AKIK KOTHEKAR
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EDUCATION

Singapore international School, Mumbai, India **2017**
-- Will appear for the International Baccalaureate (IB) Examination at the end of Grade 12.
Hiranandani Foundation School, Thane, India **2015**
-- Appeared for Indian Certificate of Secondary Education (ICSE) Examination – Grade 10.

STATUTORY TESTS

Best SAT Composite Score: 1410/1600; best Math score- 770, best Reading & Writing score- 640. Next exam on 1st oct 2016 2016
SAT Subject Tests: Mathematics Level II, Physics. Taking exam on Nov 5th 2016 2016
TOEFL Test: xxx/120. Taking test in Oct 2016 2016
AP Course: Computer Science A: 4/5 2016

ACADEMIC HONOURS

• Awarded Honors Certificate for overall Academic performance in Grade 11, semester 1 and semester 2. 2016
• Awarded Honors Certificate for overall Academic performance in First Semester of Grade 12? 2017
• Awarded the 'SIS Merit Scholarship" for outstanding Academic performance and extracurricular excellence in Grade 11 2016
• Awarded the 'SIS Merit Scholarship" for outstanding Academic performance and extracurricular excellence in Grade 12 2017
• Consistently in the top 5 %ile in the 11th and 12th grade, in the science stream 2016-2017
• Stood 1st in School in Computer Science in Grade 11 2016
• Scored 7/7 in all exams in Computer Science in Grade 11 2016
• Stood 1st in School in Math in Grade 11 2016
• Scored 7/7 in all exams in Math in Grade 11 2016
• Scored 92% in 10th Grade, ICSCE exam 2015
• Scored 98/100 in Computer Science in ICSE Board exams in 10th Grade 2015

COMMUNITY OUTREACH INITIATIVE

Tack n Secure – a mobile app to reduce abductions of children. Nearly 40,000 children go missing every year in India, and over 300,000 in the world. 2015
--The app helps parents track their children's movement when they go out of their homes. The app is available for free on Google Play Store.
--In case of a child abduction, if the location of the child, before the incident has happened, is known, the area that the police has to search is more accurate which increases the the probability of retrieving the child. The parents can get alert if they observe the child moving away from the intended path.
--The app can be downloaded on any phone running the Android Operating System.
--This app also has a parent companion which is available as a website and an app. This is used to view the location of the child and to manage child devices. The parent can decide the frequency at which he/she wants to receive location updates of the child. The app, once installed, is difficult to delete from the child device.
--The app has been appreciated by the Commissioner of Police, Thane city and Child help NGOs such as CRY Foundation and Save the Children Foundation. They have agreed to increase awareness about it.
-To develop this app, I had to take courses on Android application programming. I completed two courses offered by University of Maryland, College Park, on Coursera.

RESEARCH in Mathematics

Exploration of Successive Over-Relaxation Solver for Linear Systems . 2016
--Carried out this exploration under the internship of Dr. S Baskar, Professor in Indian institute of Technology (IIT), Bombay.
--Explored and researched about various iterative methods used to approximate the solution of linear systems, and why iterative methods of approximating the solution are much better than using exact methods such as finding the inverse of a matrix.
--The different types of iterative methods that were explored are- Jacobi iteration, Gaus-Seidal iteration, Parameterized iteration and Successive Over-Relaxation method.
--Developed algorithms in Scilab and MatLab (both are softwares for numerical computation) to model the above mentioned iterative solvers. These algorithms and the mentioned software were used to examine the time required by each and every solver to approximate the solution. A diagonally dominant, 100x100 matrix was used to observe this.
-- Learnt mathematical concepts such as Maximal Norms in order to carry out Convergence analysis (Proof that a diagonally dominant square matrix converges using these solvers).

COMPUTER SCIENCE EXPERIENCES

Project to reduce drop out rates in primary and secondary schools in India, which is currently at about 50%- 2016
Developed a Information Technology and computer devices based model that will make education in primary and secondary schools free and improve the quality of education.
-- Students from lower income families drop out of school, as they cannot afford the books, tuitions and also due to incapability of most teachers.
-- The project provides solution adapted from the technology used for online courses. A government portal will host textbooks and supporting videos, with free access. The low cost tablet will be provided free to the students by the government to access this portal. A stripped down version of the tablet only limited to access this portal and play videos will ensure it is of low cost. The free WIFI will be profided by Internte Service Providers in lieu of the huge captive audience for advertisement.
-- **The Human Resource Development Ministry of India has acknowledged the project and has shown interest in the project.**
-- Wrote a letter 'Open Letter to the Prime Minister From a Teenager of India' to Prime Minister of India for his attention to the problem and solution. The letter appeared in Economic Times of India, leading newspaper in India, on Feb 23rd 2016

Employee management and payroll system (Part of the IB Computer Science HL Internal Assessment)-
--Developing a software to manage the employee data and their salaries in an organization.
--The software uses a 3 dimensional database to store all the employee data and salaries over time, and generates various reports.
--The software incorporates the various concepts of Object Oriented Programming such as abstraction, encapsulation, polymorphism and inheritance.

COURSES IN COMPUTER SCIENCE, outside the IB curriculum

Courses on Coursera:
--- Programing Android applications for Android handheld Devices-Part 1. Offered by Maryland University. Certificate at:
https://www.coursera.org/account/accomplishments/records/Q3PMDYNF2Na4z99P
-- Programming Android applications for Android handheld Devices-Part 2. Offered by Maryland University. Certificate at:
https://www.coursera.org/account/accomplishments/records/WwU6ZvJgM3hWqAjV
From these two courses, I have learnt about the basics of android application programming, which was a new concept for me. These two courses have helped me develop the application Track n Secure. Information about the app can be found in the Community Outreach Initiative section
--- Algorithmic Toolbox offered by University of California San Diego. This course has helped me- 1. Learn why algorithms are important. 2. What are the basic conditions that an efficient algorithm should satisfy. 3. Various examples which involve extensive use of algorithms.
-- Computer Science 101 offered by Stanford University.

-- Completed course in Advanced JAVA. Offered by NIIT (National Institute of Information Technology) with Oracle certification.

RESEARCH in IB CURICULLUM: (Includes extended essay and internal assessments) **2016**

In Computer Science
-- The Research question for the Extended Essay- Why is WPA2 more secure than WEP?
-- This extended essay is an exploratory study of security implemented in wireless networks and also a comparison of two types of networks: Wireless Protected Access 2 (WPA2) and Wired Equivalent Privacy (WEP)

In Mathematics
-- I have explored the mathematical concepts of RSA Encryption
--RSA Encryption is considered a very secure method of encryption and is used by banks and ecommerce websites to exchange highly confidential information such as credit card numbers and account numbers.

In Physics
-- I have designed an experiment to find the relation between the salt concentration in water and it's resistivity.

LEADERSHIP POSITIONS

Started a Computer Science Club in High School. No computer science club in school till 2015 2016 **2016**
-- Prepared the plan and structure of the club. Convinced the Head of School and teachers to start the club.
-- Developed website to host academic material, interesting articles, blogs.
-- The website serves as a forum where students can seek help on various computer science topics.

Captain of the Cricket team of the School house in 9th grade. **2013-14**
-- Lead the team to the semifinals.

QUIZZING AND MUN

Quizzing:
-- Participated in quiz competitions every year from the 8th grade. Won an intra-school quiz in 9th grade.
-- Represented my school SIS, in 11th Grade, at the inter-school science quiz. 2008-13

MUNs and Round Square Conferences **2015-16**
-- Participated as delegate in MUN Feb 2016.
-- Participated as delegate in Round Square Sept 2015.

CULINARY INTERESTS

Taste variety of foods and visit fine dining restaurants. **2014-16**
Write reviews of the restaurant and the food in Review Boards like that of **Zomato.com**
Have written 6 reviews so far.

SPORTS

-- Squash: Played Squash at national level. Ranking- 80 (in India in U-19 category) **2009-14**
-- Cricket: Was in school cricket team from 6th till 10th Grade. Played in the Under 14, Under 16 tournaments of the state. **2008-13**
-- Swimming: Participated in inter-house tournaments. Won a bronze and silver in free style 50 mtrs. **2008-12**

COMMUNITY SERVICE

-- Helped to build a Bio gas plant in a village. This project took 30 hours to complete. **2016**
-- Worked along with my classmates to install a biogas plant in a remote village in the rural area of Maharashtra province.
-- This Bio gas plant has alleviated financial pressures of the villagers as they don't have to purchase fuel.

OTHER INTERESTS

--Programming – never tired of developing a new program or finding bugs in other's programs. (I have a bug for it ;-))
--Keenly follow Manchester City Football Club
--Big fan of the Indian Cricket team
--Like to open gadgets and check how they work. Like to repair gadgets.
--I like to learn about new and interesting developments and innovations taking place all over the world such as those in 3D printing and Artificial Intelligence.
--I like to stay up to date with all the new consumer tech such as smartphones, laptops, desktops, routers etc.
--Watch movies and TV series- The Simpsons, The Big Bang Theory amongst others.