MSPS-STL March 2024 Meeting Program
Artificial Intelligence in Surveying

I. Business Meeting:

    a. Account Balances.
    b. Discussions on developing a scholarship program.
    c. Future Programs and a Golf Outing.

II. Evening Program: Artificial Intelligence in Surveying – Where is it now?

1. What is Artificial Intelligence and What are Large Language Models?
    a. Artificial Intelligence is the simulation of human intelligence in computers and machinery.
    b. Large Language Models are artificial neural networks data mining linguistic replies to inquiries.

III. Where is Artificial Intelligence already being utilized in Surveying?

1. Global Positioning System Processing
    a. AI algorithms analyze data for atmospheric error corrections and satellite clock inaccuracies.
    b. Augmented Reality Overlays. Dynamic Route Optimization.

2. Processing Drone Photogrammetry and LiDAR Data
    a. Photogrammetry vs. LiDAR. (3D Cartography vs. 3D terrain modeling).
    b. AI deep learning algorithms excel at pattern recognition, feature extraction and data analysis.
    c. High-resolution photogrammetry lets AI train on diverse datasets. LiDAR lacks visual detail.

3. Point-cloud Classifications and Surface Building
    a. AI innovation in photogrammetry offers more attractive options for a broader range of projects.
    b. LiDAR still holds crucial role in determining accurate elevational data.
    c. Digital Terrain Modeling vs Digital Elevation Modeling vs Digital Surface Modeling.

4. Point Extractions and Feature Line Extrusions
    a. Extract points by selecting an object, creating a new point at its base and assigning a code.
    b. Extrude linestrings by picking improvement features in a point-cloud (and assigning codes).

IV. What softwares currently employ AI.

5. Trimble Business Center (TBC)
    a. Classification abilities based on 3D deep learning semantic segmentation modeling.
    b. Customized feature extraction automates asset groupings (curbs, utilities, transportation).
    c. Facilitates deliverables to CAD & 3D files, asset management software and GIS databases.

6. Trimble Realworks
    a. Automated registration of point cloud data to geo-referenced project control.
    b. Simplified data exportation to multiple platforms (ReCap).
    c. Trimble CloudEngine, an intelligent design point cloud editor and surface generator.

7. Autodesk AEC software (Civil 3D) (Maya?)
    a. Automate tedious workflow tasks, augment design exploration and analyze consequences.
    b. Generative Design assists multivariable design challenges with viable development solutions.

8. ReCap and Revit (Building Information Modeling)
    a. Use ReCap to import point cloud data. Use Revit for conceptual modeling of building features.