Sebastian Sciarra, PhD

Data Scientist

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sebsciarra
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Education

PhD | **Industrial-Organizational Psychology**
University of Guelph
Sep. 2018–May 2023

MSc | **Cognitive Psychology**
McMaster University
Sep. 2016–June 2018

Honours BSc | **Psychology, Neuroscience & Behaviour**
McMaster University
Sep. 2012–June 2016

Selected whitepapers

The Game of Supervised Machine Learning: Understanding the Setup, Players, and Rules
Published
10 August 2023

The Expectation-Maximization Algorithm: A Method for Modelling Mixtures of Distributions
Published
28 April 2023

Probability, Likelihood, and Maximum Likelihood Estimation
Published
19 March 2023

Profile

Passionate about coding, machine learning, and statistics. Completed my PhD dissertation at the intersection of these fields to address a practical problem in Industrial-Organizational psychology and received the 2022/2023 Canadian Psychological Association Certificate of Academic Excellence for this work. In my dissertation, I coded and ran Monte Carlo simulations on an AWS instance to evaluate the performance of nonlinear longitudinal models. Writes white papers on machine learning topics at sebastiansciarra.com.

Skills

Coding languages
- Python
- R
- SQL
- LaTeX
- Javascript
- HTML
- CSS

IDEs/platforms
- PyCharm
- RStudio
- AWS
- Git
- MySQL

Technical skills
- Data visualization (ggplot2, plotnine)
- Data cleaning (tidyverse, pandas, numpy)
- Machine learning (e.g., regularized regression, decision trees, random forests, mixture models)
- Statistics (e.g., latent variable models, factor analysis, multilevel modelling)

Employment experience

Teaching Assistant **Sep. 2018–May 2023**
University of Guelph
- Created R scripts for assignments and taught labs for the following courses in measurement and statistics:
  - PSYC 3290 (Conducting Statistical Analyses in Psychology)
  - PSYC 3250 (Psychological Measurement)
  - PSYC 6060 (Research Design and Statistics)
  - PSYC 6380 (Psychological Applications of Multivariate Analysis)
- Taught a variety of topics in methdods and statistics (e.g., regression with continuous and categorical [i.e., ANOVA] variables, *p* values, *p* hacking, hierarchical linear modelling, factor analysis, latent variable modelling, etc.)

Graduate Research Assistant **Sep. 2020–Apr. 2021**
University of Guelph (Part-Time)
- Used R to clean data, compute descriptive statistics, and run regression analyses (with categorical and/or continuous variables) for organizational data on turnover, downsizing, and growth

Consultant **Sep. 2020–Dec. 2020**
Geosyntec (Part-Time)
- Worked with a team of graduate students to improve the interview procedure
- Developed customized recommendations to structure the interview procedure so that adverse hiring outcomes were reduced and skills were more rigorously evaluated

Consultant **Jan. 2020–Apr. 2020**
Schema App (Part-Time)
- Worked with a team of graduate students to improve the onboarding of new employees
- Synthesized customized recommendations by using literatures on realistic job previews, goal setting, and mentoring

Data science experience

smltheory **Aug. 2023**
Python package
- Package contains nine modules and 30 functions
- Functions within package simulate data sets and demonstrate propositions of supervised machinelearning propositions (e.g., bias-variance tradeoff, excess risk decomposition)

cobaltResume **May 2023**
R Package
- Automates generation of resumes and cover letters within RStudio
- A template and class file were created (~700 lines of LaTeXcode) to specify a styling template that draws inspiration from the cobalt theme in the RStudio IDE
- R functions were created to easily generate resume entries and merge resume and cover letters into one PDF file

August 2023
Citizenship: Canadian

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sebastiansciarra.com — Mar. 2023
Personal website
- Used HTML, JavaScript, and CSS to create a personal website for writing white papers
- White papers focus on statistics, machine learning, and coding by explaining technical details, providing demonstrations, and conducting simulation experiments
- White papers use code from a variety of languages to explain content. As an example, my post titled "Coding and Visualizing the Expectation-Maximization Algorithm" used R, Python, and CSS code

guelphdown — Mar. 2023
R Package
- Created an R package that automates the generation of theses according to the University of Guelph formatting requirements
- A template and class file were created (~1400 lines of LaTeXcode) to specify formattings for the preamble, body, references, and appendices
- An example of the formatting can be seen in my thesis

nonlinSimsAnalysis — Mar. 2022
R Package
- Package contains 105 functions
- Functions automate the cleaning, analysis, and visualization of large data sets (e.g., 40 000+ rows) for my doctoral dissertation
- The creation of several different types of tables and figures were automated by this package

nonlinSims — Jan. 2022
R Package
- Package contains 30 functions
- Functions run the simulation experiments of my doctoral dissertation
- The peformance of nonlinear longitudinal models are evaluated (e.g., structured latent growth curve models) are evaluated under several conditions

Learning SQL — Mar. 2021
Project
- Went through 16 of 18 chapters from Alan Beaulieu's Learning SQL
- Topics include filtering, querying multiple tables, sets, grouping and aggregates, subqueries, joins, transactions etc.

August 2023
Citizenship: Canadian