

Aravind Reddy Talla

Curriculum Vitae

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Education

- 2018 **Indian Institute of Technology Kanpur**, *Kanpur, Uttar Pradesh, India*,
B.Tech in Computer Science & Engineering with minor in Physics, CPI - 8.7/10.
- 2014 **Sri Chaitanya Narayana Junior College**, *Vijayawada, Andhra Pradesh, India*,
98.0%(State top one percentile) in Intermediate exams conducted by BIE, A.P..
- 2012 **Dr. K.K.R's Gowtham Concept School**, *Hyderabad, Telangana, India*,
GPA - 9.7/10 in the SSC examinations conducted by BSC, A.P..

Research Internships

- Summer 2017 **Paris Centre for Quantum Computing**, *Université Paris Diderot, Paris*.
Mentors: *Prof. Eleni Diamanti, Prof. Ioannis Kerenidis* Funded(partly) by Charpak
Outline: We designed two new protocols for quantum repeater networks for sharing tripartite entangled states. I analyzed them mathematically and also performed their Monte Carlo simulations using Octave. Results in preparation.
- Summer 2016 **Centre for Quantum Technologies**, *National University of Singapore, Singapore*.
Mentor: *Prof. Hartmut Klauck*
Outline: Studied about complexity theory in general and relations between query and communication complexities of a subclass of composed functions(related to "Rectangles are Nonnegative Juntas" by Göös et.al)
- June & December 2015 **Indian Institute of Science Education and Research**, *Kolkata*.
Mentor: *Prof. Prasanta K. Panigrahi* Funded by the NIUS Scholarship
Outline: Studied about quantum computing in general and some aspects of quantum cryptography like QKD protocols and quantum money schemes.

Awards & Scholastic Achievements

- 2017 **Charpak Scholarship for research internship**, *French Government*.
- 2015 **National Initiative on Undergraduate Science Scholarship**, *HBCSE(TIFR)*.
- 2015 **Academic Excellence Award**, *IIT Kanpur*.
- 2014 **Gold Medallist**, *Indian National Physics Olympiad*, National top 35, participated in the Orientation cum Selection camp(OCSC) for the Indian team for International Physics Olympiad 2014.
- 2014 **Ranked 189 out of 120 thousand applicants**, *JEE Advanced*.
- 2014 **Ranked 206 out of 1.4 million applicants**, *JEE Main*.

Coursework: (*)Graduate course, (†)Fall 2017, (‡) Spring 2018

Theoretical Computer Science	Quantum Computing*, Modern Cryptology*, Computational Complexity†*, Algorithmic Game Theory†*, Approximation Algorithms‡*, Linear Algebra for TCS‡*, Theory of Computation, Algorithms, Discrete Mathematics, Abstract Algebra, Logic
Other CS	Machine Learning†*, Computer Networks†, Operating Systems, Compilers, Computer Organisation, Computing Tools(lab)
Physics	Quantum Mechanics 1†, Quantum Physics, Thermal Physics‡, Relativity‡
Online courses	Quantum Information Science II† (edX certificate), Quantum Cryptography (edX certificate), Human Evolution (edX certificate), Systematic Program Design (edX certificate)

Course Projects at IIT Kanpur

- Fall 2016 **Quantum Entanglement & Nonlocal Games.**
Mentor: *Prof. Rajat Mittal*, Dept. of Computer Science and Engineering
Outline: Studied about Nonlocal games and their quantum strategies. [Report](#).
- Spring 2016 **Certified Randomness Generation using Quantum Non-Locality.**
Course Project for CS682(Quantum Computing)
Outline: Studied Quantum Non-Locality and one of it's applications to certified randomness generation. [Report](#)
- Spring 2017 **Breaking Cryptosystems, Modern Cryptology by Prof. Manindra Agrawal.**
The 'assignment' in this course was a text adventure game which involved breaking various ciphers to clear a particular level. Over the course of the semester, we broke:
◦ Substitution cipher ◦ Block substitution cipher ◦ Substitution-Permutation cipher
◦ DES (with differential cryptanalysis) ◦ SASAS (AES like attack) cipher
◦ RSA (with low public exponent, using Coppersmith's LLL based attack) ◦ A hash function
- Fall 2017 **Handwritten Mathematical Expression Recognition, Machine Learning.**
Developed a tool which uses a CNN to convert an image of a handwritten mathematical expression to it's corresponding LaTeX code. [Slides](#), [Report](#)
- Spring 2017 **C Compiler, Course project for CS335(Compiler Design).**
Developed a compiler for a subset of C to x86 assembly using Python & Plex.
- Fall 2016 **Extensions for NachOS, Course project for CS330(Operating Systems).**
Implemented some system calls, process scheduling algorithms and page replacement algorithms to extend the functionality of NachOS operating system.

Skills:

Programming	C, Python, Bash, Octave, Julia, Racket, Verilog, x86 Assembly
Web-Dev	HTML, CSS, Hugo, PHP, SQL
Tools	L ^A T _E X, Git, GNU Plot, Jupyter, Xfig, Wireshark
Languages	Telugu(native), English(fluent), Hindi(fluent)

Selected talks

- July 2017 **Communication protocols for tripartite entangled state sharing networks**, LIP6, Université Pierre et Marie Curie, Paris.
- Nov 2016 **Quantum Entanglement & Nonlocal games**, SIGTACS, IITK, [Slides](#) .
- Sept 2016 **Introduction to TCS**, *for freshman students*, ACA, CSE IITK.
- June 2016 **Rectangles are Nonnegative Juntas**, *CQT CS Talk*, Singapore.
- April 2016 **Is it really random?**, Science CoffeeHouse, IITK.
- Jan 2016 **Nature and Certification of Randomness**, ACA, [Slides](#) .

Campus Leadership

- 2016-17 term **Science CoffeeHouse**.
 - Organised several student talks on interesting scientific topics.
 - Prepared questions for several events and was part of the team which organised a treasure hunt in Takneek, the inter hostel technical competition.
- 2016-17 term **Association for Computing Activities**.
 - Lead the student body of the CSE department and organised several events like informal Faculty-Student interaction sessions, programming competitions and hackathons.
 - Allocated senior student mentors to freshmen for guided semester projects.
- 2016-17 term **Card & Board Games Club**.

Organised several board game meetups and conducted inter hostel competitions in Dominion and Carcassonne.
- July 2015 - **English Literary Events, Antarāgni**.
- Oct 2015 Organised various literary events as a part of the annual institute cultural festival. There were over 300 student participants from various universities.

Miscellaneous

- Volunteer for [FSTTCS 2017](#)
- Sporadic blogger on my site [aravindreddy.org](#)
- Attended [TQC2017](#)
- Attended Shannon Centenary day celebrations at IIT Kanpur.
- Awarded distinction in initial grade keyboards exam, rock and pop organised by Trinity School of Music, London in December 2015.
- Completed the touch typing course on [typing.com](#).