

Challenge Statements

Theme: Changing Our World with AI

Junior Category

S/N	Challenge Statement for Part 1
	<p>Challenge: Develop an AI empowered application to assist and improve our daily lives</p> <p>Description of the problem: There are many areas where AI such applications can assist us in our daily lives. AI empowered application can free up human time and resources to perform value added tasks by automating the simpler requests currently fulfilled by humans.</p> <p>Challenge: Can you use Scratch with machinelearningforkids.co.uk platform to develop an AI empowered application to assist and improve our daily lives? Participants are to address at least one of areas listed below.</p> <p>a) In Education: School work, Homework, Learning, etc b) In Healthcare: Care for the elderly, Care for people around us, etc c) In Saving Earth: Care for environment, Going green, etc d) In Personal Help: Moving around, Lifestyle, etc e) In the Home: Family, Food, Study, Entertainment, etc</p> <p>Resources: 1. machinelearningforkids.co.uk has many sample worksheets to try out and to look for ideas.</p>

School & Open Category

S/N	Challenge Statement
	Challenge Contributor: NVIDIA
C X A- 01	<p><u>Challenge Title:</u> Data Visualizer</p> <p><u>Description of the problem:</u> Data is the key driving force behind many of today's transformative technologies, especially for Artificial Intelligence.</p> <p>When dealing with large of amount of data which are not available in a structured form but as text format, it will take the person managing the data some time to make sense out of it. Visualizing the data will allow clearer and effective communication of information to users.</p>

	<p><u>Challenges:</u> Design a solution that is able to read key word search in a web browser and from the search results, output to an Interactive Data Dashboard (e.g. D3.js). The solution may incorporate the following:</p> <ul style="list-style-type: none"> • natural language processing (NLP) • filtering and use the top 100 results from the search engine • categorising and grouping the extracted data by related concepts • allowing users to zoom in and out by different levels of resulting information (e.g. granularity) <ul style="list-style-type: none"> ○ top level of information display (e.g. Concepts, etc) ○ lowest level of information display (e.g. url and link to the source of detailed information/article) <p><u>Resources</u></p> <ol style="list-style-type: none"> 1. Example of an interactive dashboard <ul style="list-style-type: none"> • Among the Oscar Contenders, a Host of Connections 2. The America's Cup Finale: Oracle's path to victory <ul style="list-style-type: none"> • https://archive.nytimes.com/www.nytimes.com/interactive/2013/09/25/sports/americas-cup-course.html • https://www.nytimes.com/interactive/2014/09/19/nyregion/stop-and-frisk-map.html 3. Interactive model: <ul style="list-style-type: none"> • http://www.jeromecukier.net/projects/models/markov.html 4. Material reading: <ul style="list-style-type: none"> • http://www.r2d3.us/visual-intro-to-machine-learning-part-1/ • https://bost.ocks.org/mike/example/ <p><u>Additional Requirements (embargo till 24-hr hackathon)</u> Include different varieties of data visualisation styles (e.g. map & chart)</p>
C X A- 02	<p><u>Challenge Contributor: MicroStrategy</u></p> <p><u>Challenge Title: CxO Command Center with Amazon Alexa for the Intelligent Enterprise</u></p> <p><u>Description of the problem:</u> With a vast array of information stored in disparate data sources across an organization, and external public data that would help organizations gather market information, IT departments struggle to blend and present a holistic view of data (both private and public) to senior executives, CxO's to make swift and data-driven decisions.</p> <p><u>Challenges</u> To develop a mobile application to assist with booking of shared resources – desks, meeting rooms, phone booths & discussion areas. This will greatly</p>

	<p>improve staff productivity and ensure shared resources are utilized in a more efficient manner.</p> <p>Resources</p> <ol style="list-style-type: none"> 1. MicroStrategy SDK http://www2.microstrategy.com/producthelp/10.4/InstallConfig/Content/InstallationConfig/MicroStrategy_SDK.htm 2. Getting Started with MicroStrategy SDK https://community.microstrategy.com/s/question/0D54400004zXw4sCAC/getting-started-with-microstrategy-sdk 3. Introduction to MicroStrategy Web SDK https://lw.microstrategy.com/msdz/MSDL/GARelease_Current/GARelease_Archives/940/docs/mergedProjects/websdk/topics/other/Introduction_to_the_Web_SDK.htm 4. Integrating MicroStrategy with Alexa: https://www.youtube.com/watch?v=KpV3yerQ4CA 5. Integrate Alexa & Slack with MicroStrategy (by Southport): https://www.youtube.com/watch?v=glT4EHOXp6A 6. Building an Alexa Skill with MicroStrategy https://www.microstrategy.com/us/resources/blog/bi-trends/building-an-alexa-skill-with-microstrategy - <i>Tip: watch the on-demand webex</i> <p>Note: To use MicroStrategy for this challenge, you will require a MicroStrategy instance on AWS. To request for an instance of MicroStrategy on AWS, please email to both cchew@microstrategy.com & infosg@microstrategy.com with subject header: “<u>CXA 2018: Requesting MicroStrategy on AWS</u>”.</p> <p>Additional Requirements (embargo till 24-hr hackathon) Provide real-time stock ticker with price and volume traded, and real-time traffic conditions around office vicinity. To include CEO’s and the executive management teams’ home to office.</p>
Challenge Contributor: code::XtremeApps:: organising committee	
C X A- 03	<p><u>Challenge Title:</u> AI empowered chatbot to improve daily lives</p> <p><u>Description of the problem:</u> Who wouldn’t wish for a 24 x 7 personal assistant in our busy lives. While there are increasingly more chatbots (aka talkbot, chatterbot, Bot, IM bot, interactive agent, or Artificial Conversational Entity) assisting us in devices/websites/apps, there are many more areas which chatbots potentially can assist us in our daily lives. Chatbots can also free up more human resources to perform higher value added tasks by automating the simpler requests currently fulfilled by humans.</p>

Chatbots make it easier for us to request for information using a natural language. According to studies, 80% of businesses want chatbots by 2020, and chatbots are expected to cut business costs by \$8 billion USD by 2020.

Challenges

Develop an AI empowered chatbot to make our daily lives better. Participants are to address at least one of areas listed below.

- a) Finance/Investment
- b) Healthcare/Care for the elderly
- c) Education
- d) Lifestyle (personal assistant/sports)
- e) Transport.

Additional Requirements (embargo till 24-hr hackathon)

Choose one option below:

1. Solution is able to address at least one of the FAQ below corresponding to the area of challenge being developed:

- Finance/Investment
 - <http://www.businessinsider.com/13-burning-personal-finance-questions-2013-3/?IR=T>
 - <https://www.investopedia.com/ask/basics/>
 - http://www.mas.gov.sg/~media/resource/legislation_guidelines/in_advisers/fin_advisers_act/faqs/FAA%20FAQs_10Apr2012.aspx
- Healthcare
 - https://www.moh.gov.sg/content/dam/moh_web/HCSA/Docu/FAQ%20on%20HCS%20Bill.pdf
- Education
 - <https://www.moe.gov.sg/education/education-system/prime/frequently-asked-questions>
- Lifestyle (personal assistant/sports)
 - <https://wanderwisdom.com/travel-destinations/Visit-Singapore>
 - <https://sethlui.com/best-local-famous-foods-to-eat-singapore/>
 - <http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat>
 - <http://realrussia.co.uk/Info/WorldCup2018/FAQs>
 - <https://www.fifa.com/worldcup/>
 - <https://www.telegraph.co.uk/world-cup/2018/06/14/world-cup-2018-fixtures-full-schedule-results-match-dates/>
- Transport
 - <https://www.google.com/maps/>
 - Apple Maps
 - <http://www.streetdirectory.com/routing/>

	<ul style="list-style-type: none"> ○ https://www.mapquest.com/ ○ https://gothere.sg/maps <p>2. Solution is able to understand "Singlish" as inputs.</p>
Challenge Contributor: code::XtremeApps:: organising committee	
C X A- 04	<p><u>Challenge Title:</u> Using AI to spot fake news</p> <p><u>Description of the problem:</u> Recently, the world has witnessed the adverse effects of how fake news can sway the outcome of elections, manipulate public thinking to incite racial/religious/social tensions or worst of all, violence. Internet and social media users are finding it increasing difficult to decipher what's real and fake due to the vast amount of information content being churned out.</p> <p><u>Challenges:</u> Develop a solution to determine whether a social media post is fake.</p> <p><u>Resources</u> Exploring how artificial intelligence technologies could be leveraged to combat fake news.</p> <ol style="list-style-type: none"> 1. STANCE DETECTION http://www.fakenewschallenge.org 2. Singapore government list of facts https://www.gov.sg/factually 3. Combating fake news in Singapore http://www.nlb.gov.sg/sure/ 4. Online fact-checking website https://www.snopes.com <p><u>Additional Requirements (embargo till 24-hr hackathon)</u></p> <ul style="list-style-type: none"> • Use the Singapore government factually, Snopes or reputable news websites to fact check fake news (e.g. "Most Singapore Ministers agrees with MOE implementation of parking fees for teachers").
Challenge Contributor: Motorola Solutions	
C X A- 05	<p><u>Challenge Title:</u> Seamless AI on Health, Safety and Orders</p> <p><u>Description of the problem:</u> Consumers, government agencies and emergency services alike are all embracing wearables. Location and fitness trackers in the form of wristbands, watches and body-worn cameras are becoming increasingly commonplace. Additionally, software-based innovation such as integrating AI with video technology has made it easier for public safety agencies to analyse footage and to filter critical information from raw data. However, many of the systems used still lack the ability to seamlessly integrate data.</p> <p>How can we ensure effective and accurate data transfer from wearables to emergency services when a hazard or disaster occurs? Capturing and analysing this data in public safety command centres helps to provide a holistic view of an event as it unfolds. This also enables first responders to receive the</p>

	<p>right information they need in the field to help inform critical decisions, leading to better and safer public safety outcomes.</p> <p>According to recent analysis, the global public safety and security market will grow to US\$532 billion by 2022 with the emergence of big data analytics & AI Innovations. AI-based public safety solutions and services are critical components in enabling next-generation Health, Safety and Orders.</p> <p><u>Challenges</u> Develop an AI Solution that can be integrated with devices (wearable gadgets, mobile, bodyworn devices) and/or systems (e.g. CCTV which can be coupled with software to detect unusual movements of people or objects). This helps to accurately identify situations where the public or responders are in distress, and enhances public safety and rescue outcomes. Examples of key AI features: automated pre- and post-event hazard alerts through complex event processing; individual location mapping by computer vision (indoor positioning); and gauging hazard category of any distress (health, fire, crime scene).</p> <p><u>Additional Requirements (embargo till 24-hr hackathon)</u> Indoor Positioning: Video analytics to enable mapping positions from 3D vision to 2D floorplan.</p>
Challenge Contributor: Motorola Solutions	
C X A- 06	<p><u>Challenge Title:</u> Autonomous drones and intelligent video analytics to protect citizens and prevent hazards</p> <p><u>Description of the problem:</u> AI has brought on a new wave of security technology. Video analytics brings the benefits of real-time footage analysis and detection of unusual activities that could pose a threat to the public or an organisation According to research by PwC and Goldman Sachs, the addressable market value of drone powered solutions is over \$127 billion, fueled by demand from commercial and civil government sectors.</p> <p>The challenge to find effective and cost-efficient intelligent autonomous video monitoring still remains.</p> <p>According to PwC, the industry most suited for drone applications is infrastructure with the market value opportunity estimated at \$45 billion.</p> <p><u>Challenges:</u> To develop AI that can be mounted on a drone/UAV which is capable of running intelligent autonomous video monitoring tasks within controlled parameter/geofencing. Examples of key AI features: adaptive navigation, inspecting large scale real-estate, hazardous or high-risk human behaviour identification (in construction sites/public amenities, for example, amusement parks), disaster detection and crowd dispersing patterns (i.e. accidents, crime scene).</p>

	<p>Participants may address this challenge in following areas:</p> <ul style="list-style-type: none"> a) Safety in public areas (amusement parks, high-density, high traffic commercial areas) b) Large-Scale Facility (Construction, shipyards, off-shore oil refineries, power plants, agriculture) <p><u>Additional Requirements (embargo till 24-hr hackathon)</u></p> <ul style="list-style-type: none"> • Compulsory Autonomous Adaptive Navigation around obstacles without hindering the tasks assigned.
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