

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. Jordanis Kerenidis* Partly funded by Charpak
Outline: We designed two new protocols for quantum repeater networks for sharing tripartite entangled states. I analyzed them analytically 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 communication complexity 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	Quantum Computing*, Modern Cryptology*, Computational Complexity†*,
Computer	Algorithmic Game Theory†*, Approximation Algorithms‡*, Linear Algebra for TCS‡*,
Science	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/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**.
 - Led 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 hall(student residence) 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](#), IIT Kanpur
- Attended [TQC2017](#), LIP6, UPMC
- Attended [Shannon Centenary](#) celebrations, IIT Kanpur.
- Awarded distinction in initial grade keyboards exam, rock and pop organised by Trinity School of Music, London in December 2015.