STUDENT REPORT ON

INTERNATIONAL EXPERIENCE PROGRAMME-2025 ELECTRONICS & COMMUNICATION ENGINEERING

INSTITUTE NAME:

AHMEDABAD INSTITUTE OF TECHNOLOGY (AIT), GOTA

PREPARED BY:

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DURATION: 15TH JULY TO 16TH AUGUST 2025

On 15th July, our group departed from Ahmedabad for the International Experience Program. After a long journey, we reached Hamburg International Airport. Following immigration and baggage collection, we proceeded towards the next phase of travel — our transfer to Wismar city of Germany. A bus arranged by Gujarat Technological University (GTU) was waiting to receive us and comfortably transported us to the student dormitory.

Upon arrival, we were warmly welcomed by Professor Nara mam .who played an important role in ensuring that all students settled in without difficulty.

They personally assisted us with the check-in process by distributing room keys and Wi-Fi credentials. In addition, they provided the required cooking utensils, which proved extremely helpful for our stay. They also clearly explained the rules, regulations, and facilities available at the dormitory, thereby creating an environment of discipline, safety, and comfort. Their guidance not only helped us adapt quickly to the new setting but also gave us confidence as we began this international journey.

The initial on same days after arrival were kept free of academic activities to allow students sufficient time for rest and adjustment. This recovery period was essential after the long travel, enabling us to regain energy and prepare ourselves for the upcoming program schedule. During this time, we familiarized ourselves with the dormitory environment, interacted with fellow students, and became accustomed to the local surroundings. This smooth beginning created a strong foundation for the enriching experiences that were to follow in the subsequent weeks.

From 16th July, our regular academic sessions commenced, marking the official beginning of the structured part of the International Experience Program. On the very first day of classes, we were warmly welcomed by Prof.Francisco Cano, Prof.Andreas Ahrens and Professor Naraa who introduced themselves and gave us an overview of the academic schedule, teaching methodology, and expectations for the coming weeks.

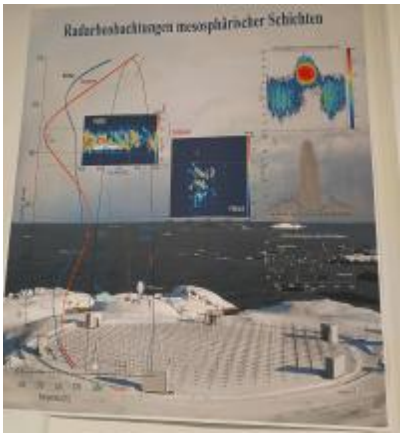
They outlined the objectives ofthe program, emphasizing both the theoretical and practical aspects of the subjects we would be studying. The professors also provided valuable insights into how the courses were designed to integrate classroom learning with industrial exposure, thereby offering us a well-rounded international academic experience. Their encouraging words and approachable manner created a positive atmosphere, which immediately made us feel comfortable and motivated.

This orientation session played a vital role in setting the tone for the upcoming weeks, as it not only familiarized us with the academic framework but also highlighted the importance of discipline, active participation, and cross-cultural learning. The warm hospitality and professional guidance of the faculty helped us transition smoothly from the initial settling-in period to the beginning of our academic journey in Germany.

On 17th July , The first visit was to the Leibniz Institute ofAtmospheric Physics (IAP), Kühlungsborn, a leading research center specializing in atmospheric studies, radar meteorology, and remote sensing technologies. This visit gave usa deeper understanding of radar systems, lidar applications, FPGA-based real-time processing, and the role of IoT and sensor networks in environmental monitoring.

Upon arrival at the IAP campus on 17 0f July, I was warmly welcomed by the institute's research and administrative staff. The visit schedule included:

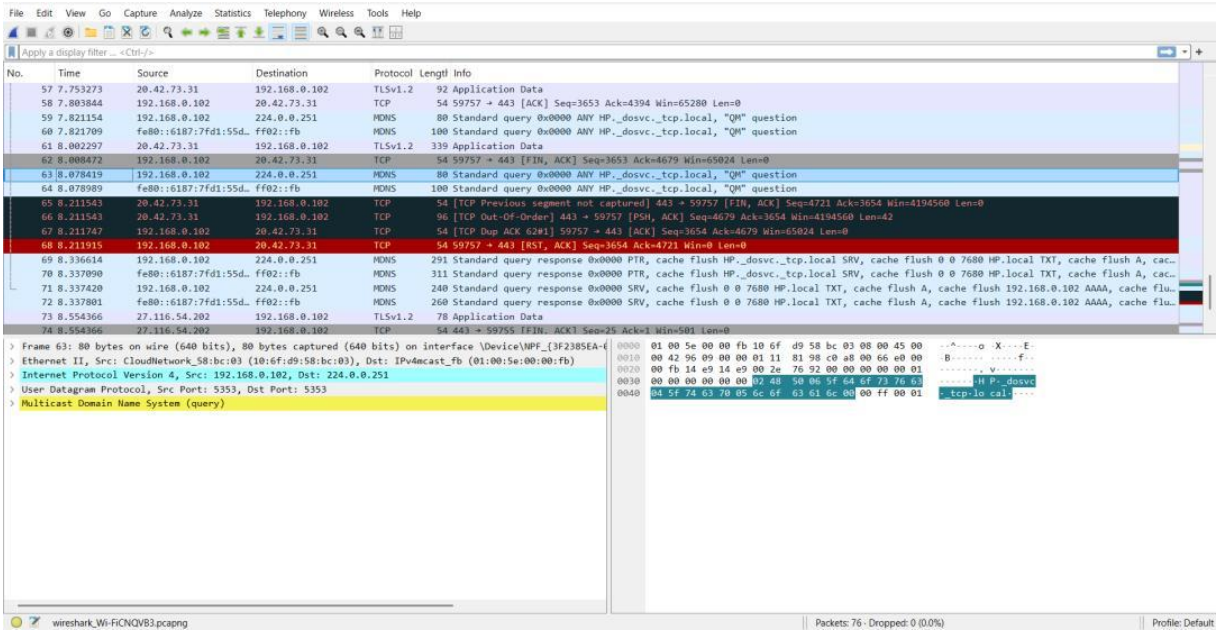
- an introductory session on the institute's mission and global research activities
- a guided tour of the laboratories, radar systems, and lidar installations
- live demonstrations of atmospheric instrument
- interactive sessions with researchers and PhD students



After the visit, we went to a nearby place called **Seebrücke Kühlungsborn**, a well-known pier and tourist attraction on the Baltic Sea. The serene seaside view, fresh breeze, and calm surroundings offered us a refreshing break after the technical sessions of the day. This brief visit allowed us to enjoy the natural beauty of Germany while also capturing memorable photographs together as a group.

On 18th July, Professor Cano introduced Chapter 1 of the Internet of Things (IoT). He had prepared a detailed PDF that served as the study material. The lecture covered core topics such as communication protocols, network access methods, physical media, the network core, and connecting end systems to edge routers. Additional points included performance, security, layered architectures, the history of the Internet, and the ISO model, giving us strong conceptual clarity.

Later, we attended a laboratory session focused on **Wireshark software**. This exercise was designed to complement the lecture by allowing us to capture and analyse real-time network traffic. Through hands-on practice, we studied how data is transmitted across different layers and understood the role of protocols in practical scenarios. The lab was highly interactive and helped us directly apply theoretical knowledge, making the session informative, engaging, and technically enriching for all students.



On **19th July 2025** our first weekend in Germany, we had the opportunity to visit the historic Schwerin Castle,

one of the most famous landmarks in the region. Surrounded by lakes and gardens, the castle

impressed us with its magnificent architecture and rich heritage. Inside, it also housed a museum that displayed royal artifacts, artworks, and historical collections. The serene environment and cultural depth made this visit a truly memorable experience.

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SCHWERIN CASTLE

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On 23 July 2025

Apart from academic work, we also had cultural activities during the

week. We went on a guided city tour of Wismar, a beautiful port town

listed as a UNESCO World Heritage

Site. During the tour, we explored

historical landmarks, old churches,

marketplaces, and the harbor area,

which gave us a glimpse of German

history and architecture. Later in the week, we also visited the Rostock

Hansa Outlet Mall, where we explored various international and local

brands, enjoyed shopping, and

experienced the lively atmosphere of a German shopping destination.

On 24th July, we formally began with the project phase of the International Experience Programme. A total of four projects were assigned, out of which two were based on Arduino, one on Android development, and another on Raspberry Pi. Each project team was supported by two student members, while one project manager was assigned to oversee the work. Since there were four projects in total, each project manager was given responsibility for handling two projects simultaneously.

Me & Divyam , our team worked on developing an Arduino-based medicine reminder system, which we named **MediAssist**. The system was designed to assist old people in remembering their medication schedules by providing timely alerts. Our goal was to combine simplicity with reliability so that the device could be used in daily life without difficulty. As project manager, my role included coordinating tasks, ensuring logical progress, and guiding the team through both hardware integration and presentation preparation.

On 25th July, the schedule included three periods, one of which was dedicated to project work while another focused on completing the final chapter of our IoT course. In this session, we studied the role of IoT in different industries, including manufacturing, oil and gas, and the development of smart and connected cities. The lecture emphasized how IoT technologies improve efficiency, enhance monitoring, and enable real-time decision-making, highlighting their growing significance in industrial applications worldwide.

In the third period, we participated in a **debate** on the topic *"***Internet of Bodies***."* Professor divided us randomly into two teams and assigned the stance of *for* or *against* through a coin toss. Our team represented the for side. To save time during preparation, we first divided the five questions among team members, assigning one question to each person. This allowed us to focus individually, note the important points, and then share and discuss them collectively before the debate.

On Sunday, 27th July, we went to Rostock for shopping. We bought shoes and chocolates for our families and friends.

On 28th July, we completed the final chapter of our IoT course, which summarized the key concepts learned throughout the sessions. The lecture provided closure to our academic discussions and highlighted the practical applications of IoT in modern industries. After the session, we dedicated our time to project work, where each team continued refining their designs, troubleshooting challenges, and preparing presentations for the upcoming evaluations.

On 29th July 2025, we appeared for our first examination of the program, which was on the subject Internet of Things(IOT). This exam was an important milestone, as it tested our understanding of fundamental design concepts and their application to real-world engineering problems. The assessment challenged us to apply principles of stress analysis, material selection, and failure criteria, thereby bridging theoretical knowledge with practical problem-solving.

We Made a project based on Internet of things which in group of two and one Project Manager and it's dedicated the spirit of teamwork.

Our Project Define :-

Specific:
Design and build a low-cost Arduino-based medicine alert system that uses LED, LCD and sound to remind users to take their medicine.

Measurable:
The system should be able to issue at least 3 daily alerts (morning, afternoon, evening) and be acknowledged by a button press.

Medi-Assist System

Group photo after completion of all projects presentation.

In the evening of 29th July, we enjoyed a memorable boat trip together. During the journey, we witnessed a beautiful rainbow and also saw the Disney Cruise Ship, which was under construction at the harbour. The experience was followed by dinner on the boat, where everyone dined together, played games, and enjoyed a cheerful atmosphere. To conclude the evening, we shared a traditional drink humorously referred to as “holy water.”

On 31st July, we began with an introduction to Digital Signal Processing (DSP). The session started with Yadu giving a practical demonstration of different types of signals, which helped us visualize the concepts more effectively. He also asked us a few questions to encourage interaction and check our understanding. Following this, Professor Ahrens explained the fundamentals of signals and introduced the concept of convolution. The example we solved on convolution was later performed in MATLAB under the guidance of Professor Borat, providing valuable hands-on experience.

On 1stAugust, the focus of our session was on Frequency-Time Domain (FTD) analysis and its applications in signal processing. Professor Ahrens introduced the theoretical aspects, explaining how signals can be represented and analyzed in both the frequency and time domains for better understanding of system performance. To complement the lecture, we carried out MATLAB practical exercises, where we applied the concepts to analyze signals and evaluate their performance. This hands-on session reinforced our theoretical learning with practical experimentation.

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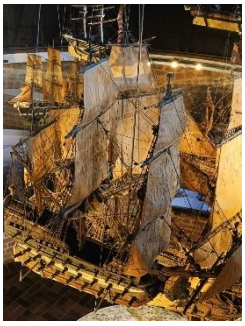
We celebrate a garba night .

On 2ndAugust, we visited Hamburg, where our first stop was a Hindu Mandir, followed by a visit to a Gurudwara. Both places offered a sense of peace and cultural connection. Later, we witnessed the vibrant Pride Parade, which showcased diversity, inclusivity, and the city's festive spirit.

HINDU TEMPLE

On 3rdAugust, we travelled to Lübeck, a historic city known for its medieval architecture and cultural heritage. Our first visit was to the grand Lübeck Cathedral, where the intricate design, stained glass windows, and spiritual atmosphere left a lasting impression. Later, we attended a musical event in the evening. The performance was uplifting, offering us a glimpse into Germany's rich artistic traditions while also providing a refreshing cultural break from academic activities.

As part of our exploration, we also enjoyed a scenic boat trip that allowed us to view Lübeck's historic skyline and waterways from a unique perspective. This relaxing experience highlighted the city's charm and its blend of tradition and modernity. Additionally, we visited a historic museum that showcased Lübeck's role in medieval trade and culture. The artifacts, displays, and architecture offered valuable insights, making the visit both educational and memorable.



On 4th August ,The second visit was to the Faculty of Engineering, Maritime, Plant Engineering and Logistics at Wismar University of Applied Sciences. This faculty is renowned for its maritime simulation laboratories and advanced industrial automation facilities. Here, we explored ship management and control systems, embedded automation in marine engineering, ship simulators, and the role of digital twins in maritime training.

Founded over a century ago, wismar university of

applied sciences is recognized for its advanced

research and applied teaching approach in engineering, design, and business disciplines. The faculty of

maritime, plant engineering, and logistics is equipped with cutting-edge simulation laboratories and

industrial automation infrastructure.

This faculty specializes in:

Maritime navigation and ship operation training

Energy systems and control in marine environments Advanced plant and logistics systems

Real-time process simulation and digital twin technologies

In the afternoon, we visited a rostock wanermunde beach. We spend time with group and make fun at beach .

In the evening, we visited Hanse Sektkellerei in Wismar, a well-known winery specializing in sparkling wines. The visit gave us the opportunity to learn about the traditional methods of wine production while also tasting different varieties of sparkling wine. The experience combined cultural exposure with social interaction ,and the evening concluded with a delightful dinner, making it both enjoyable and memorable.

On 5th August, we appeared for a short test of 15 marks that assessed our understanding of the concepts taught in the DSP sessions. After the test, we studied the key differences between Discrete Fourier Transform (DFT) and Frequency-Time Domain (FTD) analysis. The discussion clarified how DFT provides a frequency spectrum of signals, while FTD focuses on simultaneous representation, helping us appreciate their complementary roles in digital signal processing.

On 6th August, we visited WEMAG AG, a leading regional energy provider based in Schwerin, Germany. The visit was organized to give us first-hand exposure to the German energy sector and its focus on sustainability. At the beginning, we were warmly welcomed by the company staff and provided with useful materials as a token of hospitality. This gesture set a positive tone for the day and highlighted the company's professional yet friendly approach. During the technical sessions, we learned about WEMAG's operations, including renewable energy production, smart grid management, and battery storage technologies. The company serves a wide region in northern Germany, managing over 15,000 km of electrical cables. We were introduced to advanced tools such as SCADA for real-time monitoring, GIS for grid mapping, and AI-based load forecasting systems. These insights demonstrated how modern utilities integrate technology for efficient, reliable, and sustainable energy delivery.

The highlight of the visit was our tour of WEMAG's large-scale battery storage facility, one of Europe's first commercial battery parks. Here, we observed lithium-ion storage systems and advanced battery management technologies that stabilize renewable power supply from solar

and wind sources. This experience not only enriched our technical knowledge but also deepened our appreciation of Germany's commitment to green energy. The visit concluded with refreshments, giving us time to reflect on the day's valuable learnings.

Key features of WEMAG : -

- Provides electricity and broadband services to households and industries.
- Invests heavily in solar power, wind energy, and battery storage.
- Operates one of Europe largest battery storage facilities.
- Focuses on sustainability and digital grid infrastructure.

WEMAG representatives presented a detailed overview of how the company functions:

- Structure of the company and its service areas in northern Germany
- Commitment to 100% renewable energy supply.
- Explanation of the company's role
- In grid management, power distribution, and green energy production

COMPANY NETWORK & INFRASTRUCTURE

- We learned about the company's electrical grid and how it manages energy flow across regions.
- Wemag provides services across a region spanning approximately 8,000 square kilometers, covering parts of northern and eastern Germany.
- It controls over 15,000 km of electrical cables across urban and rural areas.
- The company maintains
  transformer stations, substations, and smart metering systems.
- We were introduced to smart grid technology for real -time monitoring, automated fault detection, and load balancing.

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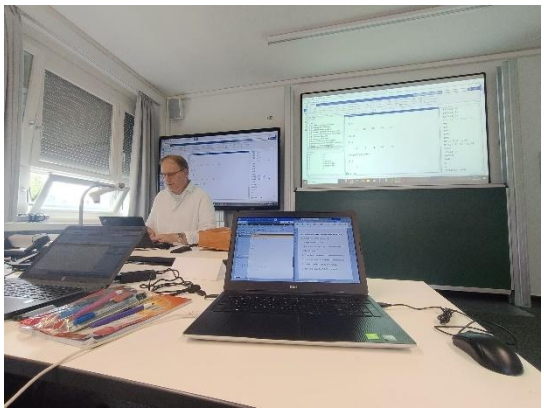
On 7th August, our session focused on the study of Z-Transform, an important concept in digital signal processing. We learned how it extends the idea of the Discrete-Time Fourier Transform and simplifies system analysis. The lecture clarified its applications in signal stability, filtering, and practical problem-solving.



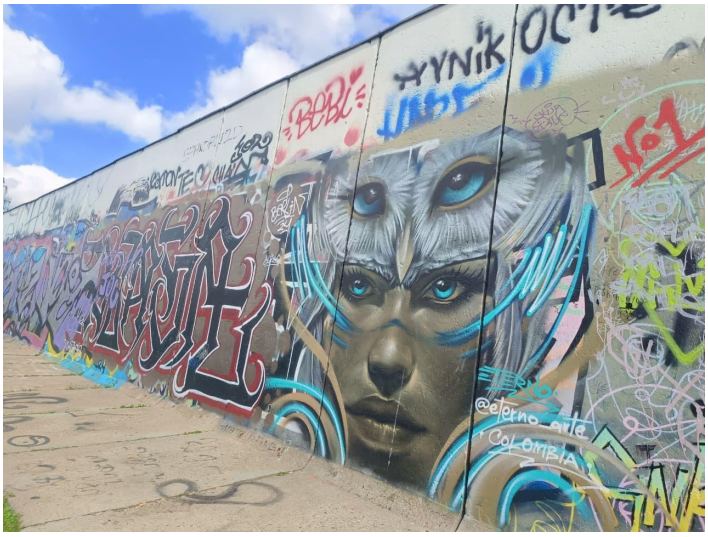
On 8th August, we appeared for a 15-mark class test that evaluated our understanding of the DSP concepts covered so far. After the test, the lecture focused on leakage effect, where we learned how finite signal observation leads to spectral distortions during frequency analysis. We also studied signal reconstruction techniques, which emphasized methods of accurately recovering original signals from sampled data. The session combined assessment with conceptual learning, strengthening our grasp of digital signal processing.

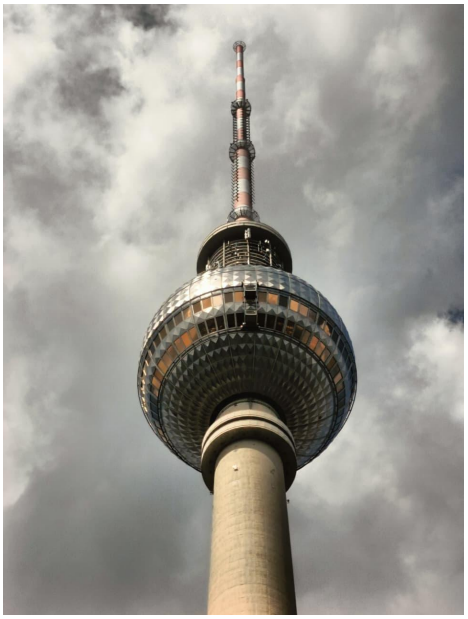
On 9th and 10th August, we visited Berlin, where we explored famous landmarks, enjoyed the city's vibrant culture, and created memorable experiences together, making the trip both exciting and enjoyable.

PARLIAMENT OF BERLIN

BRANDENBURG GATE HISTORICAL PLACE

BERLIN EAST SIDE WALL





BERLIN TV TOWER

U.S ARMY CHARLIE CHECKPOINT

WORLD CLOCK

The support of Nara ma’am, who also booked our entry into the German Parliament (Reichstag).

During the two-day visit, we explored major landmarks of Berlin, including the Brandenburg Gate, the

Berlin Wall Memorial, the Reichstag Parliament building, and the Berlin TV Tower (Fernsehturm).

Staying in a hostel during the trip gave us a memorable group experience, as we bonded more closely with fellow students while exploring Germany’s capital city.

The Berlin visit gave us a deeper understanding of German history, culture, and modern development, making it one of the most memorable highlights of the program.

On 11th August, our session focused on the study of FIR (Finite Impulse Response) and IIR (Infinite Impulse Response) systems, two fundamental categories in digital signal processing. We first explored the theoretical aspects, learning how FIR systems are always stable a nd have linear phase characteristics, while IIR systems are more efficient but may face stability challenges .The lecture also highlighted their applications in filtering and signal analysis. Later, we performed hands-on practical exercises in MATLAB, where we designed and analyzed FIR and IIR filters. This practical experience strengthened our conceptual clarity and provided valuable technical skills.

In the evening, we visited a beach in Wismar known as **Insel Poel**. The calm sea, refreshing breeze, and scenic surroundings created a peaceful atmosphere, giving us a relaxing break from our academic schedule.

On 12th August, we appeared for our final examination of 70 marks, which assessed our overall learning during the program. After the exam, we gathered in front of the university library and captured a memorable group photograph together.

In the evening, a farewell party was organized at Reuterhaus Wismar, a cozy restaurant in the heart of the old town. The atmosphere was filled with joy and a sense of accomplishment as we celebrated the successful completion of our program. During the event, Prof. Andreas Ahrens personally handed over our course certificates, which was a proud and memorable moment for all of us.

Our mentor, Komal ma'am, then delivered the concluding speech, appreciating our journey and learnings. The evening ended with light hearted moments and a cheerful toast of "holy water."

On 13th August, we spent the day preparing for our departure. We packed our belongings and also went for some last-minute shopping at Wismar city center, picking up souvenirs and gifts to carry back home.

On 14th August, was our final day in Wismar. In the morning, we cleaned our dormitory rooms as part of the checkout process. Nara ma'am personally inspected and verified all the rooms to ensure everything was in order. By 2:00 PM, a bus arranged by her transported us from the university to Hamburg Airport, where we arrived around 4:30 PM. After completing check

we bid farewell to Germany, bringing an end to a remarkable journey that combined academic learning, industrial exposure, and cultural exploration. Leaving behind the beautiful cities, kind professors, and international friends was emotional, as each moment had contributed to making this experience unforgettable .As we boarded our flight, we carried with us not only technical knowledge but also lifelong memories and valuable lessons that would guide our future academic and professional endeavors.

Our flight was depart at 9;30 pm and we left from Germany to back to Ahmedabad with thousand of clicks, dirty laundary , and a heart full of memories ,