

## Assignment No. 1

### Sub :- Wireless Sensor and Network

1. What is the difference between passive sensors and active sensor and can you name a few examples for each category.
2. Name at least four techniques to reduce power consumption in wireless sensor networks.
3. Explain the difference between time domain and frequency domain features.
4. How can oversampling of sensor data overcome the effect of noise?
5. What conclusion can be drawn from the zero crossing rate?
6. In structural health monitoring, inspection techniques are classified into global and local inspection techniques. Explain the difference between these techniques. For which of these techniques are wireless sensor networks suitable?
7. Explain how the property of a pipeline changes at a location where gas and oil leakages occur.
8. Explain how an acoustic sensor can be used to monitor the content of a pipeline.
9. Explain the principle of piezoelectric sensor to measure movement?
10. How can a magnetic sensor be employed to measure the movement of vehicles?
11. What is an electromyography and for what application can it be used?
12. Describe the three phases of a Parkinson's disease.
13. What is a heat unit?

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# Pranay Gupta

## Software Development Engineer

GitHub  
LinkedIn  
Portfolio

### SKILLS

<b>Programming Languages</b>	Java, JavaScript, Typescript, C/C++, Python
<b>Tools &amp; Platforms</b>	Git, GitHub, Vercel, Firebase, Figma, Postman, Linux, AWS
<b>Frameworks &amp; Libraries</b>	React.js, Next.js, Node.js, MongoDB, React Native, Tailwind CSS, Material UI

### WORK EXPERIENCE

<b>Software Development Intern</b> <i>ProPeers</i>	<b>Apr 2023 — Sept 2023</b> <i>New Delhi</i>
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- Developed admin-specific features and constructed an admin dashboard from scratch using **React** and **Tailwind CSS**, implementing an advanced architecture with **MVC pattern** for efficient data flow and state management.
- Implemented a robust **Restful Web Services API** using **Node.js**, **Express**, and **MongoDB** to facilitate seamless interaction between the mobile app and web app, incorporating modular design and run-time optimization techniques.
- Worked on several screens of the **React Native App**, ensuring a seamless and responsive user experience across platforms.
- Designed and implemented an **end-to-end** solution for efficient storage and retrieval of college data, leveraging multiple alias-matching algorithms to handle **hundreds of thousands of records**.

<b>Full Stack Development Intern</b> <i>Permissionless</i>	<b>Nov 2022 — Jan 2023</b> <i>Dubai</i>
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- Worked on the design and development of the cutting-edge front-end for **Dsync.ai**, utilizing **Next.js** and **Tailwind CSS**, elevating the user experience to unparalleled levels of seamlessness.
- Collaborated on the enhancement of front-end components for the dynamic Permissionless Shop, employing **agile methodologies** and leveraging advanced technologies to streamline the shopping experience.
- Crafted captivating and intuitive user interfaces through the creation of interactive web applications using **Next.js**, **Sass**, and **Ant Design**, ensuring optimal engagement and user satisfaction.

<b>Full Stack Development Intern</b> <i>Gumlet</i>	<b>June 2022 — Sept 2022</b> <i>Singapore</i>
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- Developed and deployed an MVP model for an Ed-Tech platform, showcasing expertise in full-stack development with **Next.js**, **Node.js**, and **MongoDB** for efficient data storage and reliability.
- Actively contributed to the SaaS Developer community, demonstrating software development expertise through innovative solutions and collaborative problem-solving.

### PROJECTS

<b>CodeHelp</b>	<b>Nov 2022 — Jan 2023</b>
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- Developed a learning platform **CodeHelp** using **Next.js** and **Tailwind CSS**, and managed content with **Strapi CMS**.
- Deployed the platform on **AWS EC2** and **CloudFront**, ensuring fast and reliable delivery to over **100k monthly visitors**.
- Created **CodeHelp QuickCompiler**, an **online compiler** for C, C++, Java, and Python programs.
- Designed **Fruitbox Flex**, an **interactive game** to teach CSS flexbox in a fun and engaging manner.

<b>Dar Al Marefa</b>	<b>Aug 2022</b>
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- Developed a content-driven website for a Dubai-based school with **dynamic pages**, **responsive design**, and **Next.js** for server-side rendering and optimization.
- Utilized **Tailwind CSS** for styling and used **Strapi** as a headless CMS for easy content management by non-technical users.
- Deployed the website using **Vercel** for fast and reliable delivery worldwide, leveraging its global CDN network.
- Successfully implemented **SEO best practices**, resulting in Google search indexing and improved visibility.

### EDUCATION

<b>Asansol Engineering College</b> <i>Bachelor of Technology in Information Technology — 9.24 CGPA</i>	<b>July 2020 — June 2024</b> <i>Asansol, West Bengal</i>
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**Coursework:** Algorithms and Data Structures, Operating System, Database Management Systems, Computer Networks.

<b>Loyola School, Taldanga</b> <i>Senior Secondary — 82.3%</i>	<b>April 2018 — April 2020</b> <i>Dhanbad, Jharkhand</i>
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### ACTIVITIES

Technical Expert at GirlScript Asansol	April 2022 — Present
Project Admin at Winter Of Code (WOC) by IIIT Kalyani	Nov 2021 — Jan 2022
Student Mentor at Script Winter of Code	Nov 2021 — Mar 2022