

Nicholas, Spyrison, Ph.D.

Biostatistician

Modeling | Dimension Reduction

Monona, WI 53713

☎ (720) 765-1836

✉ spyrison@gmail.com

🌐 nspyrison.netlify.com/

🐙 github.com/nspyrison

🌐 linkedin.com/in/nspyrison/



Career Summary

A published data scientist with years of experience in hypothesis testing, experimental design, enterprise-level reporting, and machine learning on a diverse range of data. Conducted end-to-end development on multiple R packages delivering open-source solutions to the community. Nick frequently acts as a mentor in sharing best practices with the team resulting in continuous improvement, performance code, and increase project completion.

Employment History

- | | | |
|-------------------|--|--------------------------|
| 03/2023 – Present | Biostatistician, IFF – Internation Flavors and Fragrances, | Madison, WI. |
| | <ul style="list-style-type: none">◦ Strain Stability interactive applications and report informing product pricing for plant sales in tens of millions monthly◦ Senior statistical modeling, interpretation, and data visualization consulting for >300 employees on-site | |
| 06/2022 – 01/2023 | Research Data Scientist, University of Queensland, | Clayton, VIC, Australia. |
| | <ul style="list-style-type: none">◦ Delivered batteries of models varying cohorts, model formulas, and hyperparameters tuning on patient-level health data | |
| 07/2018 – 10/2022 | Research Officer, Monash University, | Clayton, VIC, Australia. |
| | <ul style="list-style-type: none">◦ <i>Data Fluency Instructor:</i> Lead workshops (10-30 people) on statistical modeling, R, Python, PowerBI, and Git◦ <i>Teaching Assistant:</i> Post-grad tutorials on high-dimensional data analysis, post-grad data visualization, and undergrad economic statistics◦ <i>Research Officer:</i> Extract, transform, load, and analysis of census and text data | |
| 12/2016 – 1/2018 | Business Intelligence Developer, CPI Card Group, | Denver, CO. |
| | <ul style="list-style-type: none">◦ SQL reporting; across 4 reporting platforms and 4 servers◦ Mentor junior teammates and improve query performance◦ Triage and transfer 30+ legacy reports to modern reporting solution◦ Developed supply chain report tracking a cost reduction of more than \$4M USD | |
| 07/2015 – 10/2016 | Business Intelligence Developer, UDR Real Estate Investment Trust, | Denver, CO. |
| | <ul style="list-style-type: none">◦ Transition enterprise reporting from WebFOCUS to SSRS – 10+ reports | |
| 11/2014 – 04/2015 | Business Intelligence Analyst, Heartland Financial USA, | Dubuque, IA. |
| | <ul style="list-style-type: none">◦ Financial reporting for internal and external audiences | |
| 02/2013 – 05/2014 | Delivery Analyst, IBM – International Business Machines, | Dubuque, IA. |
| | <ul style="list-style-type: none">◦ Automated ETL with VBA macros for about 0.5 FTE savings across the team◦ KPI reporting to teams and management | |
| 01/2010 – 08/2012 | Laboratory Technician, The Ames Laboratory & Iowa State University, | Ames, IA. |

Authored Software (R Packages)

- 09/2022 **cheem** – Novel analysis and interactive visual for exploring ML interpretability [Link](#)
10/2020 **spinifex** – ggplot2-like API for composing and exporting animated projections [Link](#)

Education

- 02/2018 – 06/2022 **Ph.D. Information Technology & Statistics**, Monash University, Clayton, VIC,
Dimension reduction, interactive and animated data visualization, machine learning
Thesis: *Interactive and Dynamic Visualization of High-dimensional Data*.
 - Novel interoperability visualization methods for **Fit random forest models on several contemporary datasets** also shown to generalize to other models with **SVM and XGboost**
 - Utilized **SHAP and LIME local explanations** to explore local linear variable importance to understand large residuals in the models
 - Created **novel interactive animation** facilitating this exploration in a web app
 - **Authored R packages** on CRAN as free and open source work to improve reproducibility and contribute back to the community
- 08/2008 – 05/2012 **B.Sc. Statistics**, Iowa State University, minors in Physics and Mathematics, Ames, IA.

Technical Skills

Programs R, SQL, Python, Git, GitHub, L^AT_EX, Excel, VBA
Packages ggplot2, tidyverse, plotly, shiny, tidymodels, caret, keras, pandas, scikit-learn
Reporting SSRS, Tableau, PowerBI, Rmarkdown, Shiny

Awards and Honors

- 06/2022 Invited article for INFORM's OR/MS Tomorrow [Link](#)
04/2022 RStudio: March "Top 40" New CRAN Packages [Link](#)
05/2022 Monash Postgraduate Publication Award
10/2020 Melbourne Datathon 2020 – **1st place of several hundred entries** [Link](#)
 - *Changes to Victorian Intraday Electricity Demand Following COVID-19 Restrictions*

11/2018 ACEMS Impact and Engagement Award
07/2018 UseR2018 Datathon – 3rd place
 - Spatio temporal animated visualization of over 7 million avian sightings

2018 – 2022 Faculty Graduate Research Scholarship
2018 – 2022 Co-funded Monash Graduate Scholarship
05/2012 Nominated for Student Employee of the Year
05/2011 Nominated for Student Employee of the Year
05/2008 American Legion Award

Publications

Doctoral Thesis

- [1] Nicholas Spyrison. "Interactive and dynamic visualization of high-dimensional data". en. PhD thesis. Monash University, Mar. 2022. URL: https://github.com/nspyrison/thesis_ns/blob/master/docs/thesis_ns.pdf.

Journal Articles

- [2] Marina Wainstein et al. "Association of country income level with the characteristics and outcomes of critically ill patients hospitalized with acute kidney injury and COVID-19". In: *Kidney International Reports* (2023).

- [3] Nicholas Spyrisson, Dianne Cook, and Przemyslaw Biecek. "Exploring Local Explanations of Nonlinear Models Using Animated Linear Projections". In: *arXiv preprint, submitted to JMLR* (2023). DOI: 10.48550/ARXIV.2205.05359. URL: <https://arxiv.org/abs/2205.05359>.
- [4] Nicholas Spyrisson, Dianne Cook, and Kim Marriott. "A Study on a User-Controlled Radial Tour for Variable Importance in High-Dimensional Data". In: *arXiv preprint, submitted to TVCG* (Dec. 2022). arXiv:2301.00077 [stat]. DOI: 10.48550/arXiv.2301.00077. URL: <http://arxiv.org/abs/2301.00077> (visited on 01/06/2023).
- [5] Stuart Lee et al. "The state-of-the-art on tours for dynamic visualization of high-dimensional data". en. In: *WIREs Computational Statistics* (Dec. 2021), p. 21. ISSN: 1939-0068. DOI: 10.1002/wics.1573. URL: <https://onlinelibrary.wiley.com/doi/pdf/10.1002/wics.1573> (visited on 12/10/2021).
- [6] Nicholas Spyrisson and Dianne Cook. "spinifex: an R Package for Creating a Manual Tour of Low-dimensional Projections of Multivariate Data". en. In: *The R Journal* 12.1 (2020), p. 243. ISSN: 2073-4859. DOI: 10.32614/RJ-2020-027. URL: <https://journal.r-project.org/archive/2020/RJ-2020-027/index.html> (visited on 10/16/2020).

Software (R Packages)

- [7] Nicholas Spyrisson. *cheem: Interactively Explore the Support of Local Explanations of a Model*. 2022. URL: <https://CRAN.R-project.org/package=cheem>.
- [8] Nicholas Spyrisson and Dianne Cook. *spinifex: Manual Tours, Manual Control of Dynamic Projections of Numeric Multivariate Data*. 2021. URL: <https://CRAN.R-project.org/package=spinifex>.

Conference Proceedings

- [9] Nicholas Spyrisson. "Animated Linear Projections". In: *Summer 2022*. INFORMS, May 2022.
- [10] Nicholas Spyrisson, Benjamin Lee, and Lonni Besançon. "'Is IEEE VIS *that* good?' On key factors in the initial assessment of manuscript and venue quality". In: *IEEE AltVis Workshop*. type: article. July 2021. DOI: 10.31219/osf.io/65wm7. URL: <https://osf.io/65wm7/> (visited on 08/21/2021).
- [11] Madeleine Barrow, Jieyang Chong, and Nicholas Spyrisson. "Changes to Victorian Intraday Electricity Demand Following COVID-19 Restrictions". en. In: *Melbourne Datathon 2020, Insights category*. Oct. 2020, p. 4. URL: https://github.com/nspyrisson/melb_datathon2020/blob/master/_paper/paper.pdf (visited on 02/09/2022).
- [12] Nicholas Spyrisson. "spinifex: visualizing local structure of higher dimensions". en. In: *Brisbane, Australia, 2018*. URL: <https://user2018.r-project.org/poster/> (visited on 07/28/2020).

References available on request.