

Zhian N. Kamvar, PhD

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EMPLOYMENT

- 2024–Present **Research Software Engineer**, *University of Massachusetts—Amherst*.
My work in the Reich Lab provides data standards and tools that help modelers effectively collaborate on infectious disease forecasting challenges.
• Skills Acquired: **GitHub Apps, AWS, Dashboard Development**
- 2020–2023 **Lesson Infrastructure Developer**, *The Carpentries*, A Non-profit Organisation in Education.
Lead development and deployment of a modular infrastructure for building reproducible lessons for a broad community of educators to bring data science skills to thousands of researchers worldwide.
• Skills Acquired: **Product Management, Security, Mentorship, Monitoring Frameworks**
- 2018–2020 **Research Software Engineer**, *Imperial College London*.
Developed well-tested R packages for field epidemiology and modelling.
• Skills Acquired: **Collaborative Problem Solving, Leadership**
- 2017–2018 **Postdoctoral Researcher**, *University of Nebraska-Lincoln*.
Population genetics of the white mold pathogen *Sclerotinia sclerotiorum*.
• Skills Acquired: **Docker, Automation with Make**
- 2012–2016 **Graduate Research Assistant**, *Oregon State University*, PhD Dissertation Research.
Dissertation: Development and application of tools for genetic analysis of clonal populations
• Skills Acquired: **Project Management, Git, Testing, Scripting, DevOps, Communication**

PROFESSIONAL EXPERIENCE

Development

- Highly experienced **>10 years** experience in **developing and deploying well-tested research software using Git and CI/CD pipelines** (GitHub Actions, AWS, Circle CI, Travis CI)
- **>5 years** of **project management experience** coordinating software development for a **broad set of stakeholders** in Population Genetics, Epidemiology, and CS Education
- **>5 years** experience building **reproducible analyses with CI and Docker** (*Kamvar et al, 2017*)

Tools

- **Expert R developer** of several widely used and well-tested R packages with **substantial experience in R6 and S3** OO systems (**>10 years**)
- Experienced with **Python** for creating unique modules for population genomic simulation analysis pipeline and solving advent of code challenges (**4 years**)
- Developed **GitHub Actions** to work with the GitHub (REST and GraphQL) API using BASH, R, and node JS (**>4 years**)
- Maintained **reproducible pipelines in Make and BASH** (**2 years**) for both CI and HPC

Collaboration

- Developed a modular, **user-friendly and accessible** open source lesson infrastructure to facilitate **automated validation, rendering, and system monitoring** of data science lessons that are used and maintained by **>2000 volunteers** serving **>10,000 learners annually**
- **Coordinated communications** to hundreds of stakeholders in separate sub-communities about the impacts of upcoming infrastructure changes via video, blogs, and live Q&A
- **Mentored** three novice colleagues in **DevOps, security, automation, accessibility, and project management** of The Carpentries lesson infrastructure for handoff

Communication

- **Coached >100 graduate researchers** to communicate their research to broad audiences
- Developed and delivered material for **9 workshops** in **3 disciplines** reaching **>300 learners**
- Published **19 peer-reviewed publications** including **7 first-author publications**
- Author of **>30 technical blog posts** summarizing complex topics for a general audience

EDUCATION

December 2016 **Ph.D. Botany and Plant Pathology**, *Oregon State University (OSU)*, Corvallis, OR, USA.
December 2007 **B.S. Biology**, *Truman State University (TSU)*, Kirksville, MO, USA.

LEADERSHIP

- 2021–Present **Maintainer**, *the tinkr R package*, rOpenSci.
Collaboration with Maëlle Salmon (original author) of rOpenSci to create a lightweight R package to parse and transform Markdown documents to XML. This has been used in **validation** of markdown elements and facilitating **automated human language translation**.
- 2018–2020 **Coordinator of Software Development**, R Epidemics Consortium (RECON).
Worked with software developers, mathematical modellers, and field epidemiologists to **design quality standards for software development, validation testing, and analysis of epidemiological data**.
- 2018–2019 **Lead Developer**, *R4Epi Project*, Médecins Sans Frontières (Doctors Without Borders).
Collaborated with **diverse team of developers and field epidemiologists** to create a well-tested series of templates for automated outbreak and survey data analysis.
- 2012–2016 **Co-Founder**, *Inspiration Dissemination*, KBVR Corvallis, Oregon State University.
Created award-winning radio program for graduate researchers to communicate their research to broad audiences. **Mentored 4 radio hosts in communication** and show management. This radio program continues to exist over 10 years later.

SELECTED PROJECTS (ON GITHUB)

- Dashboards: [reichlab/flusight-dashboard](#) **dashboard visualization** and evaluation for influenza hospitalizations in the US. Built with **a customizable framework** that allows admins to create dashboard with minimal setup
- Infrastructure: [carpentries/workbench](#) **lesson publication suite** consisting of templates, software, and CI/CD workflows designed for user-friendly publishing of data science lessons
- Workflows: [carpentries/lesson-transition](#) **automated workflow** for lesson infrastructure+syntax transition
- R packages: [carpentries/sandpaper](#) user interface for **The Carpentries Workbench**
[ropensci/tinkr](#) R6 classes to transform markdown to XML and back again
[grunwaldlab/poppr](#) analysis of populations with mixed reproductive modes
- Analyses: [zkamvar/clonal-inference-simulations](#) .. simulations and analysis in **Python, R, and BASH**
[everhartlab/sclerotinia-366](#) **fully automated** and reproducible analysis in **Docker**

SELECTED PUBLICATIONS

- Developer Guide 2023-12-31 | *Remote Deployment and Management* | Workbench Developer's Guide | <https://carpentries.github.io/workbench-dev/remote/intro.html>
- Presentation 2022-07-28 | *Building Accessible Lessons with R and Friends* | RStudio::conf, Washington DC | Recording and Materials: bit.ly/zkn-rstudio-2022
- Blog Post 2022-06-14 | *Communication & Collaboration with Contributors in an Open-Source Organization* | ROpenSci Blog | doi: [10.59350/z329k-sqn35](https://doi.org/10.59350/z329k-sqn35)
- Blog Post 2020-08-10 | *Design Principles for the Next Iteration of The Carpentries Lesson Template* | Carpentries Blog | <https://carpentries.org/blog/2020/08/lesson-template-design/>
- Presentation 2019-07-11 | *Advancing Data Analytics for Field Epidemiologists using R: the R4Epi Innovation Project* | Use!R, Toulouse, FR | Recording and Materials: bit.ly/zkn-UseR-2019
- Peer-Reviewed Publication **Kamvar ZN**, Amaradasa BS, Jhala R, McCoy S, Steadman JR, Everhart SE. (2017) Population structure and phenotypic variation of *Sclerotinia sclerotiorum* from dry bean (*Phaseolus vulgaris*) in the United States. *PeerJ* 5:e4152 doi: [10.7717/peerj.4152](https://doi.org/10.7717/peerj.4152)
data/analysis: <https://github.com/everhartlab/sclerotinia-366>
doi: [10.17605/OSF.IO/EJB5Y](https://doi.org/10.17605/OSF.IO/EJB5Y)