SIDDHANT ATTAVAR

IOL SILVER MEDALIST | APLO MEDALIST | APIO MEDALIST | IOITC QUALIFIER | IRIS FINALIST

ABOUT

I am a high school student at NPS Indiranagar. My main interests are competitive programming, linguistics, machine learning, and bioinformatics (particularly computational neuroscience). I have developed several apps and products which have won awards at the international level. I also have a keen interest in the International Linguistics Olympiad (IOL) and International Informatics Olympiad (IOI).

AWARDS

September 2022

Schmidt Futures, Rhodes Trust

Rise Global Winner

Top 100 students selected to be part of the 2022 Rise Global Winner cohort out of 80,000 applicants. Results: https://www.riseftheworld.org/global-winners

July 2022

International Linguistics Olympiad, Lingomann

International Linguistics Olympiad Silver Medal

Received a silver medal in the International Linguistics Olympiad, 2022 held in Isle of Man, UK. Came 28th out of 200+ participants. Got the highest score from India. Results: https://ioling.org/results/2022/

May 2022

Asia Pacific Informatics Olympiad

Asia Pacific Informatics Olympiad Bronze Medal

2nd place amongst Indian contestants in APIO. Results: https://www.apio2022.org/ranking

April 2022

Asia Pacific Linguistics Olympiad

Asia Pacific Linguistics Olympiad 2019/22 Bronze Medal

3rd place amongst Indian contestants in APLO. Results: https://aplo.asia/results/aplo-2022-results/

April 2022

Hewlett Packard Enterprise

HPE Codewars 2021 2nd place; 2022 4th Place

Placed 2nd in 2021 and 4th in 2022 amongst 2500+ participants. Got a chance to run an experiment on the HPE Spaceborne-2 supercomputer onboard the International Space Station. Results: https://www.codingal.com/competitions/hpe-codewars-2022-code-battle/leaderboard/

January 2022

Exstemplar Education Foundation; Department of Science and Technology, India · Jan 2022

IRIS National Fair 2020/21/22 Finalist

Top 100 projects at IRIS National Fair for my projects: 1. SimAID - an agent-based simulation model and decision support tool for pandemics; 2. SMART: Stroke Monitoring and Rehabilitation using Technology.; 3. DriveSafe: A smartphone app to monitor reckless driving behaviours. Results: https://www.irisnationalfair.org

June 2021

Hong Kong Federation of Youth Groups

GYSTB 2021 Second Prize Winner

Second Prize at Global Youth Science and Technology Bowl 2021 for project "Stroke Monitoring And Rehabilitation using Technology". Results: https://hkfyg.org.hk/en/2021/06/25/gystb2021/

June 2021

Genius Olympiad

Genius Olympiad 2021 Gold Award Winner

Gold Award in Science Category of Genius Olympiad for project "Stroke Monitoring And Rehabilitation using Technology". Results: https://geniuscountries.s3.us-east-2.amazonaws.com/GENIUS_2020_2021_Awardee_List.pdf

January 2020

Indian Institute of Technology, Bombay

IITB Techfest Innovation Challenge Winner

Won 1st place in IITB Techfest's Innovation Challenge for my project "A smart Irrigation-as-a-Service (SIAS) solution for reducing water consumption in sugarcane".

PROJECTS

SMART: Stroke Monitoring And Rehabilitation using Technology: Stroke experts say it is crucial to develop innovative, technology-driven strategies to meet the growing needs of stroke survivors in

India. SMART is a comprehensive solution for stroke care comprising of - 1. SMART EEG headset and 2. SMART app having diagnostic and rehabilitation tools. I have developed the SMART EEG headset - a wearable EEG device costing less than ₹7,000 (US$100), several times cheaper than commercial EEG devices. It consists of 1. An ergonomic 3-D printed headset., 2. A signal processing module using a low-cost Arduino board and EEG Click (an IC to amplify and filter bio-signals). The EEG signals from the headset are analyzed using Fourier transforms (FFT) for classification into alpha, beta, and theta waves in the SMART app. The SMART app developed using Android SDK in Java has two key modules - 1. Stroke Diagnostics and 2.Rehabilitation. The diagnosis module uses EEG to calculate DAR levels and identify stroke patients and the rehabilitation module has an interactive game based on EEG neurofeedback training to help stroke patients improve their alpha brainwave activity and aid recovery. In order to test the reliability of the SMART EEG headset, I conducted experiments. Each experiment tested a particular stage of the EEG data acquisition process, namely: collecting the raw EEG data, calculating the frequency spectrum and lastly detecting changes in the brainwave state. I believe SMART could radically improve the delivery of medical care to stroke patients as it is low-cost and easily-accessible, and it empowers the stroke patient to recover at home with minimal medical assistance.

DriveSafe: A smartphone app to monitor reckless driving behaviors: What is the problem?- Road accidents killed 13.5 lakh people globally in 2018. They are the single largest cause of death for those in the age group of 15-45. Reckless driving is responsible for 90% of road deaths. In order to make our roads safer, a cost-effective and accessible method is needed to monitor and track reckless driving. My solution- I have developed an Android smartphone application, DriveSafe, which detects reckless driving behaviours in real-time. Steps for development- I identified the major reckless driving behaviours. These are: a. Overspeeding b. Sudden braking c. Sudden acceleration d. Sharp turning I developed an app which detects the above behaviours. In this app: a. Accelerometer sensor is used to measure acceleration in 3D space. Haversine formula is applied to calculate distances and speed from GPS coordinates. b. The data collected is stored in a csv file for later analysis. c. The user interface was integrated with Google Maps API to provide the user with an interactive experience. The app was run on Bangalore roads over 2 months. The acceleration in all 3 axes, the speed, the time and the location of the vehicle was recorded every second. Using the data, I set appropriate thresholds for the rash driving behaviours. DriveSafe can be used to monitor reckless driving behaviours with a high accuracy and improve road safety by individuals, fleet operators, insurance companies, and traffic police.

CONTACT

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https://siddhantattavar.github.io/

Github
SiddhantAttavar
LinkedIn
SiddhantAttavar
Stopstalk

SiddhantAttavar

Youtube
SiddhantAttavar

EDUCATION

2018 2023 (expected)

National Public School
https://www.npsinr.com/

High School Diploma

2014 2018

Inventure Academy
https://www.inventureacademy.com/

High School Diploma

2011 2014

Global Indian International School East Coast, Singapore
https://singapore.globalindianschool.org/east-coast

High School Diploma

SKILLS

Python

Data Structures and Algorithms

Android Development

C++

Computational Neuroscience

Linux

INTERESTS

Competitive Programming

Linguistics

Computational Neuroscience