part of a team in a fast-paced environment required.

- Sound critical thinking skills required.
- Strong attention to detail with superb analytical and organization skills required.
- Excellent written and verbal communication skills, with the ability to present data in a simple and straightforward way for non-technical audiences required.

Education, Experience, and Certifications:

- Bachelor's or master's degree in computer science, statistics, data science, economics or a closely related field required;

Technical Knowledge or Skills:

- Proficiency with statistical data analysis and machine learning using Python or R is required. The ability to work in both is preferred.

To apply:

- Upload your resume, cover letter, transcripts, and a sample of data work (class project, GitHub repo, blog, etc.) through our online form: <https://forms.gle/aFeT3YyZLLFkWHPt5>
- You must also complete our formal application:
https://uchicago.wd5.myworkdayjobs.com/External/job/Hyde-Park-Campus/Research-Professional_JR09324

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