Corinne Jones

Contact

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GitHub: `https://github.com/cjones6`

Education

University of Washington—Seattle, WA   Fall 2014–Summer 2020
- Ph.D. in Statistics (Machine Learning and Big Data track)
  Dissertation: *Representation Learning for Partitioning Problems*
  Advisor: Zaid Harchaoui

The Pennsylvania State University—University Park, PA   Fall 2010–Spring 2014
- M.A. in Economics
  Master's paper: *Exchange Rate Pass-Through: Evidence from China*
  Advisor: Kala Krishna
- B.S. in Mathematics, *with Highest Distinction*
- B.S. in Statistics, *with Highest Distinction*
- B.S. in Economics, *with Highest Distinction*

Research

École polytechnique fédérale de Lausanne   Fall 2020–Present
Swiss Data Science Center—Lausanne, VD, Switzerland
Senior Data Scientist
- Developing a method for tracking neurons in videos of freely-moving *C. elegans*
- Modeling the behavior of Chinese exporters using Chinese production and customs data
- Developing algorithms for automated preprocessing of Swiss weather station data
- Evaluating project proposals
- Interviewing job candidates

University of Washington   Fall 2016–Summer 2020
Department of Statistics—Seattle, WA, USA
Research Associate
Supervising faculty: Zaid Harchaoui
- Developed approaches to performing classification and change-point estimation that learn feature representations and work with any ratio of labeled to unlabeled data.
- Designed a change-point detection method for structured data with an application in oceanography
- Used kernel-based methods to study convolutional learning architectures

NVIDIA Corporation   Fall 2018
Robotics Research Lab—Seattle, WA, USA
Robotics Research Intern
Supervising researcher: Dieter Fox
- Developed pose estimation methods for high-resolution RGB images

University of Washington   Summer 2016
Institute for Health Metrics and Evaluation—Seattle, WA, USA
Student Assistant
Supervising faculty: Abraham Flaxman and Sham Kakade

- Used canonical correlation analysis to predict which patients who develop diverticulitis will go on to get elective surgery
- Solved a sparse generalized eigenvector problem to discover the differences between patients who did and did not get elective surgery

University of Washington   Summer 2015

Applied Physics Lab—Seattle, WA, USA

Research Associate

Supervising faculty: Caren Marzban

- Implemented clustering methods for analyzing the effects of parameters used in weather forecasts on the predicted weather maps
- Developed a method based on the idea of optimal transportation distance for comparing how well forecasts predict rain based on a comparison of weather maps

Oak Ridge National Laboratory   Summer 2013 and Summer 2014

Cyber and Information Security Research Group—Oak Ridge, TN, USA

Higher Education Research Experiences (HERE) Program Participant

Supervising researcher: Robert Bridges

- Contributed code to a project labeling entities in text using knowledge from structured fields
- Aided in the development of code that uses a log-linear model to label entities in text using training data generated by the labeling technique above
- Designed and developed a bootstrapping algorithm that ingests raw text documents generated from blogs and news articles, labels entities in them, and then extracts relevant relations

The Pennsylvania State University   Summer 2011–Spring 2014

Department of Economics—University Park, PA, USA

Undergraduate Research Assistant

Supervising faculty: Kala Krishna

- Performed exploratory data analysis on Turkish college entrance exam data to look for differences between the characteristics of students who take the exam the first time and those who retake it many times
- Performed exploratory data analysis on Chinese production and customs data for projects related to Chinese trade policies
- Assisted in checking code for a project analyzing when multi-product exporters introduce new products
- Provided assistance with writing papers in areas including international trade, the economics of education, development economics, and macroeconomics
- Completed master's paper titled "Exchange Rate Pass-Through: Evidence from China", which used a linear model to study the effect of changes in exchange rates on the prices of goods China exports

The Pennsylvania State University   Spring 2013

Department of Economics—University Park, PA, USA

Undergraduate Research Assistant

Supervising faculty: Saroj Bhattarai and Michal Fabinger

- Gathered financial data to study financial crises and contagion
- Analyzed data by creating a motion chart visualizing the trends in the type and frequency of financial crises across time and by geographic location
- Read papers and discussed potential research ideas

Papers

- **Corinne Jones**, Mahsa Barzegar Keshteli, Alice Gross, Guillaume Obozinski, and Sahand Jamal Rahi (2023). A Graph Matching Approach to Tracking Neurons in Freely-Moving *C.*

o *elegans. Submitted.*

o Core Francisco Park, Mahsa Barzegar Keshteli, Kseniia Korchagina, Ariane Delrocq, Vladislav Susoy, **Corinne Jones**, Aravinthan D. T. Samuel, and Sahand Jamal Rahi (2023). Automated neuron tracking inside moving and deforming *C. elegans* using deep learning and targeted augmentation. Accepted at *Nature Methods.*

o Peter Egger and **Corinne Jones** (2023). Co-Exportation of Products by Multi-Product Firms. *Submitted.*

o **Corinne Jones**, Vincent Roulet, and Zaid Harchaoui (2023). Revisiting Convolutional Neural Networks from the Viewpoint of Kernel-Based Methods. *Journal of Computational and Graphical Statistics*, 32:4, 1237-1247.

o **Corinne Jones**, Vincent Roulet, and Zaid Harchaoui (2022). Discriminative Clustering with Representation Learning with any Ratio of Labeled to Unlabeled Data. *Statistics and Computing* 32(1), 17.

o Vincent Roulet, **Corinne Jones**, and Zaid Harchaoui (2022). A Representation-Focused Training Algorithm for Deep Networks. *IEEE Data Science & Learning Workshop.*.

o **Corinne Jones**, Sophie Clayton, François Ribalet, E. Virginia Armbrust, and Zaid Harchaoui (2021). A Kernel-Based Change Detection Method to Map Shifts in Phytoplankton Communities Measured by Flow Cytometry. *Methods in Ecology and Evolution*, 12, 1687– 1698, 2021.

o **Corinne Jones** and Zaid Harchaoui (2020). End-to-End Learning for Retrospective Change-Point Estimation. In *Proceedings of the IEEE International Workshop on Machine Learning for Signal Processing*.

o Caren Marzban, **Corinne Jones**, Ning Li, and Scott Sandgathe (2018). On the Effect of Model Parameters on Forecast Objects. *Geoscientific Model Development*, 11, 1577–1590

o Robert A. Bridges, Kelly M.T. Huffer, **Corinne L. Jones**, Michael D. Iannacone, John R. Goodall (2017). Cybersecurity Automated Information Extraction Techniques: Drawbacks of Current Methods, and Enhanced Extractors. *International Conference on Machine Learning and Applications*.

o **Corinne Jones**, Sham Kakade, Lucas Thornblade, David Flum, and Abraham Flaxman (2016). Canonical Correlation Analysis for Analyzing Sequences of Medical Billing Codes. *NIPS Workshop on Machine Learning for Health*.

o **Corinne Jones**, Robert Bridges, Kelly Huffer, and John Goodall (2015). Towards a Relation Extraction Framework for Cyber-Security Concepts. *Cyber and Information Security Research Conference*.

o Robert Bridges, **Corinne Jones**, Michael Iannacone, Kelly Testa, and John Goodall (2014). Automatic Labeling for Entity Extraction in Cyber Security. *International Conference on Cyber Security*.

Talks and Poster Presentations

o Peter Egger and **Corinne Jones** (2023). Co-Exportation of Products by Multi-Product Firms. *Royal Economic Society Annual Conference.*

o Peter Egger and **Corinne Jones** (2023). Co-Exportation of Products by Multi-Product Firms. *Workshop on International Trade and Multilateralism.*

o Peter Egger and **Corinne Jones** (2022). Co-Exportation of Products by Multi-Product Firms. *European Trade Study Group Conference.*

o **Corinne Jones**, Mahsa Barzegar Keshteli, Alice Gross, Benjamín Bejar Haro, Guillaume Obozinski, and Sahand Rahi (2022). Tracking Neurons in Videos of *C. elegans*. *SDSC – Swiss-Prot Workshop.*

o **Corinne Jones**, Vincent Roulet, and Zaid Harchaoui (2019). Learning Feature Representations for Discriminative Clustering with Limited Supervision. *Women in Machine Learning Workshop.*

- **Corinne Jones**, Sophie Clayton, François Ribalet, Zaid Harchaoui, and E. Virginia Armbrust (2018). Detecting Community Shifts in Phytoplankton Populations using Statistical Learning. *Ocean Sciences Meeting*.
- **Corinne Jones**, Sophie Clayton, François Ribalet, Zaid Harchaoui, and E. Virginia Armbrust (2017). Detecting Community Shifts in Phytoplankton Populations using Statistical Learning. *Moore-Sloan Data Science Summit*.

Computing skills

Programming: Python, including PyTorch (current), MATLAB (past), C, C++ (coursework)

Statistical Software: R, Stata (past), Minitab, SAS (coursework)

Other: AWS EC2 (current), Mathematica (past), Hadoop/MapReduce, SQL (coursework)

Contributions:
- Chapydette: Python package for change-point estimation
- XSDC: Python package for learning feature representations with any ratio of labeled to unlabeled data
- YesWeCKN: Python package for convolutional kernel networks

Languages

English (native)

French (B1/B2)

Honors

University of Washington
- ASA Computing/Graphics Student Paper Award for the paper "End-to-End Statistical Learning, with or without Labels"
- Dorothy M. Gilford Teaching Award

The Pennsylvania State University
- Student Marshal, Department of Economics
- James Rodgers Award for outstanding senior major in economics
- William B. Forest Honors Scholarship in Mathematics
- Evan Pugh Scholar Award
- Jabir Shibley Memorial Award for outstanding achievement in mathematics
- Monroe Newman Award for outstanding junior major in economics
- Department of Economics Undergraduate Award
- Phi Beta Kappa
- President's Freshman Award

Teaching

Statistics Department, University of Washington   Fall 2014–Spring 2020
- Teaching Assistant for *Principles of Statistical Reasoning* (x3) for instructors Ranjini Grove and Anne Wagner
    - Led two quiz sections per week, graded exams, held office hours
- Teaching Assistant for *Statistical Methods in Engineering and Science* (x5) for instructors Lyndia Brumback and Caren Marzban
    - Led one quiz section per week, helped create quizzes and write homework solutions, graded quizzes and exams, held office hours
- Teaching Assistant for *Statistical Machine Learning for Data Scientists* (x4) for instructor

Zaid Harchaoui
- Created lab materials in Jupyter notebooks for each week that explained and illustrated the weekly topics, held lab sessions, created Kaggle competitions, helped develop homework assignments, wrote solutions to the homework assignments and exams, graded homework and exams, held office hours, answered students' questions on the course website, lectured when the instructor was sick

Mathematics Department, The Pennsylvania State University　　Fall 2012–Spring 2014
  ○ Learning Assistant for *Calculus I* (Fall) and *Calculus II* (Spring)

Mathematics Department, The Pennsylvania State University　　　　　Fall 2010
  ○ Grader for two sections of *Ordinary and Partial Differential Equations*

Service

  ○ Co-organizer of the SDSC weekly internal seminar series　　　　　　　　　2021
  ○ Builder and administrator of a GPU cluster　　　　　　　　　　　　　　2017-2020
  ○ Member of the Statistics Department Diversity Committee　　　　　　　2018-2019
  ○ Creator and co-instructor of a practical session for the Foundations of Data　　2018
    Science NSF TRIPODS summer school
  ○ Co-organizer of the Women in Biostatistics and Statistics faculty lunch series　2018
  ○ Volunteer for the University of Washington Women in Data Science Conference　2018
  ○ Webmaster for the Algorithmic Foundations of Data Science Institute　　　　2018
  ○ Reviewer of the University of Washington Statistics Department PhD applications　2017