ALEGION

Case Study:

Computer Vision to track attentiveness

Leveraging high-precision data annotation to empower brands with person-based TV engagement analytics

Initiative:

A leading entertainment technology company came to Alegion with a unique use case: video annotation accurate enough to power their engagement analytics, TV Audiences, which tracks how many people are watching, their attention level, and even their emotions in real-time. Brands have historically been unable to differentiate content exposure from engagement, meaning they placed equal value on both attentive and passive TV watching. Using deep learning models, the entertainment technology company is now enabling advertisers to hyper-target campaigns based on real viewer attention levels with specific TV content.

Challenge:

How consumers watch TV is not something that has historically been measured at this level of granularity because of the high degree of complexity and subjectivity involved. Quality management in this use case is not a binary evaluation. The task involved localizing the viewer's heads, tagging them with the household demographics data that had been pre-populated into the platform, and annotating them with an attention level classes across 12 million+ video frames from a data source that is 100% opt-in and privacy safe.

Quality Management:

The client entrusted Alegion to handle their data labeling because of our ability to deliver quality using a consensus-driven QA model that included annotations from two or more independent annotators with an automated evaluation to score the level of consensus on a frame-by-frame basis. Frames that fell below the target threshold were automatically routed to final adjudicator. By configuring a task-specific QA workflow within the platform and leveraging the team's domain expertise, Alegion delivered annotation for 12M+ frames at 95%+ accuracy.

Classification Approach:

The Alegion team evaluated a set of viewer disposition including their body position, posture, and head angle (pitch and yaw angles) in order to accurately and consistently label the subjects and classify levels of attentiveness. Not all videos are straightforward. The Alegion platform leveraged advanced annotation tools and conditional workflows to navigate edge cases such as videos with poor lighting or that contain subjects holding secondary devices like phones, laptops, or books.

Certainly Attentive Head Angle
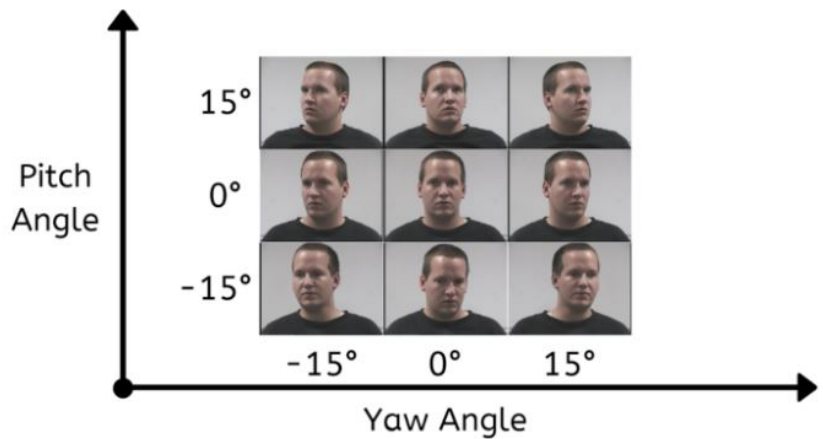
Training:

Successfully annotating tens of millions of videos with a wide range of frame rates, resolution, lighting conditions, and TV viewer dispositions requires the annotators to fully comprehend the labeling requirements. To deliver consistently high-quality labeling at this scale, Alegion implemented a comprehensive training program and pre-qualified the annotators to ensure only high performers were labeling the client's data, then expanded the training to address known challenges and remove any ambiguity in the annotation tasks.

Impact:

With reliable, high-quality model training data from Alegion consisting of **millions of frames** and **tens of millions of annotations** at **95% accuracy**, the entertainment technology company is deploying a first-of-kind TV viewer engagement analytics. This marks a giant step in enabling brands, media, and digital advertisers to advance target capabilities and build meaningful connections with their customers.

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