



## **Computing Community Consortium’s Response to RFI “[Request for Information on Federal Video and Image Analytics Research and Development Action Plan](#)”**

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**This response is from the Computing Research Association (CRA)’s Computing Community Consortium (CCC). CRA is an association of nearly 250 North American computing research organizations, both academic and industrial, and partners from the professional societies. The mission of the CCC is to bring together the computing research community to enable the pursuit of innovative, high-impact computing research that aligns with pressing national and global challenges.**

The Computing Community Consortium commends the NITRD VIA team for creating the VIA Action Plan. Video and Image Analytics is a field undergoing explosive development and receiving widespread media attention. That being said, in order to continue innovating in this field, federal investments must continue to be allocated towards VIA research. Below, the CCC lays out a few recommendations for how federal investments ought to be distributed within VIA research, and a few overarching goals we believe should be included in the next VIA team report.

Beginning with the first question from the RFI, as it has only been two and a half years since the release of the initial report, much R&D has taken place, but the basic landscape has not changed fundamentally since March of 2020. We instead would like to focus on the second half of question one, which asks how R&D has reduced or changed the need for the federal government to pursue its goals for VIA.

One growing concern is that university researchers are becoming more and more disadvantaged compared to their industry counterparts in regards to funding and access to large datasets, models, and computational resources, and yet fundamental research advanced from the nation’s academic researchers remains vital to long-term progress and competitiveness. To better leverage the strengths of each, and to help narrow the gap between industry and academic research efforts, in addition to continued federal



funding, we advise the government to incentivize industry to form stronger partnerships with academia and foster a relationship of shared knowledge and resources.

Fostering the relationship between academia and industry would be very beneficial for both parties, since the future of both depends directly on the skill level of personnel that will be recruited from universities. By encouraging more industry-academic research engagement in VIA through increased funding and improved access to research resources, the next generation of VIA researchers will be much better equipped to tackle the future challenges that will arise.

Turning now to the second question, we believe the broad-based shift toward the use of video and image analytics in a wide range of application areas will increase the demand on VIA researchers and VIA technologies. Examples of this shift in public behavior include attention paid towards police body camera footage, doorbell video cameras, medical diagnosis performed by AI analyzing photos and video, environmental monitoring, quality control in industry, healthcare and assistive technologies, vision for autonomous vehicles, and many more examples. As a result, the increased usage of VIA technologies has shed light on the importance of preparing these technologies for real world situations, rather than just the laboratory settings within which they are developed.

Take police worn body cameras for example. During a police chase, many environmental factors may affect the video and sound quality from a body camera, such as poor lighting, noise from the wind or an officer inadvertently muffling the microphone, multiple people talking or yelling at the same time, shaky camera footage from the movements of the officers, or even weather conditions such as rain or snow. These types of real world videos may be foreign to many video analytics systems and may cause the systems to make errors. To allow AI to correctly interpret video affected by these types of factors, we need to have AI systems that are built to handle such challenging real-world scenarios from first principles and tested thoroughly and systematically on large, representative datasets. This may require increased federal funding to create better testbeds for VIA and to provide those outside wealthy tech companies with access to the resources they need to conduct cutting-edge research.

Since the release of this report in 2020, public attention surrounding multimodal vision technologies has also continued to increase. Because of the sustained growth in these areas, government investments will be expected to grow comparatively to continue to support these projects. The CCC would recommend that federal investments in video



and image analytics are increased to meet the ever expanding demand placed upon these technologies. Failure to do so could result in the United States falling behind its counterparts in relation to video and image analysis capabilities. We note that while substantial research is conducted in industry, academics have the freedom to consider societal impacts that may not always align with a company's goals for VIA.

Finally, in regards to the third question of additional goals to consider, when describing video and image analytics systems, the report frames human decision makers as consumers of the outputs of VIA systems, but not as participants or collaborators with the technology. We believe human decision makers should instead be considered an integrated and integral part of all intelligent computer systems. Since both humans and AI systems have inherent biases, and human decisions can be biased by algorithmic decisions, we believe it is important to focus research attention on human-algorithm systems as a whole. Failing to do so can instill in the public and policy makers a false belief that AI systems, or human decision makers working based on inputs from VIA, are infallible and completely reliable.

Additionally, the term "decision makers" does not simply refer to those developing or modifying these systems, but also the end users who make decisions based on the outputs of VIA systems, such as doctors using VIA technologies to analyze images of tumors or irregularities. End users can interact with and draw conclusions from VIA systems without having any idea how these systems function and without needing to question them. With so little need for consumers to question VIA technologies, some of which they use every day, consumers can easily begin to turn to VIA and other AI technologies as the lead authority on a matter, and fail to consider the many biases a VIA system may hold or the other kinds of errors they may make.

In order to preserve the public's trust in VIA systems and for these systems to best serve the public, VIA technologies need to be safeguarded against introduced or learned bias, and should be held to a system of ethical standards. The CCC recommends that increased federal funding and oversight be allocated towards developing ways to monitor VIA systems to ensure biased, unfair, or ethically flawed systems can be identified and fixed or removed from operation before damage is done.

By adding these considerations to the NITRD VIA action plan, the CCC believes the plan will be more comprehensive and better serve the American public. We thank the



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NITRD VIA team for their efforts in this area thus far, and we look forward to reading the updated report.