

M. ARAVIND

Developer ~ Engineer

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MOTIVATION

Motivated researcher with a passion for innovation in Signal Processing, Wireless Communication, Artificial Intelligence, and Robotics.

Committed to pushing the boundaries of technology to solve complex challenges and drive advancements by leveraging my strong academic foundation and hands-on experience to contribute meaningfully to cutting/bleeding-edge Research & Development projects.

TECH SKILLS

Languages: C/C++, Python, MATLAB, HTML, JS, SQL

Protocols, Hardware: UART, I2C, SPI, Zigbee, BACnet, BLE, LoRaWAN, JTAG, SWD, Boards-STM32, NXP, AVR, NRF

EDUCATION

August 2021 -	Master of Science (by Research) in Electrical Engineering Specialization: Signal Processing and Communication Networks Department of Electrical Engineering, IIT Kanpur Key Courses: Wireless Communication, Random Variables and Random Processes, Convex Optimization, Linear Algebra, DSP, Machine Learning, 5G, MIMO CGPA: 8.01/10.0	Indian Institute of Technology, Kanpur
2015 - 2019	Bachelor of Technology (Hons) in Electronics and Communication Engineering APJ Abdul Kalam Technological University, Kerala, India Key Courses: Signal Processing, Digital and Analog Circuits, Cyber Security, Computer Networks CGPA: 8.73/10.0	TKM College of Engineering, Kollam
Till 2015	School Education Central Board of Secondary Education (CBSE) Higher Secondary (XII): 93.8% , Secondary (X): 95% (CGPA 10.0/10.0) Subjects: Physics, Mathematics, Chemistry, English, Computer Science	Kendriya Vidyalaya Pattom

PROJECTS

2023	On Inter Symbol Interference in Molecular Communication <ul style="list-style-type: none">• Master of Science by Research Thesis• Molecular Communication aims to make communication possible in areas where wireless communication fails, for example: inside the human body.• My work tries to analyze the effect of ISI in different scenarios in Molecular Communication.	Thesis Supervisor: Dr. Abhishek K Gupta
2021	Course projects for Wireless Communication (EE670A), MIMO Wireless Communication (EE677A) <ul style="list-style-type: none">• Simulations for studying Bit Error Rate, Signal to Noise Ratio, Signal to (Interference+Noise) Ratio for multiple antenna fading systems.• Plotting and analyzing the capacities of diverse channels (AWGN, fading) in SISO to MIMO cases.• Uplink Spectral Efficiency for line of sight and non-line of sight Massive MIMO channels for multi-cell systems.• Language: Python, MATLAB. Codes at: Github Repo	Dr. Aditya K. Jagannatham, Dr. Rohit Budhiraja
2020	LoRa sensor monitor Developed a Proof Of Concept application for evaluating LoRa technology where LoRa communication with available sensor data is demonstrated in all 3 classes and firmware over the air update is tested.	Tismo Tech.
2019	Smart street light control using 3G and Zigbee Worked on the firmware development (Java ME) of a street light controller which has features designed to maintain energy efficiency.	Tismo Tech.
2019	Internet sharing for Smart street light control using Zigbee As part of a team, got a chance to work on a proprietary technology that enables many street light controllers to exchange information via Zigbee with one main controller (switchable) which has 3G internet connectivity so that the internet connectivity is now virtually shared among all the controller devices.	Tismo Tech.

2019	An inexpensive Unmanned Aquatic Vehicle for Underwater Human Detection	Asst. Prof. MN Shafi
	<ul style="list-style-type: none"> • 8th semester B.Tech final year project • Developed a low-cost working model of an underwater vehicle that is capable of performing object detection underwater while working autonomously. • Published a paper with the same title in American Institute of Physics Conference Proceedings, Volume 2222, Issue 1, article id 040015(2020). 	
2017	Advanced Vertical-Farming Assisting Setup (AVAS)	Class project
	<ul style="list-style-type: none"> • 5th semester research project • Project to show the idea of automation on Vertical Farming for a better yield. • Fuzzy performance analysis, and comparison of growth attributes, of subject plants with the ideal set, and automation using microcontroller, humidity, temperature sensors, and servo motors, and studied the response. Displayed the project for the campus community in Space it lab, an experimental lab venture I was part of in college. 	
2016	Bluetooth Enabled Assist Device (BEAD)	Sophomore year project
	<ul style="list-style-type: none"> • 4th semester summer project • Devised a prototype model for assisting indoor navigation for visually challenged people. • Innovatively used multiple Android phones' Bluetooth feature, instead of relying on the then-costly BLE beacons for indoor mapping and developed an application to trigger the handheld device for direction advice. • Paper was accepted in IEEE TENSYP 2018, Sydney, Australia but could not participate. 	
2015	Autonomous Maze Solver	Freshman Project
	<p>The project was made for a tech event where we, as a group of 2, implemented a modified version of the Pledge Algorithm to make a robot that travels through a maze, finding its way to exit. The testing maze we made consisted of styrofoam walls and the robot relied on ultrasonic sensors to detect walls. The project participated in tech fests of NIT Calicut and my college.</p>	

EXPERIENCE

Mar/2023 Aug/2022	Teaching Assistant	IIT Kanpur
	<ul style="list-style-type: none"> • TA for the course ESC 201, Introduction to Electronics. Work included the correction, grading and maintaining marks of quizzes. 	
July/2021 Oct/2020	Teacher	(Self employed)
	<ul style="list-style-type: none"> • Taught and helped students of high school (Math and Physics) and Engineering (Electronics, Communication) during the COVID-19 Pandemic. 	
Sep/2020 June/2019	Software Engineer T1 (Firmware)	Tismo Technology, Bengaluru, Karnataka
	<ul style="list-style-type: none"> • Corporate work experience in developing wireless communication projects for Internet of Things. • Software development experience in C and java ME. • Board bring-up experience with UART, SPI and I2C, with added expertise in Zigbee, BLE and LoRa. • Attended Microchip Masters Conference, Bengaluru 2019, representing the firm. 	
July 2018	Research Intern	DSP Lab, National Institute of Technology, Calicut, Kerala
	<ul style="list-style-type: none"> • Worked on implementing improved PCA methods for detecting principal moving objects from video sequences. PI: Dr. Sudhish N George, NIT Calicut 	
July 2017	Intern	Airports Authority of India
	<ul style="list-style-type: none"> • Received training on Area, Approach, and Air Traffic Control during landing and take off of airplanes. • Conducted a comprehensive examination of various machines employed in air communication and compiled an extensive report summarizing my findings. 	

COMMUNITY SERVICE

2023	Mathematics Teacher, Prayas (NGO)	IIT Kanpur
	<ul style="list-style-type: none">• I teach Mathematics to 11th-grade students	
2022	PG Core Team Member, Institute Counselling Service	IIT Kanpur
	<ul style="list-style-type: none">• Part of a team of Counselors and Mental health professionals to help students overcome stress and other difficulties during their time in the institute. Organized workshops and lectures on Mental health.• Organized Orientation (Welcoming/Freshers) for 1500+ PG students• Web development head for the team website	
2018	Student member, National Service Scheme	TKM CE (during B.Tech)
	<ul style="list-style-type: none">• Made power banks, and emergency lights and took part in making kits for providing to families affected by the 2018 Kerala floods.	

LEADERSHIP SERVICE

2022	Student nominee to Institute Senate, IITK	IIT Kanpur
	<ul style="list-style-type: none">• I was one of the six special invitees to the Academic Senate at IIT Kanpur, which serves as the highest governing body responsible for overseeing institutional policies and decision-making. In this role, I played a key part in formulating proposals on behalf of the student community and served as their representative within the Senate.	
2022	Student nominee to Scholarships and Prizes Committee, IITK	IIT Kanpur
	<ul style="list-style-type: none">• I was entrusted as a student panel member in the Senate Scholarships and Prizes Committee where I managed and helped in the overall conduct of interviews for selection of students for various awards instituted by the college.	
2022	Vice President, Public Relations, Toastmasters Club IITK	IIT Kanpur
	<ul style="list-style-type: none">• I served as the inaugural Vice President of the Toastmasters Club at IIT Kanpur, where my responsibilities encompassed enhancing the club's visibility and bolstering its reputation among the college community. Additionally, I garnered recognition as the standout speaker and role-taker in numerous meetings.	
2022	Secretary, Photography Club IITK	IIT Kanpur
	<ul style="list-style-type: none">• I served as the sole secretary for the entire postgraduate student body, which consisted of approximately 3,000+ individuals. My responsibilities included organizing events and workshops for the campus community.	
2019	Co-founder, Space it lab	TKM CE (during B.Tech)
	<ul style="list-style-type: none">• I was the co-founder of Space it Lab, a college initiative to open a technical laboratory for developing student-initiated projects; aimed at preparing and elevating students to the industrial requirements. [Newspaper report]	
2018	Co-founder, Automation & Robotics Club	TKM CE (during B.Tech)
2017	Student member and volunteer, IEEE, ISTE, IETE	TKM CE (during B.Tech)
2015	School Captain, School Vice Captain, School Council Member for multiple tenures	Kendriya Vidyalaya Pattom

● In school, I served in leadership positions in different roles like sports captain, prefect, and house captain for a record 7 times in primary and higher secondary. In IIT K also, I could contribute to various short-term committees related to college matters, apart from the commitments I already mentioned.

EXTRA-CURRICULAR ACTIVITIES

- Athletics: Frequent participant in 5K running and 50K cycling events.
- Quiz enthusiastic: 1st in Inter-KV All Kerala Quiz Competition (2014), and other quiz competitions.
- Professionally trained (since 2007) Mridangam player (Carnatic Music) and have played in school, college and office events. Also played Ukulele, Keyboard, Tabla, and Cajón for different events.
- Loves Bike Ride, Photography, Acting & Theatre, Art & Music, and Amateur Astronomy.

KEY AWARDS AND RECOGNITIONS

- Holder of General Grade Amateur Radio License (Call sign: VU2LWH), issued by Wireless Planning and Coordination Wing, Ministry of Communications, Govt. of India.
- Secured OIS grade (Scored above 90%) in all mathematical subjects in the undergraduate curriculum.
- Secured (Hons.) from APJ Abdul Kalam Technological University for completing additional Master's level coursework credits within B.Tech course span.
- Google Science Fair Regional Finalist, Asia Pacific: 2 times consecutive during 2012 and 2013, for presenting one among the top 30 projects worldwide in the age category 14-16.
- Certificate of Merit and Cash Award from KV Sangathan for excellence in AISSE (Xth standard board examination) (2013).
- Proficiency Test Scores (2021): *IELTS*: Band 7, *GRE*: 310 (Quants: 162), *GATE* All India Ranks: 579 (Instrumentation Engg), 1935 (Electronics and Communication Engg.).