Artificial Intelligence (AI) & Robotics Future Forum – Terry Bailey

sponsored by LAEDC and Cal State Dominguez Hills
June 28, 2017

Opening Remarks by Willie Hagan, President of CSUDH

AI is impacting all of our lives in significant ways – and changing workforce development and education.

STEM fields are projected to be the fastest growing fields for both jobs and salaries over the next two decades – but they have the lowest number of women and minorities in them.

Note: The President of CSUDH led with this remark, and the audience nodded knowingly and supportively of this remark – but there were zero women or minorities on the tech panel that followed the two men who introduced and sponsored the event. - Terry

It is of great importance for businesses and education institutions to partner in this area because it is so new and fast changing.

Businesses need to keep educators apprised of skill and knowledge needs, and help with curriculum development.

Colleges need to work with the mindset of lifelong learning rather than the older model of just 2 and 4 year degrees. They also need to develop K-12 partnership programs. CSUDH, for example, has a program that they are coordinating with grades 3 to 5 in their local schools - because by the time students get to college they have usually lost interest in STEM, or are too far behind skill-wise.

Opening Remarks by Bill Allen, CEO of LAEDC

Questions to be addressed by forum's speakers:

1. How will advanced manufacturing and machine learning affect our workforce in LA County?

2. Will robots replace jobs or complement and enhance existing roles in the various industries in the LA region?

3. How will the benefits offered by the Internet of things (IoT) and AI present opportunities for industries including airlines, manufacturing, smart buildings, smart homes and oil and power?

> AI & robotics will disrupt society in ways we don't fully comprehend yet. On the one hand, it will potentially displace humans with autonomous machines, but on the other hand these innovations will provide tremendous advantages to early adopters of AI and Robotics to lower costs, enhance customer experiences, and offer new business opportunities. – *from program*

Note: No speakers addressed human displacement from jobs or related policy. – Terry

Featured Speaker & Panel Moderator: Mike Quindazzi, Managing Director of Business Development Leader, Southwest Region of Price Waterhouse Cooper

The Megatrends Leading to the Rapid Emergence of AI

Two years ago no one was talking about AI. What has changed that has brought it to the forefront? Population growth; E7[*1] nations are gaining on G7[*2] nations (and E7 nations are much more invested in social and mobile tech; costs of digital storage and processing are plummeting.

AI may be computerized, but AI needs data and AI needs humans to classify and label that data.

Types of AI:

1. Assisted Intelligence: AI as a tool to assist humans - where AI has replaced many of the repetitive and standardized tasks done by humans.

2. Augmented Intelligence: where humans and machines learn from each other and redefine the breadth and depth of what they do together.

3. Autonomous Intelligence: where adaptive/continuous systems take over in some cases

Note: Autonomous intelligence is more often referred to in the AI field as Artificial Generalized Intelligence (or AGI). AGI results when intelligence of an AI can match or beat human intelligence. It is very controversial, and I will write about it more in a future tech white paper - Terry

[*1] The E7 countries of China, India, Brazil, Mexico, Russia, Indonesia and Turkey are the emerging countries predicted to take over from today's G7 nations in power by 2050.

[*2] Canada, France, Germany, Italy, Japan, the United Kingdom and the United States. The European Union is also represented within the G7.

Keynote Speaker: Michael King, VP & General Manager, Global Education Industry, IBM

The Impact of AI on Skill Development and Workforce Preparation

AI will change education even more profoundly than it will change business.

How AI is changing business: Companies like Facebook have no content, no physical product. Airbnb is the largest accommodation company in the world now, but it owns no real estate. Businesses are becoming cognitive rather than product-based.

AI businesses are fueled by three forces.

1. The proliferation of different types of data

2. the ability to build a business in code with an API[*3] economy for a low cost, or even for free

3. the powerful capabilities of cognitive computing

Most data is unstructured, and thus not recognized by a computer until AI processes it; AI thus becomes the enabler of data. We have more devices producing ever more data.

AI gets trained over time, so its performance improves over time. The goal is to help things that machines do well improve, and the things that humans do best also improved.

AI will have a profound impact on jobs. How we prepare for that is one of the biggest challenges we need to address.

Note: but no one on the panel actually addresses it, and there are no one there to talk about policy or issues surrounding job loss due to AI. - Terry

What IBM is contributing to the world of AI: Watson is its AI software, and it produces APIs for businesses to use based on its AI and processing of data. Businesses can use Watson APIs to apply cognitive capabilities to their own software programs / apps. IBM currently has over 50 APIs that businesses can use in the apps they build.

Businesses are using Watson APIs in things like medical research and treatment. For example, One Watson API was built to filter the 800 current treatments for breast cancer and to make recommendations to doctors based on their patients' particular cases. This API processes current research papers, genetics, studies etc. on the subject – an amount of information / data that would be impossible for any doctor to process on her own.

Now IBM is also developing AI tutors to teach doctors and others how to use this AI and the APIs and apps developed.

Speaker concludes with important point about human cognitive skills beyond AI being very important. About why humans still need to be educated in skills that AI might handle. He gave the example of the old-school pilot who managed to crash land a plane in NY, saving all passengers aboard. Then he compared that true story to one about a young pilot who turned his plane on to autopilot when it began to crash, because he did not have the skill or knowledge to land the plane on his own; his plane crashed and all the passengers were killed.

[*3] APIs are data supplied by some third party that can be used in software – so, for example, if the electric company supplies electricity usage data, someone can use that data to build an app that tracks it and makes suggestions for doing your laundry at times of day when usage is down on the electric grid.

Panelist : Marcos Frommer, Manager, Corporate Affairs and Communications, American Honda Motor Company

AI in Autonomous Vehicles will Transform the Mobility Experience.

We start with being aware of the perils of predictions. Fuel cells were predicted as being ubiquitous in vehicles by 2004, but the first fuel cell vehicle did not go into production until 2016.

Still, Honda is predicting autonomous cars by 2025 - 2030.

What are the obstacles currently to autonomous cars?

1. People keep cars longer today – 11 years on average rather than what used to be about 7 years.

2. People don't yet trust autonomous cars.

3. The infrastructure of cars talking to other cars and to the city infrastructure (like traffic signals) is not yet in place.

What does Honda believe are the benefits of autonomous cars?

1. Fewer fatalities

2. Reduction in fuel use

3. more options for non drivers (he did not explain this)

4. unlocked productivity (you can work on your way to work)

5. As cars develop more emotional intelligence via their AI, they can act as digital assistants to people

6. People can potentially use their cars for ride-sharing businesses when they don't need them.

What does Honda see as the negative impacts of autonomous cars?

1. employment changes – he sites Uber, Lyft and Waymo, but does not go into detail.

2. Increased traffic – there is concern that car use will actually increase when they are automated.

3. Loss of business – body shops won't be needed due to lack of accidents, ticketing police won't be needed due to lack of rule breaking and accidents.

4. Loss of revenue to cities with fewer tickets.

Panelist : Todd Holloway, Lecturer in Data Science at UC Berkeley

Perspectives on the Growth of Data Science

Speaker formerly from Netflix. Spoke on use of assisted AI being further developed for specialized uses. For example, Netflix not only tracked data on what programs a user watched, but what color and art seems to attract users (image recognition). It then used AI to create individualized art work to advertise shows to viewers.

Data science is now an academic field and fast-becoming a broad field rather than just a subject area.

Panelist : Dr. Randall W. Hill, Jr., Executive Director of USC Institute for Creative Technologies.

AI and the Creative Industries: New Tools for New Jobs

ICT is a University Affiliated Research Center sponsored by the US Army. The mission of the ICT is to perform research on immersive technologies and apply them to training, education and therapy. Hill steers the Institutes exploration of how virtual humans, mixed reality worlds, advanced computer graphics, dramatic films, social simulation and educational video games can augment more traditional methods for imparting lessons.

No mention was made in presentation about the military use or funding of this program.

Is a robot going to take my job? LA is the creative capital of the world/ It used to cost $100 a minute for film visual effects – now the cost is up to $1 million a minute.

Hill claims that rather than taking jobs, AI is providing tools to creative staffs. It is difficult to find people with top skills in this area, because Silicon Valley is sucking them up. Demand is high.

But it is not just the tech skills that are needed. Creative use of AI also requires good critical thinking and liberal arts skills.

Note: anyone who has sat through the 15 minute long screen credits of today's sci-fi movies, knows that jobs in this field are vast compared to the small staffs that used to make special effects-laden movies! But it would have been of interest for Dr. Hill to discuss the use that the military is making of this USC creative program that it funds. - Terry