

Erich Seamon

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Results driven agricultural data scientist, with over ten years of experience in data science, machine learning and geographic information systems (GIS). I regularly build agricultural machine learning predictive models (linear/multivariate regression, logistic regression, naïve bayes, support vector machines, decision trees/random forest, KNN, kmeans, hierarchical clustering, convolutional and long-short term memory (LSTM) neural networks), using R, python, apache spark, and tensorflow. My model outputs can be seen at <http://erich.io/dashboards>.

E D U C A T I O N

University of Idaho

Ph.D. GIS and Natural Resources with a focus on agriculture and machine learning. Expected Spring 2019

Bowling Green State University

M.S. – Geosciences

Wittenberg University

B.A. – Geosciences, with GIS focus.

W O R K E X P E R I E N C E

University of Idaho

PhD Candidate, 2014 – Present (expected completion spring 2019)

- Currently developing R and python based machine learning techniques to explore drought and agricultural commodity insurance loss for the Climate Impacts Research Consortium - <http://pnwcirc.org>). <http://erich.io>.
- Currently a Co-Principal Investigator on a soil health feedback systems project funded thru the Socio-Environmental Synthesis Center (<http://sesync.org>). Developing R based structural equation modeling and latent profile analysis techniques to examine relationships of cropping practices to soil health. <http://soilhealthfeedback.org>.
- PhD research focuses on developing machine learning models to predict and explore interactions between agricultural practices, climate, and economic outcomes (commodity insurance loss). Model development focuses on decision trees, convolutional and LSTM neural networks, as well as gradient boosting approaches.

University of Idaho

Environmental Data Manager, December 2011 – March 2018

- Implemented ArcGIS Server systems and RESTful interfaces, using python and R, as the Environmental Data Manager for a USDA/NIFA funded \$20 million Coordinated Agricultural Project (<http://reacchpna.org>).
- Developed GIS based systems to integrate netCDF, flat file, and database formatted datasets for agricultural predictive modeling, emissions analysis, cropping systems examination, biotics, and hydrological review.
- Developed R and interactive python (jupyter notebooks) codesets for NetCDF subsetting and aggregation using Thematic Real time Environmental Data Distribution Services (THREDDS) and NC operators, as well as JavaScript web server development, geospatial database development, and geospatial metadata/data catalog development.

Erich Seamon and Associates, LLC

Data Scientist, November 2005 – February 2011

- Applied data science techniques to make organizations successful, including Enterprise GIS development, GIS assessment and strategic planning, governmental systems architectural and life/cycle business development, and water utility systems development. Managed technology projects/implementations for the City of Portland, Oregon, enterprise GIS assessment for the City of New Orleans, LA, and political campaign mapping for state and national party efforts.

City and County of San Francisco, CA

Senior GIS Project Manager, December 2000 – November 2005

- Managed over \$20 million annually in technology services for multiple business systems, including Enterprise GIS, public utilities, public works, property/real estate analysis (Assessor/Recorder), and tax collection (Treasurer/Tax Collector). Supervised twenty staff, including programmers, analysts, developers, and project managers.
- Developed and implemented San Francisco's first Enterprise GIS system using ESRI/ArcGIS software, consisting of ArcGIS Server, ArcIMS and ArcGIS geodatabase schemas for DB2. Developed web service based applications for Real Estate, SF Police, Fire, Public Utilities, and the Mayor's Office of Economic Development (MOED).

Marin Municipal Water District. Corte Madera, CA.

Senior GIS Analyst, May 1997 – December 2000

- Developed infrastructure and natural resources technology systems thru the use of GIS technologies on Linux and Unix. Developed services using ArcGIS Desktop, ArcGIS Server, and AutoCAD, and SAS. Integrated GIS services with work order management systems.
- Oversaw technical architecture management, including oversight for UNIX/Windows systems, and their interactions with other legacy applications (Informix, Informix Spatial Data Blade, Oracle). Served as the project manager for natural resource GIS development. Including coordinating and developing all GIS applications as they related to projects such as fire modeling, sediment streambed monitoring, soil erosion analysis, and watershed modeling.

C E R T I F I C A T I O N , H O N O R S A N D A W A R D S

- Certified Project Management Professional (PMP)
- Certified Geographic Information Systems Professional (GISP)
- Certified Information Technology Infrastructure (ITIL) Foundation Certified
- Certified GIS Expert in US Federal Court (Willits vs. City of Los Angeles)
- Xi Sigma Xi Honor Society
- Phi Kappa Phi Honor Society

S K I L L S S U M M A R Y

Machine Learning and Data Science Experience

- Develop predicative models for two research teams (<http://pnwcirc.org> and <http://soilhealthfeedback.org>) to examine agricultural insurance commodity loss in comparison to climate and other social/demographic factors.
- Use algorithmic data mining and filtering techniques on agriculture datasets for feature extraction and transformation for model development, including: decision trees, random forest, neural networks/convolutional neural networks, Naïve Bayes, Support Vector Machines, and Long-Short Term Memory (LSTM) neural networks. Examples of model development can be seen at <http://erich.io/dashboards>.
- Regularly build agriculturally-based cross validated and stacked models for accuracy and error testing (regression and classification) in both python and R, as well as hyper-parameter tuning. Use bootstrap aggregation and gradient boosting techniques on a daily basis.
- Use RMarkdown to organize methodologies that embed R code with outputs. RMarkdown examples can be seen at <http://erich.io/data-science-examples>.

- Regularly deploy flask/python web services that use pickled models for online pythonic web service prediction. Actively push code related to machine learning to github – <http://github.com/erichseamon>.
- Use Amazon Web Services (AWS) for python machine learning deployment, primarily for scalability. R and python examples posted at <http://erich.io> and at <http://github.com/erichseamon>.

Project Management Experience

- Led technology project teams for academic, private sector, and government. Developed and implemented the City of San Francisco's first Enterprise GIS program across 65 city agencies. PMP and GISP certified.
- Experienced in Agile, Waterfall and Scrum methodologies. Lead project manager for the City of Pittsburgh's GIS E-911 street address data development (2009). Strong presenter and conveyor of technology outcomes to both leadership and customers. Presented GIS technology topics for private firms as well as many conferences (ESRI, GITA, URISA, AGU).

Programming and Development Experience

- Experienced with all forms of Geographic Information Systems (GIS) software, including ArcGIS Desktop, ArcGIS Server, ArcSDE, ERDAS, GRASS, QGIS, MapInfo, MapReduce.
- Extensive programming experience in R and Python. Well versed in parallel processing libraries for python and R.
- Database experience: Well versed in database structures and SQL scripting using PostgreSQL, Oracle, DB2, SQL Server, MySQL, MongoDB. Strong database development and modeling, as well as UML design experience (Visio).
- Regularly deploy flask web services using python machine learning models. Experienced with Apache and Tomcat server technology, Java/Javascript, PERL.
- UNIX and Linux administrator experience – very knowledgeable in shell scripting, and typical UNIX interaction. I was previously certified as a UNIX systems administrator.
- Experienced in geospatial data mining with regards to large databases/systems – and providing analytical perspectives (report, presentation, data model review, etc.).
- Experienced in the day to day management and quality control of technology systems, including data management, help desk management, backup, disaster recovery and business continuity, code management, and system/application security. ITILF certified.