Jarrod Burges, GIT

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Research Interests

Utilizing machine learning to solve geological questions using big data, with specific interests in developing models to understand geochemical and optical–petrographic micro-signatures. Passionate about building geoscience cyber-infrastructure to accelerate data analysis.

Education

Doctor of Philosophy, Earth and Planetary Sciences — Expected May 2030
Rutgers University – New Brunswick
Thesis Advisor: Dr. Shaunna M. Morrison

Bachelor of Science, Computer Science & Geological Sciences — December 2024
California State University – Fullerton
Thesis Advisor: Dr. Kathryn Metcalf
Thesis: GeoCORK: An improved workflow for geochronology data management

Certifications

- California Geologist-in-Training (GIT) — Obtained October 2024
- OSHA HAZWOPER 40-hour — Obtained June 2024

PUBLICATIONS

2. Metcalf, K. and **Burges, J.** (2024). GeoCORK: Part1. An improved workflow for geochronology data management. (In preparation; submission April 2025)
1. **Burges, J.** and Metcalf, K. (2024). GeoCORK: Part2 Technical specifications for future software development and expansion. (In preparation; submission April 2025)

TECHNICAL SKILLS

- **Languages**: Python, SQL, R, Java, C++
- **Development**: JetBrainsIDESuite, RStudio, Git/GitHub
- **GIS**: ArcGIS Pro / ArcMap
- **Productivity**: Microsoft Office Suite
- **Design**: Adobe Illustrator, Acrobat Sign, Photoshop, Premiere Pro
- **OS**: Linux(Ubuntu / Raspbian), Windows, macOS

RESEARCH EXPERIENCE

Undergraduate Honors Thesis — California State University, Fullerton — October 2022–Present
GeoCORK: An improved workflow for geochronology data management

- Full-stack development in Python, SQLite3, and PyQt6 across 52 normalized tables
- Designed automated data import, flexible filtering, and export to detritalPy, DzStats, IsoplotR
- Implemented custom tagging system and UI for complex geological datasets

Field Assistant — Tibet, China — July 2023
Assisted four-week expedition collecting structural data for creation of balanced cross-sections.

GIS Analyst — CSU Fullerton Police 911 Dispatch Center — February 2023
Updated CAD geodatabases and satellite imagery in ArcGIS/ArcMap to improve emergency dispatch accuracy.

TEACHING & ADVISING

Undergraduate Teaching Assistant — GEOL303A: EarthMaterials, CSUFullerton Fall 2023
Provided lab instruction for 25 students and delivered a seminar on AI applications in geology. Acted as in-class mentor to sophomore and junior-standing geology students.

PROFESSIONAL EXPERIENCE

Staff Geologist & Database Analyst — EEC Environmental, Orange,CA May 2024–Present

- Authored geological reports and managed multi-state environmental compliance projects
- Built and maintained MicrosoftAccess/SQLServer databases with full metadata documentation
- Monitored drilling operations and provided real-time geological interpretations
- Ensured compliance with environmental regulations across multiple states and company standards during fieldwork and data analysis.

Community Service Officer (CSO) Supervisor — CSU Fullerton Police Dept. June 2022–March 2025
Overseeing supervisor for 35 student CSOs. Managed scheduling, payroll, and field training to ensure program efficiency.

Lab Assistant (Winter Temp) — GMU Geotechnical, Rancho Santa Margarita,CA December 2022–January 2023

- Conducted comprehensive soil analyses to state and federally regulated procedures

PROFESSIONAL SERVICE

Student Representative October 2023-Present
Geological Society of America — Division of Geoinformatics & Data Science (GIDS)

SELECTED AWARDS

- Natural Sciences and Mathematics Inter-Club Council Travel Award ($750), California State University,Fullerton (November 2024)
- Armstrong-Butcher Undergraduate Geology Conference Travel Award ($500), California State University, Fullerton (November 2024)
- Undergraduate Research Opportunity Center (UROC) Travel Award ($500), California State University, Fullerton (November 2024)
- Armstrong-Butcher Undergraduate Geology Conference Travel Award ($500), California State University, Fullerton (September 2024)
- Cordilleran Section Student Travel Award ($375), Geological Society of America (September 2024)
- Armstrong-Butcher Undergraduate Geology Conference Travel Award ($500), California State University, Fullerton (May 2024)
- Undergraduate Research Opportunity Center (UROC) Travel Award ($750), California State University, Fullerton (May 2024)
- Cordilleran Section Student Travel Award ($600), Geological Society of America (May 2024)

MEETING ABSTRACTS

10. **Burges, J.** and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract V23B-3335 presented at 2024 American Geophysical Union Annual Meeting, Washington, DC, 9-13 December. April 2025 Page 5 of 5
9. **Burges, J.** and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract 59-4 presented at 2024 Geological Society of America Annual Meeting, Anaheim, California, 22-25 September.

8. **Burges, J.** and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract 38-2 presented at 2024 Geological Society of America Joint Cordilleran and Rocky Mountain Section Meeting, Spokane, Washington, 15-17 May.
7. **Burges, J.** and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Presented at Southern California Geological Society May 2024 Meeting, Fullerton, California, 6 May.
6. **Burges, J.** and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Presented at 2024 Department of Geological Sciences Research Day, Fullerton, California, 3 May.
5. **Burges, J.**, and Metcalf, K., 2024, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract 411 presented at 2024 National Conference of Undergraduate Research, Long Beach, California, 8-10 April.
4. **Burges, J.**, and Metcalf, K., 2023, DESKTOP APPLICATION TO MANAGE AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract 46-6 presented at 2023 Geological Society of America Annual Meeting, Pittsburgh, Philadelphia, 15-18 October.
3. **Burges, J.**, Metcalf, K., and Goffman, M., 2023, PYTHON PROGRAM TO INPUT, SORT, VIEW, AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Abstract 9-11 presented at 2023 Geological Society of America Cordilleran Section Meeting, Reno, Nevada, 16-19 May.
2. **Burges, J.**, Metcalf, K., and Goffman, M., 2023, PYTHON PROGRAM TO INPUT, SORT, VIEW, AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Presented at 2023 College of Engineering and Computer Science Student Innovation Expo, Fullerton, California, 5 May.
1. **Burges, J.**, Metcalf, K., and Goffman, M., PYTHON PROGRAM TO INPUT, SORT, VIEW, AND STORE DETRITAL ZIRCON GEOCHRONOLOGICAL DATA IN A SQL DATABASE: Presented at 2023 Department of Geological Sciences Research Day, Fullerton, California, 5 May

References

Available upon request.