WILLIAM T. GUSTAFSON

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SCIENTIFIC SOFTWARE DEVELOPER

Demonstrated skill working at the intersection of science, software development and operations to interpret "the physical world" through large spatial and temporal datasets, and managing risk by analyzing related datasets and reducing them to manageable intelligence. Key skills include:

Scientific Computing | Scientific Visualization | Data Analysis & Reporting | Project Management | Numerical Analysis | Image Processing | Programming | Research | Satellite Remote Sensing

EXPERIENCE

Institute for Health Metrics and Evaluation, UNIVERSITY OF WASHINGTON, Seattle, WA **2020-present**
Software Engineer, Local and Small Area Estimation
Supported researchers with geospatial processing related to epidemiology.

VAISALA, Seattle, WA **2013-2020**
Scientific Software Engineer, Energy Offering Development (2013-2020)
Produced solar data products based on satellite images.

- Primary responsibility for improving algorithms for hourly time series based on images from GOES, MTSAT, GMS, Himawari, and Meteosat series of geosynchronous weather satellites between January 1997 and now.
- Included researching and incorporating data sets of atmospheric and land surface parameters (aerosol optical depth, water vapor, snow) based on satellite measurements (MODIS), weather reanalysis and forecasting data sets (MERRA2, GFS, ECMWF), and ground measurements (BSRN, NSRDB, client observations).
- Performance tested numerical weather prediction (WRF) models.

Scientific Software Engineer, Ground Transportation (2018-2019)
Worked as part of a team to create an operational road condition forecast system.

- Designed the backend system to use existing databases to sample input data for the forecast model.
- Implemented an AWS Lambda for processing external forecast data, and wrote a program using GeoPandas to downsample data from various inputs to our base GIS road network.
- Implemented a Kubernetes framework in AWS for scientists to execute retrospective model runs.

The Climate Corporation, Seattle, WA **2012-2013**
Physical Observations Engineer, Platform/Data Acquisitions Group
Responsible for evaluating and ingesting weather, soil, land surface model and geographic datasets. Performed operational updating of internal versions of recurring weather datasets.

- Responsible for merging multiple CONUS-wide datasets (soil, precipitation, and field level shapefiles) into a single dataset used throughout the company for modeling and sales. Evaluated and implemented processing technique for soil data.
- Developed processes for evaluating model input, including developing a tool for automated dataset extraction of the Landsat TM, and NASS cropscape data for given shapefiles.
- Created innovative visualizations for QC and data analysis.

3TIER, Seattle, WA **2007-2012**
Scientific Programmer, Software Development Group

- Primary responsibility for implementing algorithms (C, Ruby) to produce global irradiance map and hourly time series data product based on images from GOES, MTSAT, GMS, and Meteosat series of geosynchronous weather satellites taken between January 1997 and the current time.

ADDITIONAL RELEVANT EXPERIENCE

UNIVERSITY OF WASHINGTON, Seattle, WA
Research Engineer, UW Keck Remote Sensing Laboratory
Responsible for software development of standard product algorithms for the ASTER instrument. Conducted research into remote sensing applications of data from a variety of remote sensing platforms. Developed MPI code for multi-processor Beowulf clusters for NASA's REE project. Wrote application programs (C, IDL), and scripting language programs (Python, IDL) for remote sensing research. Developed MS Windows image processing software for remote sensing applications. Wrote routing model for hydrological modeling of Amazon River Basin. Provided Unix system administration. Provided maintenance for various field instrumentation.

PACIFIC NORTHWEST SEISMIC NETWORK, Seattle, WA
Senior Computer Specialist
Developed application programs (C, Matlab), and high-level scripting language programs (Python and shell scripting) for seismological data collection and archiving. Maintained and supported applications (Java, Perl, Mysql) for creating web pages of seismic shaking, and equipment inventory. Provided computer support and system administration for Solaris and Linux systems.

QUEST INTEGRATED INC., Kent, WA
Engineer, Software and Electronics Development

448th Civil Affairs Battalion, USAR, Ft Lewis, WA
Intelligence Staff Officer (S-2)

EDUCATION / CERTIFICATION

MASTER OF SCIENCE IN ENGINEERING (MSE)
University of Washington, Seattle, WA
Thesis: Land-form classification of SIR-C radar images based on radar scattering components.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (BSEE)
California Institute of Technology, Pasadena, CA
Standard engineering coursework including Physics of Remote Sensing.

TECHNICAL PROFICIENCIES AND EXPERTISE

C | C++ | Python | R | Pandas | GeoPandas | Jupyter | Java | Clojure | Matlab | Perl | Ruby | shell scripting | Linux | Windows | slurm | git | IDL/ENVI | Matlab | Gnuplot | Ncview | OGR/GDAL | QGIS | Docker | Kubernetes | Atlassian Suite of Development Tools | AWS

PUBLICATIONS

Available on LinkedIn Profile and By Request