Jacob Wysko

Geospatial and Software Engineer.
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EDUCATION

Bachelor of Science in Geospatial Engineering, Minor in Computer Science — Aug. 2020 – Aug. 2024
Michigan Technological University, Houghton, Michigan — GPA: Overall: 3.89, Departmental: 4.00

WORK EXPERIENCE

KEBS, Inc. — Haslett, Michigan
Survey Technician — May 2022 – Aug. 2024

- Worked independently and with crew to complete cadastral boundary surveys, topographic surveys, and ALTA surveys using Leica robotic total stations and GNSS receivers.
- Operated unmanned aerial systems and photogrammetry software to produce high-resolution orthomosaic imagery for use in ALTA surveys.

Michigan Technological University — Houghton, Michigan
Teaching Assistant — Aug. 2022 – Apr. 2024

- Provided assistance for hands-on surveying labs in Introduction to Surveying. Aided students with the setup and operation of surveying equipment, geospatial computations, and best-practice surveying procedures.
- Graded field equipment labs and AutoCAD Civil 3D labs for Introduction to Surveying, graded exams and projects for Route and Engineering Surveying, and graded computational workbooks for Geospatial Computations.

UNDERGRADUATE PROJECTS

BNSF Superior Dock and Yard Improvements – Senior Design — Jan. 2024 – Apr. 2024

- Collaborated with civil engineering students to develop a storage solution for taconite pellets at the BNSF taconite transloading facility in Superior, Wisconsin.
- Performed terrestrial LiDAR scanning with a Trimble SX12. Georeferenced the point cloud using a combination of static observations—processed using the National Geodetic Survey's (NGS) Online Positioning User Service—and RTK observations with Trimble R12i GNSS receivers. The scan captured existing structures on site, notably structural members of the dock bins.
- Planned the relocation of an existing access road by designing a new horizontal and vertical alignment conforming to AASHTO roadway design policy.
- Created CAD drawing standards for plan sheets, drafted existing and proposed conditions sheets, and compiled other teams' sheets into a comprehensive construction plan set.
- Compiled a comprehensive project report using the LaTeX typesetting package.

Michigan Tech Campus Control — Oct. 2023 – Feb. 2024

- Observed geodetic control marks on the campus of Michigan Technological University for inclusion in the NGS Integrated Database via a campaign-style GNSS survey.
- Managed a group of fifteen students, which was divided into five teams of three—each responsible for conducting observation. Established a standard operating procedure for data collection and organization.
- Worked extensively with NGS's OPUS Projects and WinDesc software packages to describe, process, and adjust the GNSS observations ("blue-booking").
- Evaluated CORS stations for operational status, data availability, and network accuracies to produce a CORS design that improves the accuracy of the network.
- Compiled a comprehensive project report using the LaTeX typesetting package, which was included with the project submission to NGS.
- Gave a presentation on our work and results at the 2024 Michigan Society of Professional Surveyors conference.

Carp Lake Mine LiDAR Scan — Oct. 2023 – Feb. 2024

- Scanned an abandoned copper mine in the Porcupine Mountains Wilderness State Park in Ontonagaon, Michigan using a Trimble X7 terrestrial LiDAR scanner.
- Determined total air volume from point cloud data. This metric was used by a team of electrical engineers to develop an air ventilation system to control white-nose syndrome in bats.

Winter Carnival LiDAR Scans Feb. 2022 – Feb. 2024

- Annually scanned large-scale snow sculptures using a combination of LiDAR data from a FARO Focus 3D, Trimble SX12, and Trimble X7.
- Converted and processed raw point cloud data into mesh geometry using RealityCapture, MeshLab, and Blender 3D software packages.
- Published our models to Sketchfab. Customized rendering parameters to create PBR materials that mimic real-world lighting conditions of snow.

3D Historical Documentation Oct. 2022 – Feb. 2023

- Operated a FARO Focus 3D terrestrial LiDAR scanner to collect point cloud data of a historic building at the Quincy Smelting Works in Hancock, Michigan to create 3D documentation. Processed, registered, and prepared point cloud data for analysis.
- Operated a Matterport Pro2 mapping camera to create navigable virtual tours of the building's interior—resulting in a computerized, immersive experience.
- Drafted architectural diagrams from LiDAR data that accurately depict structural elements, floor plan arrangements, and building elevations using Autodesk Revit and AutoCAD.
- Gave a presentation on our work and results at the 2023 Michigan Society of Professional Surveyors conference.

SKILLS

- **Computer Software** – Experienced with geospatial software packages: Autodesk Civil 3D, Trimble Business Center, RealityCapture, Agisoft Metashape, FARO SCENE, CloudCompare, ESRI ArcGIS, and common suites including Microsoft Office.

- **Computer Graphics** – Knowledgeable in computer graphics rendering systems and relevant software packages, such as Blender 3D and Unreal Engine 5.

- **Software Development** – Proven development of integrative web applications using Next.js and TypeScript. Extensive knowledge of Kotlin and the JVM ecosystem to create desktop applications.

CERTIFICATIONS AND AWARDS

Part 107 Remote Pilot Certificate – *Federal Aviation Administration* – Issued June 2023.

Undergraduate Student Service Award – *Michigan Technological University* – Awarded April 2023.

Dean's List – *Michigan Technological University* – All semesters.

SELECTED COURSES

- CEE 4990 . . . . AI for Engineers
- SU 3180 . . . . Boundary Law Principles
- CS 2321 . . . . Data Structures
- CS 3425 . . . . Database Systems
- CS 2311 . . . . Discrete Structures
- CS 3311 . . . . Formal Models of Computation
- FW 3540 . . . . . . GIS for Natural Resource Management
- SU 4060 . . . . Geodesy
- SU 4100 . . . . Geodetic Positioning
- SU 4180 . . . . Land Subdivision Design
- SU 4140 . . . . Photogrammetry & UAV Mapping
- SU 4996 . . . . Remote Sensing
- SU 2220 . . . . Route and Engineering Surveying
- CMG 3200 . . . . Site Planning & Development
- SU 3600 . . . Surveying Computations and Adjustments
- SU 4142 . . . . Terrestrial LiDAR Scanning