

James Wade

AI DEVELOPER TOOLS · ENTERPRISE R&D

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3,000

SCIENTISTS
AI strategy lead

84

SHINY APPS
50 R + 34 Python

35

PACKAGES
25 R + 10 Python

3x

POSIT::CONF
speaker

ABOUT

I build AI-powered developer tools on Posit's stack and ship them at enterprise scale — 35 packages, 84 Shiny apps, and direct collaboration with Posit engineers. At Dow, I lead AI strategy for a 3,000-person R&D organization while navigating the same disruption reshaping how all software gets built. I've been building for what comes next.

OPEN SOURCE

shinymcp

CREATOR

Bridges Shiny apps and AI agents via the Model Context Protocol. Auto-detects inputs, tracks the reactive graph, and routes tools — so any Shiny app becomes an MCP server.

measure

CREATOR

Tidymodels-native package for measurement science — brings psychometric and analytical measurement models into the tidymodels framework with a consistent, composable API.

dsprrr

CREATOR

R port of Stanford NLP's DSPy framework — declarative, self-improving language programs. Prompt optimization, module composition, and cost tracking. Officially listed by Stanford.

Also contributed to: [ellmer](#), [py-shiny](#), [shinychat](#), [tidyr](#), [dplyr](#), [parsnip](#), [embed](#), [rsample](#), [Stanford DSPy](#), [Axolotl](#), [Mistral.AI](#)

deputy

CREATOR

Agentic AI workflows for R. Multi-agent delegation, tool policies, pre/post hooks, structured output, and streaming with a terminal CLI.

measure.sec

CREATOR

Size exclusion chromatography tools built on tidymodels. Calibration, molecular weight distribution analysis, and integration with the measure ecosystem.

gptstudio

★ 800+ stars

CREATOR & MAINTAINER

Early-mover RStudio IDE addin integrating LLMs into the coding workflow. Multi-provider support, published to CRAN. Paved the way for Posit's native AI tooling.

SKILLS

POSIT ECOSYSTEM

Shiny (R & Python) RStudio IDE Extensions bslib shinychat Quarto Connect
Workbench Package Manager

AI & LLMS

Agentic Systems MCP Protocol RAG DSPy / Prompt Optimization
Multi-Provider APIs Claude Agent SDK Vector Databases Fine-Tuning

SOFTWARE ENGINEERING

R Python TypeScript Package Development (CRAN) Git/GitHub CI/CD
Docker DuckDB/Arrow

DATA SCIENCE & ENTERPRISE

Tidyverse Tidymodels MLOps Statistical Modeling Platform Administration

EXPERIENCE

Research Scientist

2022 – Present

Dow · Midland, MI

- Lead AI strategy for Dow's 3,000-person R&D organization and directly advise the CTSO on AI and digitalization priorities.
- Co-developed chat UI components and AI tooling directly with Posit engineers Joe Cheng, Garrick Aden-Buie, and Carson Sievert. Contributed to [ellmer](#), [py-shiny](#), [shinychat](#), and core tidyverse packages.
- Architected an AI-powered emissions monitoring platform serving 27 manufacturing sites across 6 countries, with an LLM pipeline that auto-converts Excel workbooks into production Python code.
- Co-developed an LLM-powered Patent Analysis tool highlighted to Dow's Board of Directors and Microsoft's leadership team.
- Scaled generative AI from proof-of-concept to enterprise-wide deployment, expanding secure access to frontier and open models across the organization.
- Built and deployed 84 Shiny applications (50 R, 34 Python) to Posit Connect — including ML model APIs, live data pipelines, and 19 AI-powered production apps.
- Authored 35 packages (25 R, 10 Python), establishing package development patterns and CI/CD workflows adopted organization-wide.
- Created shinymcp, deputy, dsprrr, and gptstudio — open source AI developer tools spanning MCP protocol, agentic workflows, prompt optimization, and IDE integration.

Associate Research Scientist

2020 – 2022

Dow · Midland, MI

- Founded and led the data science strategy team for Analytical Science, defining best practices for R, Python, and AI enablement across a 400-person organization.
- Designed and delivered the Citizen Data Science curriculum and led Posit Academy mentorship, achieving >90% training completion and mentoring 25+ professionals across multiple organizations.
- Key contributor to Dow's enterprise AI Strategy, defining the organizational operating model and leading the Scale & Standards sub-team.
- Led an AI-enabled plastic recycling project, building ML models that maintained product performance with increased recycled content — recognized with two internal awards.

Senior Chemist

2018 – 2020

Dow · Midland, MI

- Pioneered a deep learning approach to modeling product performance in manufacturing, resulting in a patent submission and \$2.3MM+ in realized value.
- Built a Shiny-based Duty Drawback tool enabling \$2.5MM one-time and \$1.2MM annual savings for the supply chain organization.

Postdoctoral Fellow

2017

University of Michigan · Ann Arbor, MI

- Biosensor and microfluidic research, supporting lab transition from UIUC to the University of Michigan.

Graduate Research Fellow

University of Illinois at Urbana-Champaign · Urbana, IL

- Developed biosensors and microfluidic tools for precision medicine, including multiplex diagnostic panels on silicon photonic microring resonator arrays.
- Integrated microring resonators with separation technologies for applications in industrial polymer analysis.
- Mentored 4 undergraduate and 3 graduate students; contributed to successful NSF and NIH proposals.

Undergraduate Research Fellow

Furman University · Greenville, SC

- Published 2 research papers, delivered 14 presentations, and mentored 5 undergraduate students.

EDUCATION

Doctor of Philosophy in Chemistry

University of Illinois at Urbana-Champaign · Urbana, IL

Bachelor of Science in Chemistry

Furman University · Greenville, SC

AWARDS & RECOGNITION

2021 Technical Achievement Award (Project Lead)

Dow

2021 Manufacturing Innovation Award (Project Lead)

Dow

2019 Data Science Innovation Challenge Winner (1 of 3 selected — Project Lead)

Dow

2016 ACS Division of Analytical Chemistry Graduate Fellowship

University of Illinois

2012 – 2015 NSF Graduate Research Fellow

University of Illinois

PUBLICATIONS

10 peer-reviewed publications listed below, plus 40 internal publications, 29 internal technical reports, and 8 internal filings for intellectual property disclosure.

1. The Citizen Data Science program at Dow

Andrews K, Arturo S, Benedict M, Braun B, Clark B, Cook S, Curtis-Fisk J, D’Ottaviano F, Licquia T, Margl P, Moore J, Naler L, Singh P, Schmidt A, Sokolov A, Talbert J, **Wade JH**. *Digital Discovery*, 2025.

2. A linear mass concentration detector for solvent gradient polymer separations

Mordan EH, **Wade JH**, Pearce E, Meunier DM, Bailey RC. *Analyst*, 2020.

3. Recent advances in separation-based techniques for synthetic polymer characterization

Meunier DM, **Wade JH**, Janco M, Cong R, Gao W, Li Y, Mekap D, Wang G. *Analytical Chemistry*, 2020.

4. Silicon Photonic Microring Resonator Arrays for Mass Concentration Detection of Polymers in Isocratic Separations

Mordan EH, **Wade JH**, Wiersma ZSB, Pearce E, Pangburn TO, deGroot AW, Meunier DM, Bailey RC. *Analytical Chemistry*, 2018.

5. Microfluidic platform for efficient Nanodisc assembly, membrane protein incorporation, and purification

Wade JH, Jones JD, Lenov IL, Riordan CM, Sligar SG, Bailey RC. *Lab on a Chip*, 2017.

6. Applications of optical microcavity resonators in analytical chemistry

Wade JH, Bailey RC. *Annual Review of Analytical Chemistry*, 2016.

7. Rapid, multiplexed phosphoprotein profiling using silicon photonic sensor arrays

Wade JH, Alsop AT, Vertin NR, Yang H, Johnson MD, Bailey RC. *ACS Central Science*, 2015.

8. Refractive index-based detection of gradient elution liquid chromatography using chip-integrated microring resonator arrays

Wade JH, Bailey RC. *Analytical Chemistry*, 2014.

9. A unified mechanism for abiotic adenine and purine synthesis in formamide

Hudson JS, Eberle JF, Vachhani RH, Rogers LC, **Wade JH**, Krishnamurthy R, Springsteen G. *Angewandte Chemie*, 2012.

10. Synthesis of cis and trans Bis-alkynyl Complexes of Cr(III) and Rh(III) Supported by a Tetradentate Macroyclic Amine: A Spectroscopic Investigation of the M(III)-Alkynyl Interaction

Sun C, Turlington CR, Thomas WW, **Wade JH**, Stout WM, Grisenti DL, Forrest WP, VanDerveer DG, Wagenknecht PS. *Inorganic Chemistry*, 2011.