**2019 BIG DATA HACKATHON PROJECT SUBMISSION FORM**

Complete the following information and upload to your team number GitHub repository (github.com/BigDataForSanDiego) by 10:00 a.m. on Saturday, March 16th (along with your team’s final pitch presentation slides).

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| **Team Number:** | **206** |

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| **Team Name:** | **ET’s National University Geeks** |

**Team Members:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Name* | *Active SDSU student?* | *Female active SDSU student?* | *Active SDSU veteran?* | *14th grade (college 2nd year) or younger* |
| **Manmeet Bains** |  |  |  |  |
| **Shashi Bala Lnu** |  |  |  |  |
| **Akinyemi Fayankinnu** |  |  |  |  |
| **Wanghuizi Gao** |  |  |  |  |
| **Kara Lena** |  |  |  |  |
| **Lohith Sekhar Potluri** |  |  |  |  |
| **Kornkanok Somkul** |  |  |  |  |
| **Matthew C. Vanderbilt** |  |  |  |  |
|  |  |  |  |  |
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| **Team Leader:** | **Mathew Vanderbilt** |

**A question your team is answering (check a box OR provide a question your group created)**

**Smart City**

How can San Diegans have better options for parking in high-traffic areas to void congestion?

How can we get an emergency vehicle to the scene in shortest possible time can save lives?

Your question:

**Smart Environment**

How can San Diegans have access to better air quality indoors and outdoors?

How can we clean San Diego beaches effectively?

Your question: How can we improve the precision of air quality data in San Diego to enable smart decision making for the City and its inhabitants?

**Smart Education**

How can schools better utilize their physical resources?

How to provide better school bus routing plan for San Diego Unified School Districts?

Your question:

**Smart Transportation**

How can San Diegans make better transportation decisions of getting from point A to Z that leaves a smaller carbon footprint?

Your question:

**Smart Health**

How can we share useful public health information and web analytical tools for improve public health in San Diego?

What chronic diseases affect San Diegans and how can these conditions be managed daily?

Your question:

**Your team’s hackathon idea in TWO sentences:**

Air pollution has been linked to cognitive learning disorders, memory problems, and depression, in addition to respiratory issues, but there is insufficient data in San Diego County for finite air-quality analytics.

Creation of improved, cost-effective, real-time monitoring devices deployed at strategic locations will enable dynamic geolocational predictive analytics of indoor/outdoor air quality conditions for smart decision making.

**Dataset(s) your team are using for the project. Provide name and URL:**

EPA Air Quality Data: https://aqs.epa.gov/api

**The impact of this project on your selected theme:**

Due to insufficient air quality (AQ) monitoring stations in San Diego County, finite, predictive, analytics are not feasible. Creation of a low-cost AQ sensor will enable localized AQ predictions. This data will feed to a Hadoop cloud server where our near-real-time, supervised, machine learning algorithms will predict near-, mid-, and long-term AQ conditions. This will expand available information about our local environment and the air we breathe. We expect our hardware/software platform to provide actionable information to reduce childhood exposure to harmful pollutants affecting cognitive learning, as well as enable Smart City and commercial integrations to shift individual behaviours that adversely affect the environment.

**The next steps needed to launch the project:**

Our prototype device, which is based upon an open-source model, is running to a cloud feed with responsive web interface. For our next phase, we have begun working with a physicist and retired Vice President of Digital/Analog Microelectronic Design Engineering to develop a low-cost, impact and water-resistant, PCB with PM2.5 sensor, GPS, and solar charging. Our cost-effective price point will disrupt the existing device market and provide greater services through our supervised machine learning algorithms. We anticipate Phase 2 to be a local, government, roll-out; Phase 3 expands to residential/commercial locations; and Phase 4 will scale up beyond San Diego County.

In addition to the Smart City and Smart Environment impacts of this business, we are also integrating with a joint research venture between UC San Diego School of Medicine and National University Business Analytics to provide geospatial statistics targeting distinct San Diego sub-populations for outreach to reduce asthma hospitalizations and mortality.