Interrogatory Answers for Ryan Calo, Lane Powell and D. Wayne Gittinger Associate Professor of Law and Tech Policy Lab Co-Director, University of Washington
Little Hoover Commission, January 25, 2018

1) What is artificial intelligence? Please describe the difficulty in developing a clear definition and how this uncertainty has contributed to research, ethical concerns and policy questions.

Artificial intelligence (AI) is an umbrella term with no straightforward, consensus definition. AI is probably best understood as a set of techniques aimed at approximating some aspect of human or animal cognition using machines. Consensus is difficult for several reasons, including disagreement among practitioners as to what constitutes AI as well as popular misunderstandings about the technology. That AI lacks a stable consensus definition does not necessarily impede research, as researchers are free to work on any aspect of AI, but it does complicate efforts to develop an appropriate policy infrastructure. It can be difficult to formulate policies surrounding AI when everyone at the table cannot agree what exactly they are trying to regulate.

2) The development and history of artificial intelligence, and why the current social, economic and technological context warrants the attention of policymakers.

The term "artificial intelligence" was coined in the 1950s by John McCarthy and others at a workshop at Dartmouth College, but the foundational concepts of AI date back generations to the ideas of Charles Babbage, Ada Lovelace, and Alan Turing. While AI's underlying concepts have existed for decades, recent attention is due to several factors. In particular, a vast increase in computational power and access to training data has led to technological breakthroughs. The new range of AI applications available and under development today are powerful enough to remake aspects of American society and are therefore worthy of public and official attention.

3) What are the current and likely future applications of artificial intelligence and machine learning? Some examples may include medical diagnosis and personalized recommendation systems.

I see machine learning—which refers roughly to the capacity of a system to improve its performance at a cognitive task over time through iteration—as a powerful and much discussed subset of AI. AI in general, and machine learning in particular, has already been implemented in numerous products and services, from language translation to facial recognition. In the future, there is reason to believe that AI will be deployed in a very wide set of fields—basically any context in which pattern recognition or repetition of the same task (automation) is useful. One scenario on the horizon is medical diagnosis, another is the automation of the trucking industry. But few industries will be left entirely untouched by AI.

4) What are the key policy questions of artificial intelligence? Specific issues may include justice, equity, safety and privacy. Why are these the most pressing questions, and how can policymakers attempt to resolve them?

In my recent work, I describe five distinct policy areas:

- justice and equity;
- use of force;
- safety and certification;
- privacy and power; and
- taxation and displacement of labor.

I would be reticent to choose which issues are the most pressing but, as I describe in the next set of answers, the first step in creating a wise and inclusive policy infrastructure for AI is to develop government expertise and to gather information, particularly from the most vulnerable stakeholders. Indeed, as Kate Crawford and I have written for *Nature*, the costs and benefits of AI are not being distributed evenly across society even today and this fact itself constitutes an important policy issue.

> 5) How can government address those issues of concern and guide the development and use of artificial intelligence? Policy? Regulation? What are the investment and procurement opportunities, and how can this ensure the creation of more responsible forms of artificial intelligence?

California's first step should be to accrue expertise and to hear from stakeholders. Without adequate expertise inside government, officials will have to take the word of others for what the technology can, cannot, should, or should not do. California can also influence policy through its purchasing decisions. States are capable of exerting considerable market pressures through their spending. Policymakers at all levels should consider the qualities and characteristics of the AI-enabled products the state purchases and the companies that create them. Policymakers can use contract to help ensure best practice around privacy, security, and other values. And the state can choose how it invests in AI, from funding its public universities (which are critical sources of AI innovation) to supporting promising startups.

In the longer term, AI is likely to require new laws or at least the adjustment of current rules and regulations. Two obvious starting points are safety certification and taxation. California and other states are already engaged in setting standards for driverless cars. As AI learns to perform more tasks reliably—from cutting hair to performing surgery—state and federal officials will have to decide how to certify the safety of these non-human systems. Moreover, insofar as California relies upon income taxes, the prospect of automating many more human tasks mean that the state may fall short on revenue projections. The robots that replace people will not pay taxes (and indeed, may even depreciate overtime leading to tax deductions by business owners).

> 6) How can policymakers ensure that artificial intelligence is used to benefit the public interest? For example, many artificial intelligence systems today are proprietary and owners have poor incentives to open them up to scrutiny, such as criminal justice algorithms. How can government correct this problem without stifling innovation?

Policymakers can take several steps. As alluded to above, procurement is a powerful tool—the state should not purchase anything AI-powered without adequately vetting the values and risks at play with the technology, including its appropriateness for use in the criminal justice, health, or welfare system. The state can also incentivize (or at least remove disincentives to) research that seeks to test the efficacy, safety, or fairness of AI decisions. At a minimum, Californian journalists, non-profits, or academics that vet public or private algorithms should not be subject to legal retaliation in California courts.

7) The importance of ensuring some form of in-house technical expertise for policymakers, such as a commission or agency. What would be the purpose and role of this organization? How would it contribute to the development of artificial intelligence policy?

I have argued that the most efficient way to accrue government expertise in robotics and artificial intelligence is to establish a standalone commission. This is so for several reasons, developed at length in a Brookings Institution whitepaper. For example, fully understanding the societal implications of technology requires experts with diverse experience and training. It would be prohibitively expensive for every agency or body that touches the technology to hire its own set of experts, whereas a single commission could support and advise other government bodies. Moreover, attracting talent is difficult given competition from academia and especially industry. My experience leads me to believe that a California Robotics Commission represents a more interesting opportunity for a technologist than a technology position within a particular agency.

It is important to note that the commission would not promulgate rules, at least not in the short term. Rather, it would serve as a repository of expertise for legislatures, courts, law enforcement, and administrative bodies at the state and local level. It would, for instance, help San Francisco make good choices about sidewalk robot delivery or help the California DMV make credible decisions around driverless trucks. The commission could assist the California courts to decide whether to purchase or deploy AI system or file amicus briefs before the court to help judges decide AI-related litigation. These are just a few of many examples.

8) Given California's context as a leader in technological innovations, how can government leaders leverage this knowledge to address the key policy challenges of artificial intelligence?

In my view, California's leadership position on technology imposes upon the state an obligation to assist the rest of the country and perhaps the world in create the best legal and policy infrastructure for AI and robotics. California's enormous size and economic importance means that decisions by the state sometimes become the de facto national standard. Such is the case with privacy policies on websites—which all companies have everywhere because California law requires them within the state—as well as data breach notification laws. California also hosts the headquarters of many of the leading companies in this area, with the sole exceptions of Microsoft (Washington), Amazon (Washington), and IBM (New York). The state can and should leverage the expertise and market power of Google, Facebook, and other companies to help establish beneficial polices the world over.