EAS

ENVI ANALYTICS SYMPOSIUM

Applying AI/ML to Geospatial Engineering Tasks

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The 64th Engineer Detachment

- Became a unit “again” in April ’15…4 years ago.
  - 27 Soldiers
    - Geospatial Engineers, Technicians, and Officers
  - Feature Extraction Team
- Internally Organized into Four (4) Functional Teams:
  1. Detachment HQ’s (Admin)
  2. Analysis
  3. Map Finishing (1:50K) w/Feature Extraction Team
  4. Database Management w/Data Steward

StoryMap Link to Army Geospatial Enterprise: https://arcg.is/0D8Wmu

My Discussion Points:

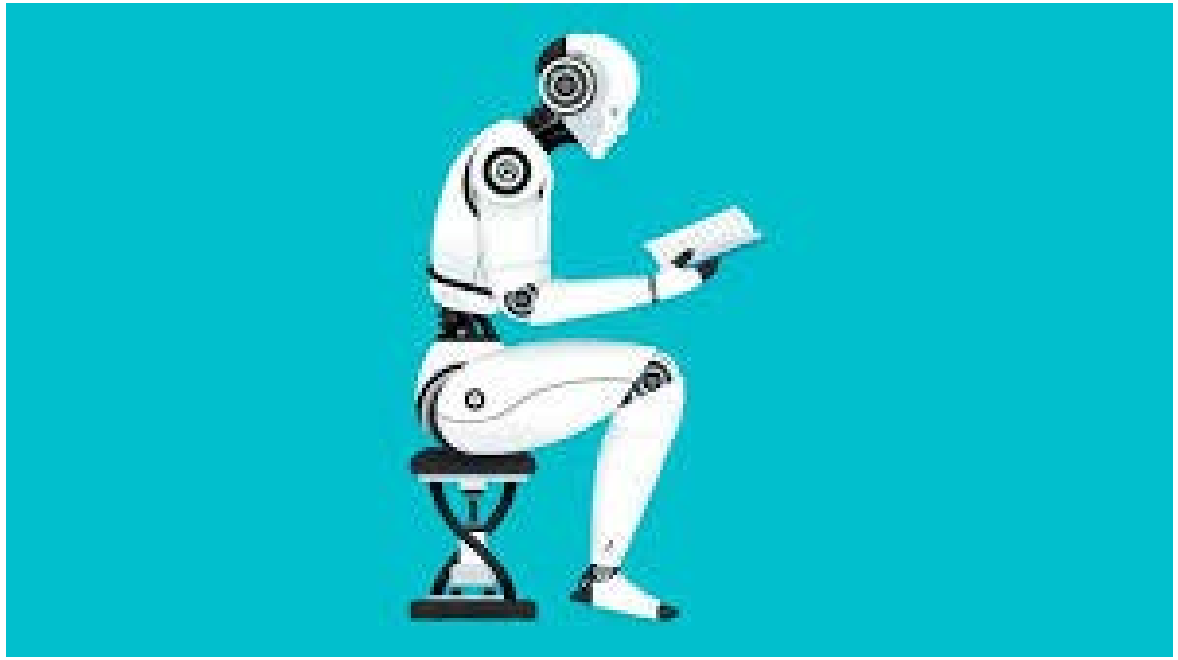
- Machine Learning ➡ Deep Learning ➡ Artificial Intelligence
- Commander’s Perspective – how are we moving forward?
- Cloud Migration: Desktop ➡ Cloud

Machine Learning – Deep Learning – AI (@ 64th EN DET)

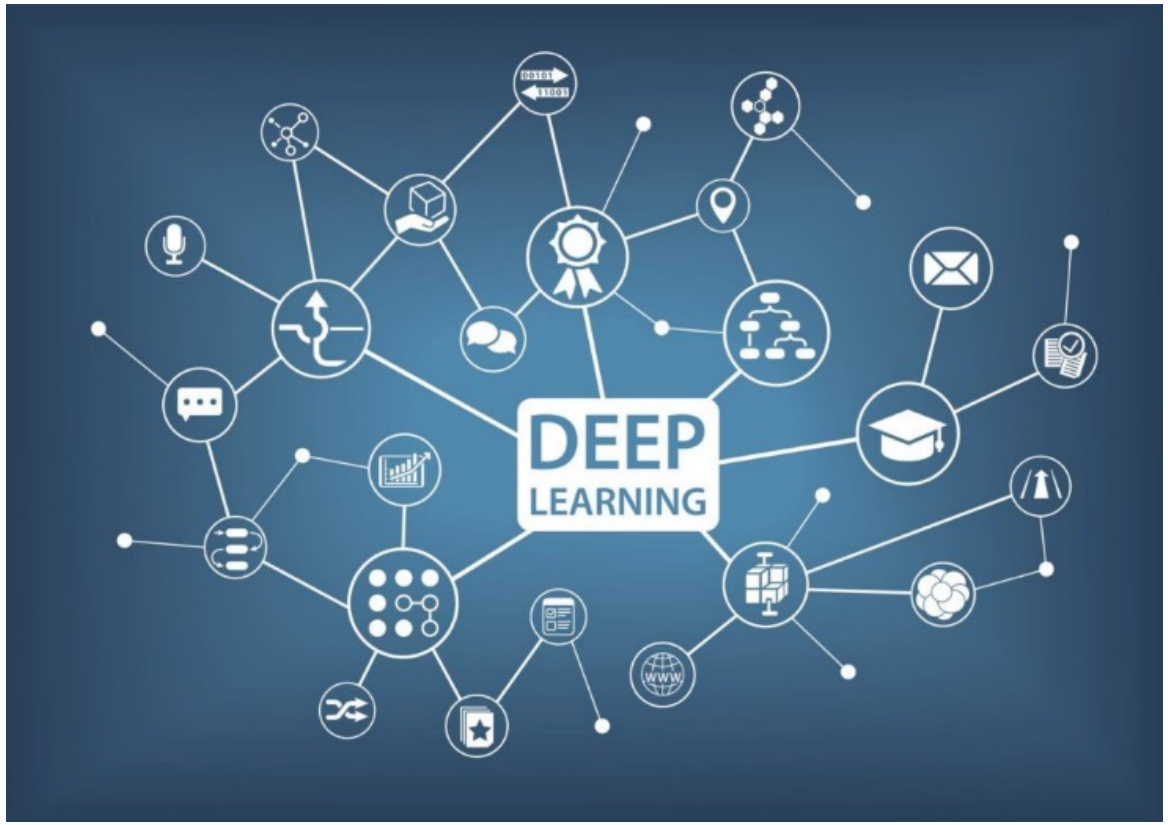
Are we teaching our machines, and are they learning?

Yes & No…

1. Object oriented feature extraction algorithm development.
2. Team's are creating Python scripts to gain efficiencies.
3. Next step…bringing the scripts and models together.
4. Army Geospatial Center's SAGE Tool. (Spatially Aware Geospatially Enabled)



Machine Learning – Deep Learning – AI (@ 64th EN DET)



<u>Are we thinking deep?</u>

No, not yet…why not?

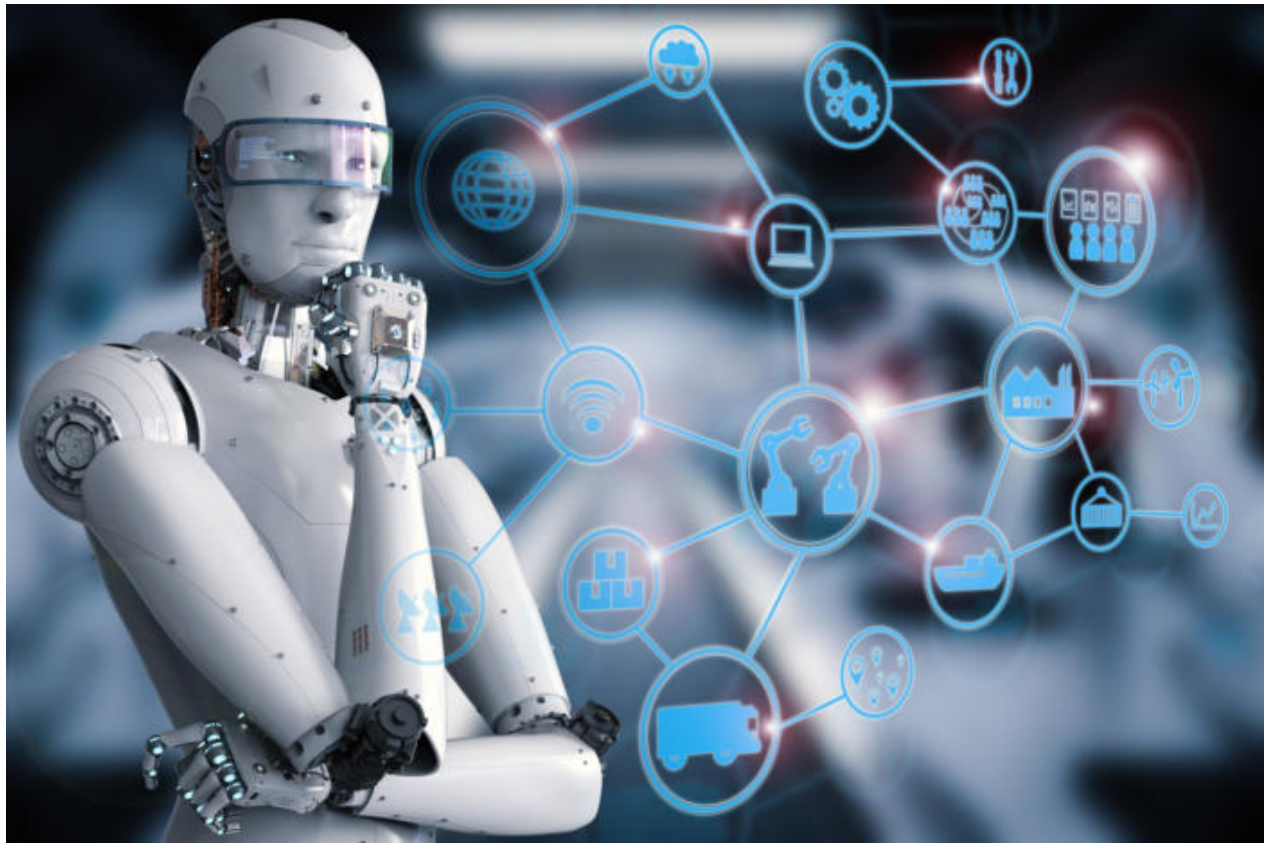
1. Acquired a GPU - - power supply swap.
   *HP Proliant DL380 Gen 9
2. Not using Cloud Server solutions to overcome GPU issues.
3. Lacking a defined problem statement and training dataset.
4. AGC SAGE tool take into account other domains. Is it MCIA's SAT tool?

Machine Learning – Deep Learning – AI (@ 64th EN DET)

Using AI for Geospatial Engineering?

No, but the potential is...

1. Taking large unstructured datasets and giving it structure.
2. An automated MCCO (2028) - - telling us what we should be seeing.
3. Will we TRUST the results?

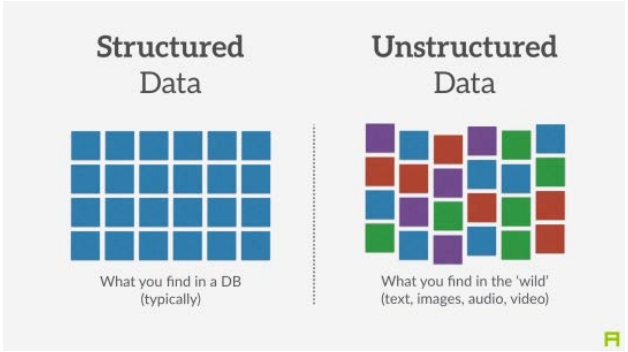


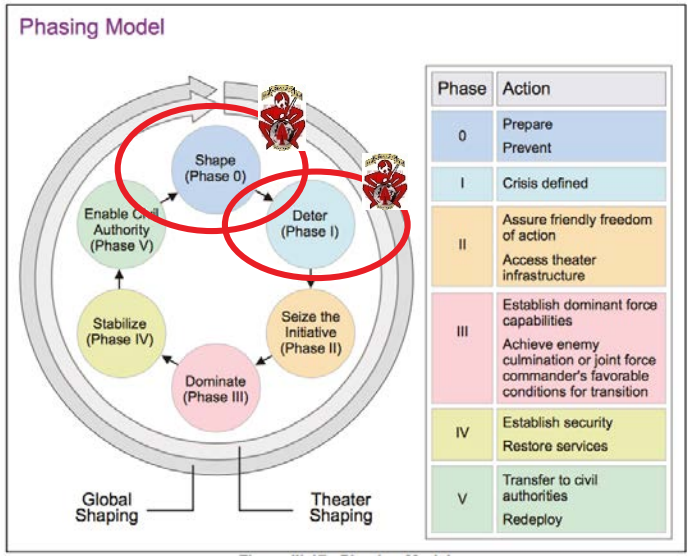
Applying Machine & Deep Learning / AI (@ 64th EN DET)

<u>Data structure and management are key's to success. Are we doing it?</u>

Yes & No…again.

1. SSGF – Standard Sharable Geospatial Foundation led by Army Geospatial Center (AGC); we're in compliance.
2. Data management at mid-level within an organization is lacking, not enough time.
3. Our data is stored onsite within fixed server stacks. We're not utilizing the elastic IaaS despite having the time available.





Applying Machine & Deep Learning / AI (@ 64th EN DET)

<u>All the stars aligned, could we employ AI?</u>

No.

1. My perception is I could not employ AI today without major cybersecurity implications.
2. It's unclear if Senior Staff would TRUST the solution.
3. Using AI enabled UAV's.

https://vimeo.com/shieldai/nova

Cloud Migration – How do we get there? (@ 64th EN DET)

US Army Computing Environments

Command Post

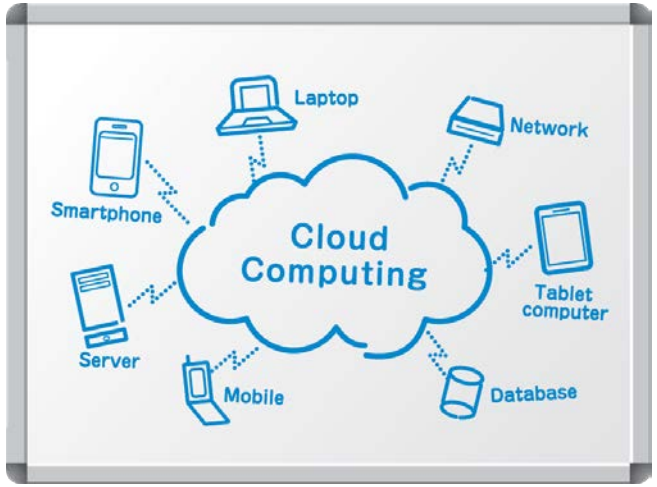
Mobile

Mounted

Sensor

Real-Time

Cloud



By 2021…Goals @ 64th

1. Being able to remote desktop into an instance freely.
2. Running big data analytics in a cloud computing environment.
3. Using IaaS, PaaS, and SaaS as a norm within the Detachment.
4. Institutionally seeing a change in base-line knowledge of cloud computing.

Closing Thoughts

- Understanding our foundation first before jumping to AI…
  - What echelon in an organization do we want to employ AI?
  - Many computing environments (form factors), many GIS programs…meshing together.

- Onboard for cutting edge technology…
  - Environments with reliable network connectivity are key, or is that a paradigm?
  - Pushing the bubble forward, advancing our tradecraft within the US Army…ALL I

- Toddler Steps…we all don't start off running. We're getting there though.