KIM SUNDEEN

Full Stack Engineer | Mapper | Project Coordinator

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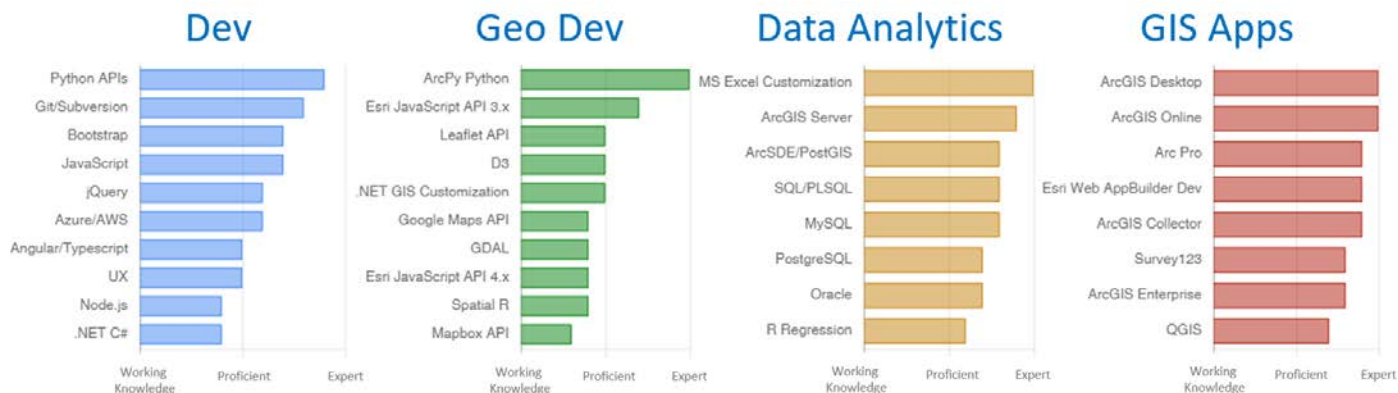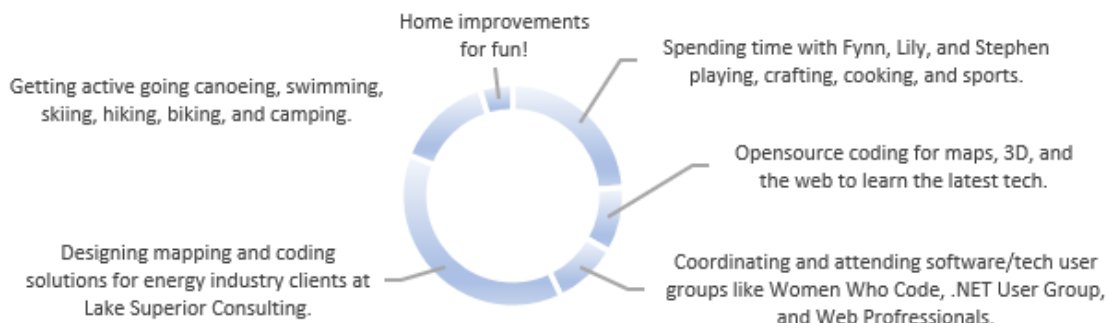https://www.linkedin.com/in/kim-sundeen-63007a16/

LIFE PHILOPHY *"The only mistake is one from which you didn't learn" -A Friend*

SUMMARY

Kim came from mapping wildlife population distributions to becoming a leader, planner, and developer designing and coding client-focused web and mobile apps with maps.

Kim has 12 years of extensive experience planning and implementing progressive GIS solutions using a variety of software programs including ArcGIS Enterprise, Python backend automation, web development frameworks, and desktop mapping applications (ArcGIS/QGIS) that focus on improving the end-user's experience. Kim's background includes database management (SQL Server, Oracle, PostgreSQL) and designing, strategizing, and implementing new desktop, mobile, and map solutions using agile scrum software development. She has deep technical and industry knowledge in utility and engineering practices, remote sensing, environmental sciences, mobile applications, and government services. She has managed internal data collections applications for field surveys, asset management systems, data migrations, and integrations between IT and GIS systems. Kim also is a constant learner; she coordinates virtual environment training workshops on Amazon Web Services and Azure, web apps, python, and new GIS tools to stay current with technology and code outside of work. Kim is active in the development, business, and GIS communities having launched the local chapter of Women in Tech and stepped into the Director role of the Duluth Chapter of Women Who Code. She also serves on professional GIS boards and committees (MN GIS/LIS Conference Committee Workshop, Fond du Lac Geospatial Technologies Advisory Committee, WI Land Information Association Membership Chair).

A DAY OF MY LIFE

Home improvements for fun!

Getting active going canoeing, swimming, skiing, hiking, biking, and camping.

Spending time with Fynn, Lily, and Stephen playing, crafting, cooking, and sports.

Opensource coding for maps, 3D, and the web to learn the latest tech.

Designing mapping and coding solutions for energy industry clients at Lake Superior Consulting.

Coordinating and attending software/tech user groups like Women Who Code, .NET User Group, and Web Profressionals.

Dev: Python APIs, Git/Subversion, Bootstrap, JavaScript, jQuery, Azure/AWS, Angular/Typescript, UX, Node.js, .NET C#

Geo Dev: ArcPy Python, Esri JavaScript API 3.x, Leaflet API, D3, .NET GIS Customization, Google Maps API, GDAL, Esri JavaScript API 4.x, Spatial R, Mapbox API

Data Analytics: MS Excel Customization, ArcGIS Server, ArcSDE/PostGIS, SQL/PLSQL, MySQL, PostgreSQL, Oracle, R Regression

GIS Apps: ArcGIS Desktop, ArcGIS Online, Arc Pro, Esri Web AppBuilder Dev, ArcGIS Collector, Survey123, ArcGIS Enterprise, QGIS

(Skill levels: Working Knowledge — Proficient — Expert)

Lake Superior Consulting ⑨ Duluth, MN

GIS Developer, May 2018–Present

Main GIS solution architect to lead collaborative efforts on web map applications and desktop tools for mapping, analysis, reporting, and reviewing of field-collected data. Coordinates with software developers to gather, document, and prioritize user requirements. Implements agile scrum development for the Data Solution group leading mapping, engineering design, and construction management projects. Designs and plans key automation and standalone applications for Esri, SharePoint, Primavera, and SQL Server integrations. Uses a suite of frameworks to align, extend, and develop existing tools and programs in JavaScript frameworks (Angular, jQuery, TypeScript), backend internal applications (MVVM, C#, .NET), and custom map and GIS tools (Python 2.7, 3.x, Esri's JavaScript API 3.x, 4.x). Identifies new business opportunities by designing and presenting proof-of-concept solutions for client demos, training, and standard protocol.

`Azure` `C# .NET` `TypeScript/Angular` `Node.js` `ArcGIS Enterprise` `ArcGIS Pro/Desktop` `Survey123` `ArcGIS Server` `ArcSDE` `MySQL` `ArcPy` `Esri JavaScript API 3.x, 4.x`

PRIOR WORK EXPERIENCE

RAMTeCH Software Solutions, Inc. – Professional Services, February 2017–May 2018 ⑨ Stillwater, MN

GIS Analyst/Developer

Worked as team member to provide custom mapping software development, improvement, and migration tools. Researched and presented on new tools to clients at conferences and internal meetings.

Data Migration and ETL Software Development for Clients

Applied agile product development methodology to design, build, and release python and SQL utility migration toolsets accessing oracle 11g/12g SDE databases, ArcMap and Pro desktop tools. Lead general and detailed user-training/demos for client support and project work. Researched new Esri utility network extension built in SQL server databases. Developed custom python, SQL, and Oracle database migration process to handle ETL from 5 source databases to one unified model for the new Esri Utility Network as the first official Esri implementation.

`C# .NET` `Python` `ArcGIS Enterprise` `ArcGIS Pro/Desktop` `Oracle` `ArcSDE` `MySQL` `ArcPy` `Esri Web AppBuilder Dev.`

Developed and Presented AWS Workshops for Clients and Conferences

Coordinated with Minnesota GIS/LIS Consortium to plan a training workshop for gas, electric, water, and utility operators. Promoted and lead a workshop for 20+ users to test workflows using Amazon Web Service machines.
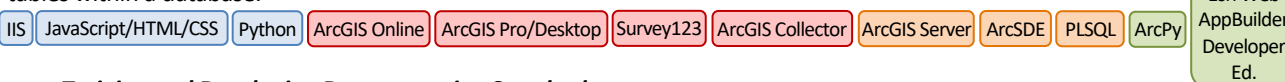
`AWS` `Python` `ArcGIS Online` `ArcGIS Enterprise` `ArcGIS Pro` `PostgreSQL` `ArcSDE` `Esri JavaScript API 3.x`

Minnesota Power – Facility Operations, 2016–2017 ⑨ Duluth, MN

GIS Programmer Analyst

Collaborated in teams to plan, design, develop, and test new mobile, desktop, and web mapping applications for maintaining electric infrastructure.
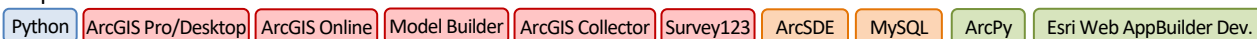
Mobile Mapping Application/Survey Tool Development

Developed, tested, trained staff, and implemented customized GIS services and geoprocessing tools through ArcGIS Server for mobile data entry and data-transfer through ArcGIS Online web maps for internal staff. Coordinated development and testing environments for Esri's Web AppBuilder installations. Created Python routines to download and extract ArcGIS Online data and images from a Survey123 app and export to a PDF with hyperlinked images and a summary of data from multiple related tables within a database.

`IIS` `JavaScript/HTML/CSS` `Python` `ArcGIS Online` `ArcGIS Pro/Desktop` `Survey123` `ArcGIS Collector` `ArcGIS Server` `ArcSDE` `PLSQL` `ArcPy` `Esri Web AppBuilder Developer Ed.`

Software Training and Developing Documentation Standards

Trained staff on using Esri's Model Builder, python, and ArcGIS Online tools with existing utility editing, work order, and field tools systems. Updated documented workflows for designing and publishing custom Survey123, ArcGIS Collector, and web maps.

`Python` `ArcGIS Pro/Desktop` `ArcGIS Online` `Model Builder` `ArcGIS Collector` `Survey123` `ArcSDE` `MySQL` `ArcPy` `Esri Web AppBuilder Dev.`

City of Duluth – Engineering Division, 2015–2016 ⚲ Duluth, MN

GIS Specialist

Served as liaison between IT Department and Engineering Division to ensure efficient data transfers and updates, and to improve GIS data applications for engineers and city planners. Maintained gas, electric, water, storm water, and sewer GIS datasets for engineering groups.

Database and Web Map Project Design and Implementation

Coordinated full lifecycle software and database development for mapping and web data-entry applications with Python and ArcGIS Online. Designed and managed a GIS user needs assessment and implementation plans for 19 projects for software development, database development/improvements, training, and website improvements for City of Duluth IT Department, Public Works, and Utilities beginning in 2015. Edited gas, water, and storm GIS data. Managed editing, training, and metadata tools for versioned SQL Server SDE database editing practices. Expanded existing GIS map services to multiuser, versioned online feature editing and Python-built geoprocessing services for City of Duluth.

`IIS` `Python` `QGIS` `ArcReader` `ArcGIS Desktop` `ArcGIS Server` `ArcSDE` `MySQL` `ArcPy` `Esri Web AppBuilder Dev.` `Esri Flex Viewer`

Bad River Tribe – Natural Resources Dept., 2012–2015 ⚲ Duluth, MN

GIS Specialist

Maintained and created map products and developed to new automation tools for increasing workflows for internal staff on data analysis, mapping, GPS collection/transfer. Improved tribal website with print and interactive map products.

Survey Field Collection, Processing, and Training

Managed all stages of field data collection preparation, training, pre- and post-processing for surveys on roads, historical properties, utilities, and tree inventories using Esri's ArcPad, in Trimble GeoXH series,

`ArcGIS Desktop` `ArcPad` `Trimble Positions` `Garmin GPS/GPX` `ArcSDE` `MySQL` `ArcPy`

Map Creation, Analysis, and Automation

Scripted opensource and ArcGIS programs to manipulate, re-write, or edit raster and vector data for use in GIS analysis and remote sensing apps (batch-processing image enhancements and transforms, and radiometric/atmospheric correction).

`Python` `ArcGIS Online` `ArcGIS Desktop` `ERDAS Imagine` `ArcSDE` `MySQL` `ArcPy` `OGR/GDAL`

Data Creation, Maintenance and Standardization for Natural Resources Website

Organized and designed GIS data in databases for all depts., planned and published data-entry web maps, and updated tribal website. Added new HTML/CSS pages for reorganizing the Bad River Tribal Natural Resources webpage to host both secured and public Google, Esri JavaScript API, ArcGIS Online, and GeoMoose OpenLayers web maps. Implemented new ArcGIS Server security protocol for publishing GIS services online. Researched and re-wrote external and internal data-sharing agreements and policies for the Bad River Tribe. Implemented new ArcGIS Server and published GIS secured web services for the Bad River Tribe.

`IIS` `Joomla CMS` `HTML/CSS` `Python` `ArcGIS Pro/Desktop` `ArcSDE` `MySQL` `PHP` `ArcPy` `GeoMoose JS API` `OpenLayers JS API` `Esri JS API` `Esri Flex Viewer`

School of Nursing – University of WI-Madison, 2010–2012 ⚲ Madison, WI

Graduate Student GIS Project Assistant

Developed Python algorithms to compare water quality interpolated data related to how map readers perceived their water quality risk. Analyzed spatial patterns in map visualizations for perceived health risk associated with well water test results.

`Python` `ArcGIS Desktop` `Esri File GDB` `MS Access` `ArcPy` `Google Maps JS API`

International Crane Foundation – Field Ecology, 2007–2010 ⚲ Baraboo, WI

GIS Field Ecology Researcher

Conducted wildlife surveys for analyzing population and genetic sampling. Mapped GPS locations and documented information for reporting and data analysis. Presented survey results to wider public audience.

`Python` `ArcGIS Desktop` `MS Access` `R Statistics` `Excel` `ArcPy` `GDAL`

PROJECT EXPERIENCE

Web Map App Development & Implementation: Planned and developed custom ArcGIS web mapping applications and designed and trained on configuring Google Analytics web tracking for improving web marketing for:

- Lake Superior Consulting engineering web viewers in Angular and C# frameworks using Esri's API 3.x,
- Bad River Tribal Ownership and Lease Viewer (ArcGIS Flex Viewer and SDE database),
- City of Duluth Street Update Viewer (creating using Esri's Web App Builder and SDE database),
- MN Power's Electric Utility Asset Identification (created using Esris' JavaScript API and Web AppBuilder Developer's Edition and SDE database),
- Biking Route Finder (Google Maps API and Postgresql database).

ArcGIS Service Publishing Automation: Developed configuration-driven python solution for other clients to quickly publish 20-40 GIS web services between different development/staging/production environments through ArcMap into ArcGIS Server 10.6. This process saved 3-4 hours/day of manual error-prone service publishing. Created ArcGIS add-ins and published REST geoprocessing tools into ArcGIS Server to simplify City of Duluth's street and pavement updates for users.

GIS Data Migration for Gas UPDM New Utility Network: Lead agile software development and project planning for client and consultant teams to customize python-plsql oracle database migration solutions to handle ETL from 5 source databases to one unified model. Managed multiple Esri alpha/beta software releases for changes in the new Utility Network model.

GIS Workflow & Process Improvement: Coordinated GIS feasibility study to understand how users interact and use the applications. The results are used to develop clear tool requirements for Lake Superior Consulting app tool development. Documented workflows for engineering staff at City of Duluth to identify areas for improvement. Learned established GIS data entry policies.

Full Cycle Project Development & Implementation: Coordinated GIS user needs assessment & implementation plans for 19 projects for software development, database development and improvements, training, and website enhancements for City of Duluth IT Dept. & Public Works & Utilities Dept. Priorities were used to direct funding to most important projects.

Training: Taught introductory Python, JavaScript, GPS & GIS sessions for small group workshops on: (1) using new mapping & GPS programs (2) configuring and testing ArcGIS Desktop & opensource QGIS, (3) setting up development environments for Python & JavaScript, (4) process for updating website front ends, & (5) GIS user needs assessments.

Staff Supervision: Managed remote development teams for software development and database configuration using agile project management with RAMTeCH. Oversaw and trained student GIS technicians on GIS data entry procedures for UW Nursing School mapping projects and LTE staff for short-term land ownership projects with the Bad River Tribe.

GIS Data Security: Implemented new ArcGIS Server security protocol for publishing GIS services online; Researched and re-wrote external and internal data-sharing agreements and policies for the Bad River Tribe.

ACHIEVEMENTS

Education and Training

- Continued Education: computer science, GIS, and web development courses through Lake Superior College, University of Wisconsin-Madison, FreeCodeCamp.
- University of Wisconsin-Madison, Graduate Certificate: Geographic Information Systems, 2012
- University of Wisconsin-Madison, Master of Science: Conservation Biology and Sustainable Development, 2011
- University of Wisconsin-Madison, Bachelor of Science: Wildlife Ecology, Certificate: Environmental Studies, 2006
- Taught introductory Python, JavaScript, GPS and GIS sessions for small group workshops on: (1) using new mapping and GPS programs (2) configuring and testing ArcGIS Desktop and opensource QGIS, (3) setting up development environments for Python and JavaScript, (4) process for updating website front ends, (5) GIS user needs assessments, (6) workshops on new technologies including Esri's Utility Network.

Certifications and Licenses

- Certified Geographic Information Systems Professional (GISP) #84940

Presentations

- Sundeen, K.H. (2019) "Building, Branding, and Boosting your Web Portfolio with Github Pages and Google Analytics." Women in Tech Duluth User's Group, Feb.
- Sundeen, K.H. (2018). "Exploring the Utility Network in ArcGIS Pro for Water, Electric, and Gas Networks." MN GIS/LIS Spring Workshop, Oct.
- Sundeen, K.H. (2018). Sharing Code, Maps, and Data Science Through a Digital Jupyter Notebook." Duluth.NET Meetup group, June.
- Sundeen, K.H. (2018). "Exploring the Utility Network in ArcGIS Pro." MN GIS/LIS Spring Workshop, March.
- Sundeen, K.H. (2017). "Exploring the Utility Network in ArcGIS Pro." MN GIS/LIS Pre-Conference Workshop, Oct.
- Sundeen, K.H. (2017). "Esri's Utility Pipeline Data Model (UPDM) and Utility Network in Network Management Basics." Utility Industry Forum Posting, Sept.
- Sundeen, K.H., et al. (2017). Early Adopters of the Gas Utility Network: Are You the Tortoise or the Hare? Esri's GeoConX Conference, Sept.
- Sundeen, K.H. (2016). "Simplifying Metadata Editing for the Non-Programmer." Northern MN GIS User Group, April.
- Sundeen, K.H. (2016). "Designing a Long-Term GIS Vision and Implementation Plan." Minnesota GIS/LIS Pre-Conference Workshop, Oct.
- Sundeen, K.H. (2015). "Having Fun with a Homegrown Approach to a GIS User Needs Assessment: With a Bonus Implementation Plan!" Northern WI GIS User's Group, Nov.
- Sundeen, K.H. (2015). "From the Field through the Firewall: An Approach to Streamlining Utility GIS Data Access in the Field, Office, and Web." Minnesota GIS/LIS Conference, Oct.
- Sundeen, K.H. (2015). "Bringing Free and Open Source GIS to India Country." Wisconsin Land Information Association, Feb.
- Sundeen, K.H. (2013). "GIS Site Selection for Development in the Bad River Reservation: A Weighted Analysis for Avoiding Impacts to Wetlands and Cultural Historic Sites." National Tribal GIS Conference, Nov.
- Sundeen, K.H. (2012). "Searching for Risky Power Lines: Predicting Sandhill Crane Flight Behavior and Collision Risk in WI." University of Wisconsin-Madison, GIS Day Expo, May.

Awards and Recognitions

- $127,000 FEMA grant
- $10,000 University of Wisconsin-Madison research grant
- $5,200 ESRI Conservation Grant Program grant
- 1st Place: Large-format map, 2014 National Tribal GIS Conference, "A Bird's Eye View of the Bad River Watershed and Proposed Mine."

Organizations and Affiliations

- Coordinate Duluth Women in Tech (WiT) groups for women to learn, present, and develop professionally together, *Director*
- Assist with .NET Duluth meetup groups for developers for presentations and professional development
- Conference Committee Member 2018: Minnesota GIS/LIS Conference, *Virtual Environment Task Force*
- 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*

OTHER SKILLS

- Database design/structures (Microsoft SQL Server, 11g/12c Oracle, PostgreSQL, MySQL, MS Access, Excel)
- Server-side/desktop programming (Python, C# .NET, SQL/PLSQL)
- Web development (Typescript, HTML5, CSS, JavaScript frameworks, PHP)
- ArcGIS Enterprise stack (installed and helped configured ArcGIS Server, Web Adapter, ArcSDE to spatially-enable enterprise databases, Portal, Data store)
- Mapping APIs (ArcGIS for JavaScript 3.x, 4.x, Leaflet, Mapbox, Google Maps, Openlayers)
- GIS/GPS/mobile apps (ArcGIS 9.x-10.x, ArcGIS Pro 2.x, QGIS 2-3, Google Earth KML, Garmin, ArcPad, Terrasync, and Pathfinder Office, Survey 123, ArcGIS for Collector, Web AppBuilder Developer Edition, ArcGIS Online)
- Project management
- Code Versioning (Git, Github, Hg Mercurial, TortoiseSVN)
- Presentation and graphic design (workshops, training, presentations, lectures, and posters)
- Technical and scientific writing for research articles, user guides, case studies, and grants