Christopher **Burch**

Data Scientist and Consultant

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Summary

Experienced data scientist, business analyst, and team leader with ten years of experience in complex systems modeling, analysis, and simulation. I take pride in transforming data into business insight and building teams that perform as more than the sum of their parts.

Experience

The MITRE Corporation
Lead Data Scientist *2022 - 2025*

- Developed and validated statistical models to design interventions into social, logistical, and physical engineering problems, with a focus on the modeling and analysis of complex systems.
- Designed, budgeted, staffed, and served as Co-Principal Investigator (PI) for a multi-year research project focused on improving outcomes and efficiency in the US Veterans' Affairs disability awards process.
- Developed models and simulated encouters to help shipping vessels avoid striking whales in major US shipping lanes.
- Presented the findings, recommendations, and the results of complex analysis to a variety of internal and external audiences, including executive-level decison makers.
- Developed company-internal R visualization and data processing packages used by multiple projects across the organization.
- Build, programmed, and analyzed results of an agent-based epidemiologocal simulation, which led to actionable interventions to prevent the spread of disease in commercial agricultural populations.
- Trained data analysts and mentored junior data scientists in statatiscal techniques, complex systems modeling, simulation methods, and data analysis best practices.
- Assisted with reserach design and coded the a comprehensive metaanalysis of Alzheimer's Disease and related dementias (ADRD), projecting expected ADRD burden at the US State and County level.
- Lead a baseline testing team and served as the epidemiology modeling expert for the DARPA Automated Scientific Knowledge Extraction and Modeling (ASKEM) evaluation over three years.
- Developed survey response questions and analyzed results for multiple trageted inteventions into hiring, promotion, and accommodation decisions across multiple US Federal departments.

Grant Leading Technology
Data Scientist and Consultant *2018 - 2022*

- Technical lead for FAA property data visualization, covering more than $9 billion in managed property.
- Built machine learning models to analyze and predict vehicle fleet fuel use, mileage, and accident rates, resulting in improved FAA vehicle training policy.
- Wrote and maintained open-source R packages to interface with existing Federal APIs, improving FAA reporting automation and reducing errors.
- Managed development of the FAA-wide vehicle recall status tracking system, reducing outstanding vehicle recalls by 90%.
- Applied systems theory to model complex interactions between business units, and proposed workflow process improvements based on those models.
- Wrote, built, and administered rollout of a new company-wide employee evaluation system.

Cogentis Therapeutics
Cofounder / Chief Data Officer *2014 - 2018*

- Developed financial models which reduced investor risk and controlled experimental risk for increased stability in the startup ecosystem.
- Created company data standard operating procedures (SOP), code books, and data dictionaries.
- Prepared data visualizations for company communication, publication, and grantwriting.

US Army 20th Special Forces Group
Advanced Skills Instructor *2009 - 2011*

- Senior CQB/Close Combat Instructor for US Army, US Navy, and NATO forces in close quarters combat (CQB), fighting in built-up areas (FIBU), advanced urban combat (SFAUC), and advanced special operations (ASO).
- Lead a team of 5 – 10 junior instructors; responsible for subordinate instruction in firearms and small unit tactics proficiency, range preparation, and field exercise coordination.
- Developed a metrics-based training evaluation system to A/B test multiple techniques.

US Army 10th Special Forces Group
Special Forces Communications NCO *2004 - 2009*

- Trained and advised more than 2,000 foreign military and police force personnel in patrolling, advanced urban combat, marksmanship, and mission planning.
- Participated in more than 250 named missions across Afghanistan, Africa, and Eastern Europe in support of US and NATO counterterrerism efforts.

Technical Skills

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Education

Massachussetts Institute of Technology
MICROMASTERS CERTIFICATE   *2015-2017*

Graduate training in Data, Economics, and Developmental Policy (DEDP)

Johns Hopkins University
MASTER OF BUSINESS ADMINISTRATION   *2013-2015*

Double Specialization in Enterprise Risk Management (ERM) and Marketing

Arizona State University Global Campus
BACHELOR OF ARTS, ORGANIZATIONAL MANAGEMENT   *2011-2013*

- SALUTE National Honors Society

Current Certifications

Certified Professional Property Specialist (CPPS)
NATIONAL PROPERTY MANAGEMENT ASSOCIATION

Lean Six Sigma Yellow Belt
GRANT LEADING TECHNOLOGY

Certified Risk Analyst (CRA)
GLOBAL ACADEMY OF FINANCE AND MANAGEMENT

Memberships

ASTM International
VOTING MEMBER ON SUBCOMMITTEES FOR SAMPLING/STATISTICS, DATA MANAGEMENT,
FLEET MANAGEMENT

National Property Management Association
MEMBER, FEDERAL CHAPTER

Data Science Council of America
MEMBER AT LARGE

Awards

The MITRE Corporation
SPARK AWARD   *2023*

MassChallenge
FINALIST   *2020 & 2016*
- Startup incubator and business model contest. Selected as a Top 20 Finalist, the incubator's highest honor, from more than 500 startups from across the globe.

Neuro StartUp Challenge
1ST PLACE   *2015*

- NIH/Oxbridge funded competition to develop existing NIH patents.

Wake Forest Business School Business Case Competition
1ST PLACE   *2015*

- Biotech business case competition with Boston Scientific.

Federal Bureau of Investigation
DIRECTOR'S AWARD FOR EXCELLENCE   *2014*

- First unit outside of the FBI to recieve this award.

US Army
BRONZE STAR MEDAL   *2009*

- Awarded for combat actions in Logar, Afghanistan.

Publications

1. Burch, C. (2020). *Altfuelr: An interface to the NREL alternate fuels locator.* `https://CRAN.R-project.org/package=altfuelr`
2. Burch, C. (2020). *Vindecodr: An interface to the US department of transportation VIN decoder.* `https://CRAN.R-project.org/package=vindecodr`
3. Burch, C. (2021). *Excelstrippr: Extracts tabular data from excel reports.* `https://CRAN.R-project.org/package=excelstrippr`