

PHILIPP LUKAS GREGOR BURCKHARDT

PERSONAL INFORMATION

Born in Germany, 23 January 1990

email pgb@andrew.cmu.edu

website <http://www.philipp-burckhardt.com>

POSITIONS

2022- Carnegie Mellon University

Director of E-Learning, Analytics, and Technology @ Department of Statistics & Data Science.

Director of E-Learning for Data Science @ Dietrich College.

Special Faculty. Leading development of the Integrated Statistics Learning Environment (ISLE). See <http://stat.cmu.edu/isle> for additional information.

2019-2022 Carnegie Mellon University

Postdoctoral Researcher in Statistics & Data Science. Advisors:
Prof. Christopher R. GENOVESE, Prof. Rebecca NUGENT

EDUCATION

2013-2019 Carnegie Mellon University

Heinz College · Department of Statistics & Data Science

Thesis: *Building the Data Science Laboratory. A Web-Based Framework for Modern Statistics* (<https://bit.ly/2vM4t3n>)

Advisors: Prof. Alexandra CHOULDECHOVA, Prof. Christopher R. GENOVESE,
Prof. Rebecca NUGENT, Prof. Rema PADMAN, Prof. Howard SELTMAN

2012-2013 University of Oxford

· Department of Statistics · *Graduated with Distinction*

· Foreign Exchange Scholarship of the German National Academic Foundation

Thesis: *What's the news?*

Advisor: Dr. Geoff NICHOLLS

2009-2012 Humboldt-University of Berlin

· School of Business and Economics

· Price of the Economic Society at Humboldt-University of Berlin for the best graduation of the year 2012 (GPA 1.1)

· Scholar of the German National Academic Foundation (since 2011)

Thesis: *The Impact of System Risk on Company-Specific Risk*

Advisor: Prof. Melanie SCHIENLE

GRANTS

Integrating a Statistical Learning Environment into the Writing Classroom

ProSEED/Simon Initiative Seed Grant. Submitted. David West Brown (Co-PI),
Rebecca Nugent (Co-PI), Philipp Burckhardt (Co-PI)

Data Analysis Think-Alouds: Investigating Student Engagement and Workflow on an Online Interactive Statistical Analysis Tool

ProSEED/Simon Initiative Seed Grant. Awarded May 2018. \$15,000. Rebecca
Nugent (PI) and Philipp Burckhardt (Investigator).

Using Interactive Lab Activities To Improve Statistics Education

ProSEED/Simon Initiative Seed Grant. Awarded April 2016, \$14,084. Alexandra
Chouldechova (PI), Christopher R. Genovese (PI) and Philipp Burckhardt
(Investigator).

RESEARCH

Publications

*PhD Statistics,
MPhil Public Policy
& Management*

*MSc Applied
Statistics*

BSc Economics

2022 Think-aloud interviews: A tool for exploring student statistical reasoning

Journal of Statistics and Data Science Education.

Authors: Alex REINHART, Ciaran EVANS, Amanda LUBY, Josue ORELLANA, Mikaela MEYER, Jerzy WIECZOREK, Peter ELLIOTT, Philipp BURCKHARDT, Rebecca NUGENT

2021 Teaching Statistical Concepts and Modern Data Analysis with a Computing-Integrated Learning Environment

Journal of Statistics Education.

Authors: Philipp BURCKHARDT, Rebecca NUGENT, Christopher R. GENOVESE

2020 Informing the Design of e-Learning Lessons on Data Science through Think-Aloud Experiments with Healthcare Professionals Workshop Paper. *IEEE ICHI 2020 Conference Proceedings.*

Authors: Philipp BURCKHARDT, Lindsay K. GRAFF, Divya VENKAT, Shiv DUA, Rema PADMAN

2019 Mining of Clinical Narratives: Extending an Analysis of Chronic Kidney Disease Pathways

Conference paper. Proceedings of the Twenty-Ninth Workshop on Information Technologies and Systems (WITS), December 2019, Munich, Germany.

Authors: Philipp BURCKHARDT, Prof. Rema PADMAN, Prof. Daniel NAGIN

2018 A Deep Learning Architecture for De-identification of Patient Notes: Implementation and Evaluation

Conference paper. Proceedings of the Twenty-Eighth Workshop on Information Technologies and Systems (WITS), December 2018, Santa Clara, CA. **Finalist for the WITS 2018 Best Paper Award.**

Authors: Kaung KHIN, Philipp BURCKHARDT, Prof. Rema PADMAN

2018 TeachIT: Turning the Classroom into a Research Laboratory via Interactive E-Learning Tools.

Invited paper. "Looking back, looking forward." Proceedings of the Tenth International Conference on Teaching Statistics (ICOTS10, July, 2018), Kyoto, Japan.

Authors: Philipp BURCKHARDT, Prof. Alexandra CHOULDECHOVA, Prof. Rebecca NUGENT

2018 Multi-Trajectory Modeling to Predict Acute Kidney Injury in Chronic Kidney Disease Patients

American Medical Informatics Association (AMIA) Annual Symposium Proceedings, San Francisco.

Authors: Philipp BURCKHARDT, Prof. Daniel NAGIN, Prof. Rema PADMAN, Vijaya PRIYA RAMA VIJAYASARATHY

2017 deidentify

American Medical Informatics Association (AMIA) Annual Symposium Proceedings, Washington DC.

Authors: Philipp BURCKHARDT, Prof. Rema PADMAN

2017 Querying Online Self-help Forums for Chronic Kidney Disease with Ontology-based Text Mining

Proceedings of the 12th INFORMS Workshop on Data Mining and Decision Analytics, Houston.

Authors: Philipp BURCKHARDT, Prof. Rema PADMAN

2017 Improving Statistics Education Through Interactive Learning Tools

Joint Statistical Meetings (JSM) Proceedings, Baltimore.

Authors: Philipp BURCKHARDT, Prof. Alexandra CHOULDECHOVA

2016 Multi-Trajectory Models of Chronic Kidney Disease Progression

American Medical Informatics Association (AMIA) Annual Symposium Proceedings, Chicago, November 2016. **Student Paper Competition Finalist & 2nd place KDDM Student Paper Award.**

Authors: Philipp BURCKHARDT, Prof. Daniel NAGIN, Prof. Rema PADMAN

2015 Analyzing Self-Help Forums with Ontology-Based Text Mining: An Exploration in Kidney Space
American Medical Informatics Association (AMIA) Annual Symposium Proceedings, San Francisco, November 2015.
Authors: Philipp BURCKHARDT, Prof. Rema PADMAN

Popular Press /
Others

2018 Echtzeit-Statistik in JavaScript mit *stdlib* erstellen / Real-Time Statistics with *stdlib*.

Article for *entwickler.de*. Authors: Philipp BURCKHARDT, Athan REINES. URL: <https://bit.ly/2L610EI>

Working Papers

2013- Locating Economic Perceptions: the Geographical Distribution of Responses to Economic News

Authors: Philipp BURCKHARDT, Prof. Raymond DUCH, Akitaka MATSUO

2012- A REX for Banks

Authors: Philipp BURCKHARDT, Prof. Melanie SCHIENLE, Julia SCHAUMBURG

Workshops &
Tutorials

Data Science for Healthcare via an E-Learning Statistics Platform

IEEE ICHI 2022 Half-Day Tutorial, Rochester, June 2022 (together with Saba Al-Sayouri & Rema Padman)

Data Science and Knowledge Transfer for 21st Century Health-Care Delivery

Organizer of IEEE ICHI 2020 Half-Day Workshop, Oldenburg, June 2020 (postponed to November due to Covid19), with Rema Padman

Teaching and Researching Data Science with ISLE

Demo at the ADSA (Academic Data Science Alliance) Annual Meeting, October 2020, with Rebecca Nugent and Jamic McGovern

eCOTS Regional Conference Pennsylvania

Organizer of regional conference at CMU, Pittsburgh, May 2020 (postponed due to COVID-19, virtual meetings instead)

Presentations

Incorporating Data Analysis and Writing in Introductory Statistics

Presentation at the Annual Conference of the American Mathematical Association of Two-Year Colleges, October 2021, Phoenix, Arizona. Jointly with Rebecca Nugent and Gordon Weinberg.

Supporting and Studying Collaborative Data Analysis and Writing in Statistics and Data Science Using the Integrated Statistics Learning Environment

Invited e-Poster Session at the Joint Statistical Meetings (JSM), August 2021. Presented by Rebecca Nugent, joint work with David Brown and Mike Laudenschlager.

Teaching and Researching Data Science with ISLE

Demo and Tutorial at the 2020 ADSA Annual Meeting, jointly with Rebecca Nugent

Data Science and Knowledge Transfer for 21st Century Health-Care Delivery

Organizer of and presenter at said workshop at the IEEE ICHI 2020 conference, June 2020 (postponed to November due to Covid19), jointly with Rema Padman

Personalized Learning Environments for Student-Centric STEM

Video presentation with Rebecca Nugent. Winner of the **Idea Competition** of the Symposium on Imagining the Future of Undergraduate STEM Education by the National Academies. https://www.youtube.com/watch?v=Yv8mTG_MU1M

ISLE: An Integrated Learning (and Research) Environment for Statistics & Data Science

Presentation at the Joint Statistical Meetings, Philadelphia, August 2020, jointly with Rebecca Nugent and Christopher R. Genovese

Uncovering and Utilizing Data Analysis Workflows - Data Provenance in ISLE

Presentation at the Joint Statistical Meetings, Philadelphia, August 2020, joint work with Rebecca Nugent and Christopher R. Genovese

The Interactive Lecture

Poster Presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2020, joint work with Rebecca Nugent and Christopher R. Genovese

Open-Ended Data Analysis Collaboration in the Introductory Statistics Course

Poster Presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2020, joint work with Rebecca Nugent and Christopher R. Genovese

Discipline-Specific Activities in Introductory Statistics

Poster Presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2020, joint work with Ciaran Evans, Rebecca Nugent, and Gordon Weinberg

Exploring how students reason about correlation and causation

Poster Presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2020, joint work with Ciaran Evans, Alex Reinhart, Rebecca Nugent, and Gordon Weinberg

stdlib - Open Source Directions

Quansight Open Source Directions Seminar on stdlib, jointly with Athan Reines, November 2019. <https://www.quansight.com/post/episode-33-stdlib>

Mining of Clinical Narratives: Extending an Analysis of Chronic Kidney Disease Pathways

Paper presentation at 29th Workshop on Information Technologies and Systems, December 2019, Munich, Germany, joint work with Rema Padman and Daniel Nagin

Writing practical pre- and post-tests for concepts in introductory courses

Presentation at Teaching & Learning Summit, Pittsburgh, November 2019, joint work with A Reinhart, P W Elliott, C Evans, A Luby, M Meyer, J Orellana, R Yurko, G Weinberg, J Wiecezorek, R Nugent

Collaborative Data Analysis with ISLE

Presentation at Teaching & Learning Summit, Pittsburgh, November 2019, joint work with Christopher R. Genovese and Rebecca Nugent

Incorporating Real-Time Clustering of Student Responses into an E-Learning System

Paper presentation at the Joint Statistical Meetings, Denver, July-August 2019, joint work with Rebecca Nugent, Christopher R. Genovese, and Ronald J. Yurko

"Many Students, One Dataset": Using ISLE to Teach Reproducibility and the Impact of Data Analysis Decisions on Conclusions

USCOTS Breakout Session, May 2019, joint work with Rebecca Nugent, Francis R. Kovacs, Ron Yurko

Using think-aloud interviews to assess student understanding of statistics concepts

USCOTS Breakout Session, May 2019, joint work with A Reinhart, P W Elliott, C Evans, A Luby, M Meyer, J Orellana, R Yurko, G Weinberg, J Wiecezorek, R Nugent

Predicting Acute Kidney Injury in Chronic Kidney Disease Patients via Multi-Trajectory Modeling

Poster presentation at the CMU Innovation with Impact Exhibition, April 2019, joint work with Rema Padman, Daniel Nagin, Vijaya Priya Rama Vijayasathy

ISLE: A Browser-Based E-Learning Platform for Teaching Statistics & Data Analysis While Learning How Students Approach It

CAUSE Webinar Series, December 2018, joint work with Francis R. Kovacs, Rebecca Nugent, Ronald J. Yurko. URL: <https://bit.ly/2RP2Bwu>

Multi-Trajectory Modeling to Predict Acute Kidney Injury in Chronic Kidney Disease Patients

Paper presentation at the AMIA 2018 Annual Symposium, San Francisco, November 2018, joint work with Rema Padman, Daniel Nagin, Vijaya Priya Rama Vijayasathy

First Words - How to get rid of a thousand apps and regain your voice

Presentation at the International JavaScript Conference (iJS), Munich, October 2018

Techniques for Analyzing Large Datasets with Node.js

Presentation at the International JavaScript Conference (iJS), Munich, October 2018

From Data Import to Poster Export: Data Analysis with ISLE

Presentation at Teaching & Learning Summit, Pittsburgh, November 2018, joint work with Francis R. Kovacs and Rebecca Nugent

Developing an assessment for concepts in introductory statistics and data science Presentation at Teaching & Learning Summit, Pittsburgh, November 2018, joint work with Elliott, P., Evans, C., Lin, K., Luby, A., et al. **(People's Choice Award for the best poster presentation)**

How students make sense of data on an e-learning platform

Presentation at the Joint Statistical Meetings, Vancouver, July-August 2018, joint work with Rebecca Nugent and Christopher R. Genovese. **2018 SPEED Session Award.**

TeachIT: Turning the Classroom into a Research Laboratory via Interactive e-Learning Tools

Paper presentation at 10th International Conference on Teaching Statistics, Kyoto, July 2018, joint work with Alexandra Chouldechova and Rebecca Nugent

Detecting Data Analysis Patterns in Text and Graphs to Characterize Student Learning in an Introductory Statistics & Data Science Course

Presentation at Classification Society Annual Meeting, June 2018, by Ron Yurko and Rebecca Nugent

Learning Data Science with the Help of a Data Exploration Tool

Poster presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2018, joint work with Rebecca Nugent and Christopher R. Genovese

Identifying misconceptions of introductory data science using a think-aloud protocol

Poster presentation at the Electronic Conference On Teaching Statistics (eCOTS), May 2018, joint work with S Hyun, P Elliott, C Evans, K Lin, A Luby, C P Makris, J Orellana, A Reinhart, J Wiczorek, R Yurko, G Weinberg, & R Nugent

E-Learning Tools for Teaching Predictive Analytics and Data Science

Presentation at the POMS 29th Annual Conference, Houston, May 2018, joint work with Rema Padman

De-identification of personal health identifiers in medical records

Poster presentation at the CMU Innovation with Impact Exhibition, April 2018, joint work with Rema Padman

Introduction to stdlib-js

Talk at the International JavaScript Conference (iJS), London, April 2018

The JavaScript & Node.js Data Science Survival Kit

Power workshop (together with Athan Reines) at the International JavaScript Conference (iJS), London, April 2018

deidentify

Presentation at the AMIA 2017 Annual Symposium, Washington DC, November 2017, joint work with Rema Padman

deidentify

Presentation at the 8th Conference on Health IT and Analytics (CHITA), November 2017, joint work with Rema Padman

Exploratory Data Analysis with JS

Talk at the International JavaScript Conference (iJS), Munich, October 2017

Best Practices for Writing JS Libraries

Talk at the International JavaScript Conference (iJS), Munich, October 2017

Querying Online Self-help Forums for Chronic Kidney Disease with Ontology-based Text Mining

Paper presentation at the 12th INFORMS Workshop on Data Mining and Decision Analytics, Houston, October 2017, joint work with Rema Padman

The ISLE Experience: Enhancing Classroom Instruction with Interactive e-Learning Tools

Presentation at Teaching & Learning Summit, Pittsburgh, October 2017, joint work with Alexandra Chouldechova and Rebecca Nugent

Assessment of Student Learning and Misconception Identification in Intro Statistics

Poster at Teaching & Learning Summit, Pittsburgh, October 2017, joint work with Peter Elliott, Sangwon Hyun, Kevin Lin, Amanda Luby, Christopher Peter Makris, Josue Orellana, Alex Reinhart, Jerzy Wiczorek, Gordon Weinberg & Rebecca Nugent

Data Science Survival Kit

Workshop at Node.js Interactive US (together with Athan Reines), Vancouver, October 2017

Improving statistics education through interactive learning tools

Paper presentation at the Joint Statistical Meetings, Baltimore, July-August 2017, joint work with Alexandra Chouldechova

The JavaScript Data Science Survival Kit

Workshop at FullStack conference on JavaScript, Node and Internet of Things (together with Athan Reines), London, July 2017

Monitoring and Analyzing User Behaviour

Talk at FullStack conference on JavaScript, Node and Internet of Things, London, July 2017

Understanding Chronic Kidney Disease Progression through Multi-Trajectory Modeling

Talk at the POMS 28th Annual Conference, Seattle, May 2017

How to Mislead the Public

Talk at the csv,conf,v3 conference, Portland, May 2017

Real-Time Machine Learning with Node.js

Talk at the Node.js Interactive US conference, Austin, November 2016. URL: <https://bit.ly/2y97dsV> (> 45,000 views on YouTube)

Multi-Trajectory Models of Chronic Kidney Disease Progression

Talk at the AMIA 2016 Annual Symposium, Chicago, November 2016, joint work with Daniel Nagin and Rema Padman

Real-Time Machine Learning with Node.js

Talk at the EmpireNode conference, New York, November 2016

Text Mining with Node.js

Talk at the Node.js Interactive Europe conference, Amsterdam, September 2016. URL: <https://bit.ly/2UvZjQy>

Workshop: Interactive Numeric Computing with Node.js and JavaScript

Assistance for a workshop led by Athan Reines at FullStack conference on JavaScript, Node and Internet of Things, London, July 2016

Tweet as a tool for election forecast

Presented at the third annual meeting of the Asian Political Methodology Society in Beijing, January 2016, joint work with Raymond Duch and Akitaka Matsuo

Analyzing Self-Help Forums with Ontology-Based Text Mining: An Exploration in Kidney Space

Presented at the American Medical Informatics Association (AMIA) Annual Symposium, San Francisco, November 2015, joint work with Rema Padman

Powered by the Web. Harnessing web technologies for large-scale data analysis

Presented at the "From Industrial Statistics to Data Science" conference at the University of Michigan, Ann Arbor, September 2015, joint work with Athan Reines

Tweet as a Tool for Election Forecast: UK 2015 General Election as an Example

Presented at the fifth annual conference of the European Political Science Association (EPSA), Vienna, June 2015 and the annual meeting of the American Political Science Association, San Francisco, September 2015, with Raymond Duch and Akitaka Matsuo

Locating Economic Perception: The Geographical Distribution of Economic Tweets

Presented at the 73rd annual Midwest Political Science Association (MPSA) Conference, Chicago, April 2015, with Raymond Duch and Akitaka Matsuo

Locating Economic Perceptions

Presented at the Asian Political Methodology Meeting, Tokyo, January 2014, with Raymond Duch and Akitaka Matsuo

SOFTWARE

node.js Packages

2016- **stdlib**

Jointly with Athan Reines, development of **stdlib**, a standard library for JavaScript, which includes extensive numerical and statistical computing packages. Covered in **InfoWorld** and **Le Monde Informatique**.

2014- **Published/Maintaining 250+ software modules on npm**

> 8 million downloads per month (see: www.npm-stats.com/Planesifter)

Selection: *ConceptNet*, an interface to the ConceptNet semantic network API. *rstats*, an interface to statistical programming language R. *text-miner*, text mining utilities for processing text corpora and creating document-term matrices. *wordnet-magic*, tools for working with Princeton's lexical database WordNet.

WORK EXPERIENCE

2013 - Teaching Assistant

Carnegie Mellon University

- Spring 2018: 94-842 Programming in R for Analytics
- Fall 2017 - Spring 2019: 36-200 Reasoning with Data (Co-Instructor)
- Spring 2017, Summer 2017 & 2018: 36-200 Reasoning with Data
- Fall 2016: 650-750 Statistical Computing
- Spring 2016: 95-868 Exploring and Visualizing Data
- Spring 2016: 36-220 Engineering Statistics and Quality Control / 36-247 Statistics for Lab Sciences
- Fall 2015, Fall 2016: 90-711 Statistical Methods
- Fall 2014, 2015: 90-905 Statistical Theory for Social and Policy Research
- Fall 2013: 36-309/749 Experimental Design for Behavioral and Social Sciences.

2010-2012 Management Assistant

Ludic Philosophy GmbH & Co. KG

Responsibilities: Accounting, Data Analysis.

COMPUTER SKILLS

<i>Languages</i>	R, JAVASCRIPT, C, C++, HTML, CSS
<i>Software</i>	Git, L ^A T _E X, Microsoft Office
<i>Databases</i>	MySQL, SQLite, mongoDB
<i>Operating Systems</i>	Linux, MacOS, Windows

PROFESSIONAL ORGANIZATION MEMBERSHIPS

- American Medical Informatics Association (AMIA)
- American Statistical Association (ASA)
- Institute of Mathematical Statistics (IMS)
- Institute for Operations Research and the Management Sciences (INFORMS)
- Society for Industrial and Applied Mathematics (SIAM)

ACADEMIC SERVICE

- Reviewer for the AMIA Annual Symposium
- Reviewer for the Journal of Educational and Behavioral Statistics
- Reviewer for the INFORMS Annual Meeting
- Reviewer for the International Conference on Teaching Statistics (ICOTS)
- Reviewer for the Journal of Statistics Education
- Reviewer for the IEEE Internet of Things Journal
- Reviewer for Heliyon

OTHER INFORMATION

<i>Languages</i>	GERMAN · Mothertongue
	ENGLISH · Fluent
	FRENCH · Basic (simple words and phrases only)
	LATIN · Intermediate
	ANCIENT GREEK · Advanced
<i>Interests</i>	Movies · Books · Web Development · Politics · Technology

July 12, 2022