

Technology Stack

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Core

- Python 3.11+ (speed, typing, ecosystem)
- NumPy (arrays, vectorized slope math)
- (Later) PDAL or laspy for LAZ ingest
- (Later) SciPy: KD-tree / interpolation utilities

Dev + Quality

- pytest minimal unit tests
- ruff / black (style; optional early)

Visualization (optional early)

- Matplotlib: quick 2D plots of height + path
- (Possible) Plotly: interactive 3D surface when needed

Performance Path

Start pure Python/NumPy. If hotspots appear:

- Numba JIT for inner loops
- PyTorch or JAX only if GPU batch path planning emerges

Packaging

Simple src layout; no heavy framework. One *main entry for demos*.

Data

Local cache directory (e.g. data/raw, data/processed). Avoid bundling big files in git.

Why This Stack

Fast iteration, minimal friction, easy to grow to heavier geo libs later.