OCTO

Hatteras

Adaptive MLOps for the Ever-Changing Battlefield

If you're using off-the-shelf, manually maintained machine learning (ML) models, you don't have mastery of the battlefield.

Battlefields are anything but stagnant, and ML models can't be either. For warfighters harnessing ML, this presents a problem: ML models must constantly be retrained through MLOps to adapt to shifting conditions. But most technology providers won't disclose that ML models become obsolete quickly—almost as soon as they are released for use. The truth is *ML models must have the ability to be retrained automatically, nearly constantly, and by any user.*

Otherwise, warfighters do not have quick access to the level of critical situational awareness necessary to maintain dominance, and data scientists and DevOps teams must be taken off production to rebuild deteriorating models. Enter Hatteras, Octo's MLOps solution to help arm the warfighter with the latest, most accurate situational awareness.

Retrain ML Models Anywhere, Anytime, Automatically

Hatteras is a low cost but essential MLOps solution that enables AI at scale, even at the tactical edge. It empowers warfighters by preventing model decay, automatically retraining ML models through a user interface that requires no DevOps experience.

Automated Retraining and Maintenance: Hatteras triggers automated retraining to maintain ML model performance and support data integrity, ensuring ML models are less likely to fall victim to adversarial attack.

One Tool: Hatteras allows users to iteratively develop ML models, deploy custom and existing models, and monitor and continuously train models—all through one tool.

Open Source: Hatteras embraces open source frameworks and integrates open source tools with permissive licenses. It prevents vendor lock in, even if personnel change.

User-Centric: Hatteras empowers users to deploy models through an intuitive user interface, no advanced training necessary.

Monitor CV Model Decay

As with all ML models, computer vision (CV) model performance decays when present conditions exhibit patterns that deviate from those it was trained to detect. This chart illustrates the employment of pattern deviation detection on results from a CV model for object detection. In this scenario, the CV model was generating inference (detecting cars and people, in this example) on thermal Black Hornet drone footage in a gradually changing environment. Seventeen pattern deviations were detected as the CV model ran against drone footage transitioning between familiar and unfamiliar environments. Each deviation indicates a point at which the CV model's performance decreased appreciably and represents opportune moments to retrain the model. **Without Hatteras, models running on the battlefield will continue to decay in this way. Hatteras can detect and automatically retrain these models so performance stays strong.**

Monitor CV Model Decay Using Pattern Deviation

Yolo Model with Pattern Deviation Detection: Performance on Gradually Changing Environment

Pre-Pattern Deviation: HQ Detections
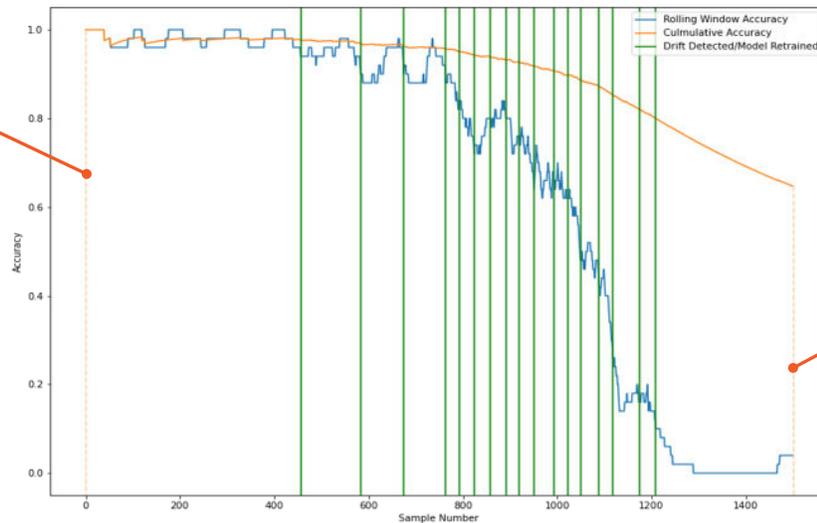
Post-Pattern Deviation: LQ Detections

Outcomes that Matter

With mission conditions changing at breakneck speed, warfighters need cutting-edge, easy to use tools to win. Hatteras provides a safety net for warfighters who depend on updated, accurate situational awareness from ML models on the battlefield and beyond. It allows warfighters to deploy operational AI in any environment, a must have ability in modern day warfare. Learn how Hatteras can empower your teams to meet even the most dangerous missions, while reducing time, cost—and casualties. **Contact Octo for a demo.**