

Key Takeaways From “Staying Current with Emerging Technology Trends: Using Big Data to Inform Planning”

This paper proposes a data-informed approach to identify research developments relevant to an organization. We describe this approach in detail and use research from the U.S. Department of Defense (DOD) to complete a proof of concept. The approach consists of five steps. Briefly, these steps include:

1. Identify a set of **papers** deemed relevant for further study.
2. Locate the **clusters** in the CSET ETO Map of Science that contain those papers and the other papers that are closely connected to them through citations.
3. Analyze the metadata of the selected research clusters to identify the **most active or exceptional clusters**, based on the research goals.
4. **Prepare analysis** for a subset of clusters for subject matter expert (SME) review.
5. Facilitate a **SME discussion** about how the research cluster might impact an organization's equities.

Proof of Concept Results:

The proof of concept used papers from DOD-affiliated institutions to identify clusters (step 1) and prioritize them for SME review based on evidence of being related to artificial intelligence (AI) and evidence of translating to applications and development (step 3 and 4). The SME's found the resulting clusters illuminating (Step 5) and our proof of concept included the following findings:

- Rapid changes in a research cluster with many papers related to **image forgery and forgery detection** (cluster [1994](#)). SMEs found the cluster's high growth and exports interesting and surmised that the research could be relevant to concerns around adversarial attacks, clandestine operations, and disinformation.
- A family of clusters with high activity all related to robots and robot navigation ([5167](#), [2658](#), [43601](#), [416](#), [7185](#), [2812](#), [6265](#), [45546](#)). The combination of these research advances **could substantially affect the DOD's interests in terrestrial and waterborne robotics and robotic navigation, which are relevant to the DOD's Replicator program.**

Closer examination of these clusters could support the DOD's research and development goals.

For more information:

- Download the report: <https://cset.georgetown.edu/publication/staying-current-with-emerging-technology-trends-using-big-data-to-inform-planning/>
- Contact us: cset@georgetown.edu