

KIM SUNDEEN

Full Stack Sr. GIS Software Engineer, GISP

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LIFE PHILOSOPHY “The only real mistake is one from which we learn nothing” –Henry Ford

SUMMARY

Accomplished and dynamic Consultant and Geographic Information Systems (GIS) Software Engineer with 15+ years of experience in developing innovative geospatial solutions. Proven track record in leading teams, management complex projects, and enhancing data visualizations through modern web and mobile applications. Expertise in full-stack development, machine learning, cloud solutions, and GIS technologies, including ArcGIS, GeoServer, and PostgreSQL/POSTGIS with a commitment to clean code and efficient UI design.

TECHNICAL SKILLS

- **Web Development:** Typescript, HTML5, CSS, JavaScript frameworks, node.js, npm/yarn, React, IIS
- **Code Versioning:** Git, Github, Mercurial, Jira TFS
- **OS:** Windows, Linux
- **Server-side/desktop programming:** Python 3, C# .NET, SQL/PLSQL, ASP.NET MVC, .NET Framework 4.8, GeoServer web publishing
- **Database design/structures:** Microsoft SQL Server, 11g/12c Oracle, PostgreSQL/POSTGIS, MySQL, JSON
- **Machine Learning:** TensorFlow, SciPi
- **Cloud Solutions:** Microsoft Azure, AWS, DevOps
- **ArcGIS Enterprise stack:** ArcGIS Server/Enterprise, Web Adapter, Branch Versioning, Portal, Data Store, ArcGIS Online
- **Using APIs:** Esri's JavaScript API 3.x, 4.x, Leaflet, Mapbox, Google Maps, Openlayers 5/6, Boundless SDK (React-based OpenLayers)
- **Developing APIs:** Python Flask and FastAPI, .NET C#
- **GIS/GPS/Mobile Apps:** ArcGIS 9.x-10.x, ArcGIS Pro 3.x, QGIS 2-3, Google Earth KML, Garmin, ArcPad, Terrasync, and Pathfinder Office, Survey 123, ArcGIS for Collector, Experience Builder, Web AppBuilder Developer Edition

SOFT SKILLS

- Personnel Management
- Agile Scrum Project Management
- Workshops and Training
- Presentations
- Graphic Design
- Technical and Scientific Writing

EDUCATION

- 2021 – C# Programming Certificate, University of California-San Diego
- Continued Education: software engineering through Lake Superior College, PluralSight, LinkedIn Learning, Udemy
- 2017 – 2018 *Graduate Courses in University of Wisconsin-Madison, Master of Science (GIS Web Map Programming)*
 - Biking Route Finder (Google Maps API and Postgresql database to highlight optimal biking routes around Duluth based on the user's preference for terrain, slope, social media tweets, and proximity to bikes - https://ksundeen.github.io/assets/videos/CycleRoutesIntro_small.mp4)
- Certified Geographic Information Systems Professional (GISP) #84940
- University of Wisconsin-Madison, Graduate Certificate: Geographic Information Systems
 - *Focus: geostatistical regression of remotely-sensed mercury concentrations and data science methods.*
- University of Wisconsin-Madison, Master of Science: Conservation Biology and Sustainable Development
 - *Focus: predictive spatial models to detect wildlife and electric distribution power line risks.*
- University of Wisconsin-Madison, Bachelor of Science: Wildlife Ecology, Certificate: Environmental Studies

WORK EXPERIENCE

Sept 2022 -

Senior Software Engineer

DeForest, WI / Remote

Feb 2025

GeoComm, Inc

- **Machine Learning** - Collaborated on a Large Language Learning Model (LLM) python tool that implemented auto-generated database (Extract, Transform, and Load) ETL field mapping and data migration using user-provided prompts.
- **Continuous Integration/Continuous Deployment** - Implemented unit tests within the CI/CD pipelines using AWS CodeBuild, CloudWatch, and Elastic Container Registries (ECR), automating deployment processes reducing testing times by 1 day a week.
- **Esri GIS Development** - Built 50+ new modular tools and 500+ Jest/Jasmine unit tests for Esri JavaScript API 4.x web applications with Bootstrap styles aimed at facilitating data sharing, updating, and creation through a custom portal using Esri ArcGIS Pro, Esri ArcGIS Server and Esri Enterprise used by 500+ customers.
- **Full-Stack Development** - Created and maintained 50 Python FastAPI and Flask APIs, OpenAPI endpoints, and 200+ unit tests to streamline database management, implementing optimized queries in PostgreSQL/POSTGIS and Elasticsearch that were 25% faster in data retrieval.

Sept 2020 - Feb 2022	Team Lead, Tech Lead, GIS Software Engineer SSP Innovations, LLC – Systems Implementation <ul style="list-style-type: none"> • Agile Project Management - Managed 4 software engineers for a 2-year, \$1 million project. Led project with 10 presentations/demos for customers. Led 2 integration design workshops with clients to gather requirements to translate to Agile 50+ user stories for developers. Wrote design documents from workshops to convert business requirements to technical requirements. • Architecture and Patterns - Implemented standards and coached software engineers on code reuse, code patterns (for creating .NET Web APIs and ArcGIS Pro Addins), CI/CD TFS build pipelines (using cake for Windows installer MSI files). • GIS App and Tool Development - Developed 10 Python/C#. NET Framework tools for web APIs, token authentication, swagger API documentation, maps, analyses, and automation for editing gas and electric utilities in the web and through desktop Addins and Windows services. Wrote and implemented 200+ ArcGIS Arcade for attribute rules. 	 Centennial, CO (Remote in Duluth, MN)
May 2019 - Sept 2020	Lead GIS Developer GCR, Inc (Now Civix) – Software Development <ul style="list-style-type: none"> • GIS Business Strategy – Lead strategy and technical requirements meetings reducing software development and release cycles in QA testing from 3 weeks to 1 week. • Team Leadership and Collaboration – Improved onboarding process to increase new developer productivity reducing onboarding from 1 week to 2 days. Served as technical manager for team of 3 developers to prioritize work, and unblock their issues and provide team guidance and mentorship. • GIS App and Tool Development – Delivered 3 modular map-centric applications using React.js framework (Boundless SDK), OpenLayers, PostgreSQL, and Geoserver with SQL Server databases for parcel research and management. 	 New Orleans, LA (Remote in Duluth, MN)
May 2018 - May 2019	GIS Developer Lake Superior Consulting – Software Development <ul style="list-style-type: none"> • GIS Business Strategy - Conducted GIS feasibility and UX/UI study that clearly identified user, business, and technical requirements for 10 new development tools. Lead 3 research efforts and 2 client presentations on implementing and architecting new mobile mapping systems that delivered immediate use for client projects with aggressive deadlines. • Team and Project Management - Implemented new team and meeting planning to improve productivity. Reduced the time from idea to implemented solution from 2 months to 3 weeks. • GIS App and Tool Development - Engineered 3 web and Python applications using Esri, SharePoint, Primavera, and SQL Server integrations used by over 200 users. Used web frameworks to align, extend, and develop existing tools and programs (Angular, TypeScript, jQuery), backend internal applications (ASP.NET MVC, C#, .NET), and GIS tools (Python 2.7, 3.x, Esri's JavaScript API 3.26). 	 Duluth, MN
Feb 2017 - May 2018	GIS Analyst/Developer RAMTeCH Software Solutions – Professional Services <ul style="list-style-type: none"> • Redesigned Practices and Coached Clients in Agile – Lead as Scrum Master for 10-member team to re-architect client software development life cycle and direct funds for applications and tools. Lead 5 general and detailed client-focused user-training/demos. • Engineered Data Migration and ETL Software Tools for Clients – Designed, built, tested, and released 15 C#, Python and SQL gas and electric utility network migration toolsets accessing Oracle 11g/12g SDE databases, ArcMap and Pro desktop tools that seamlessly handled ETL from 5 source databases to one unified model for Esri's new Utility Network as 1st official Esri implementation. • Developed and Presented AWS Workshops for Clients/Conferences – Worked with MN GIS/LIS Consortium to use ArcGIS Enterprise software for gas, electric, water, and utility operators using virtual AWS production environments for a workshop attended by 30 utility sector customers. 	 Stillwater, MN (Remote in Duluth, MN)
April 2016 - Feb 2017	GIS Programmer Analyst Minnesota Power – Facility Operations <ul style="list-style-type: none"> • Mobile Mapping Application/Survey Tool Development – Developed, implemented, and trained 10 staff on GIS services and geoprocessing tools through ArcGIS Server/ArcGIS Online reducing paperwork and saving days' worth of data entry. • Python Automation - Created 25+ Python tools to download and extract ArcGIS Online data/images from a Survey123 app and export to PDF with hyperlinked images and a summary of data from multiple related tables within a database. • Web GIS Application Development - Developed MN Power's Electric Utility Asset Identification using Esri's JavaScript API and Web AppBuilder Developer's Edition and SDE database. • Software Training and Developing Documentation Standards - Trained 5 staff on Esri's Model Builder, Python, and ArcGIS Online for supporting northern Minnesota's utility edits, work order, and field tools systems. Documented 50 publishing workflows in Survey123, ArcGIS Collector, and web maps that reduced printed paper by 100%. 	 Duluth, MN

Feb 2015 -

April 2016

GIS Specialist

 Duluth, MN

City of Duluth – Engineering Division

- **GIS Web Map Software Project Management** - Designed and managed a GIS user needs assessment and implementation for 19 projects for software development, database development/improvements, and training for City of Duluth IT Department, Public Works, and Utilities. Developed City of Duluth Street Update Viewer web application.
- **User Training and Presentations** – Lead monthly knowledge transfer user groups and designed new user.
- **Multi-user Database Management** - Edited gas, water, and storm GIS data in versioned SQL Server SDE databases. Expanded existing GIS map services to Python-built geoprocessing services to automate web map updates that reduced data entry from 3 days to 1 day.

Sept 2012 -

Feb 2015

GIS Specialist

 Odanah, WI

Bad River Tribe – Natural Resources Department

- **Survey Field Collection, Processing, and Training** - Managed diverse field data collection preparation, training, pre/post-processing for surveys on roads, historical properties, utilities, and tree inventories using Esri's ArcPad, in Trimble GeoXH series.
- **Map Creation, Analysis, and Automation** – Designed 4 web application and trained 15 non-developers to use the applications and Python to manipulate, re-write, or edit raster/vector data for use in GIS analysis and remote sensing apps (image enhancements, transforms, and radiometric/atmospheric correction). Deployed Tribal Ownership and Lease GIS Web Map Viewer.
- **Data Creation, Maintenance and Standardization for Natural Resources Website** - Designed 3 GIS databases for all departments, planned and published 3 data-entry web maps, and updated tribal website.
- **Data Security** - Added secured and public Google, Esri's JavaScript API, ArcGIS Online, and OpenLayers web maps.

ACHIEVEMENTS

Organizations and Affiliations

- Affiliate Member (2018-2021): Support MN GIS/LIS Consortium with Azure virtual environments for virtual workshops.
- Director (2018-2019): Launched and led Duluth Women in Tech/Women Who Code groups for professional learning.
- Co-coordinator (2018) .NET Duluth meetup groups for developers for presentations and professional development
- Conference Committee Member (2015-Present): Minnesota GIS/LIS Conference
- Conference Committee Member 2016-2017: Minnesota GIS/LIS Conference, *Workshop Committee*
- Board of Directors (2014-2015): Wisconsin Land Information Association (WLIA), *Chair of Membership Committee*
- Committee Member (2014-2015): National Tribal Geographic Information Support Center (NTGISC), *Publications Committee*

Notable Presentations and Workshops

- 2019. "Building, Branding, and Boosting your Web Portfolio with Github Pages and Google Analytics." Women in Tech Duluth User's Group, Feb.
- 2018. "Exploring the Utility Network in ArcGIS Pro for Water, Electric, and Gas Networks." MN GIS/LIS Fall Workshop, Oct.
- 2018. "Sharing Code, Maps, and Data Science through a Digital Jupyter Notebook." Duluth.NET Meetup group, June.
- 2017 and 2018. "Exploring the Utility Network in ArcGIS Pro." MN GIS/LIS Spring and Fall Workshop.
- 2017. "Early Adopters of the Gas Utility Network: Are You the Tortoise or the Hare?" Esri's GeoConX Conference, Sept.
- 2016. "Simplifying Metadata Editing for the Non-Programmer." Northern MN GIS User Group, April.
- 2016. "Designing a Long-Term GIS Vision and Implementation Plan." MN GIS/LIS PreConference Workshop, Oct.
- 2015. "From the Field through the Firewall: An Approach to Streamlining Utility GIS Data Access in the Field, Office, and Web." MN GIS/LIS Conference, Oct.
- 2015. "Bringing Free and Open Source GIS to India Country." WI Land Information Association, Feb.