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**Section : 7B1**

**Course title :** [Scientific Research and Methodology](https://classroom.google.com/u/3/c/NzEwMzA4NDkwMjQ4)

**Course Code :**418

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| **Ref.** | **Problem area** | **Data type** | **Data size** | **Data Sources** | **Availability** |
| **1** | **Flood monitoring System** | **Here, Used to Real-time sensor data (water level, rainfall)** | **50MB/day** | **IoT sensors, weather stations, satellite imagery (NASA GFMS)** | **Publicly available, but requires an API connection** |
| **2** | **Prediction of flood risk using IoT and GIS mapping** | **River flow data, elevation models, rainfall, soil moisture** | **Large datasets (100MB-1GB/day)** | **IoT river level sensors, GIS mapping data (DEM), remote sensing** | **Publicly available GIS and satellite data.** |

**References:**

1. **S. Azid, B. Sharma, K. Raghuwaiya, A. Chand, S. Prasad, and A. Jacquier, SMS based flood monitoring and early warning system, vol. 10. 2015.R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.**
2. **Sharmad Pasha,"Thingspeak Based Sensing and Monitoring System for IoT with Matlab Analysis", International Journal of New Technology and Research (IJNTR) , Volume-2, Issue 6, June 2016 Pages 19-23I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–3**

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| **Ref.** | **Methods/**  **Techniques** | **Results/**  **Outcomes** | **Research gap/ limitation or drawbacks** | **Future Direction/ Future work** | **Opinion/Comments/ Feedback** |
| 1 | IoT sensors (water level, rainfall) & NASA GFMS | Achieved **real-time flood detection** with 85% accuracy in flood-prone areas. | Limited sensor coverage in remote regions | **Expand sensor networks** in rural areas. Utilize low-cost, solar-powered sensors. | **usefulness of real-time alerts**, |
| 2 | **GIS mapping integrated with IoT data** for flood risk visualization. | **interactive flood risk maps** with high accuracy, enabling quicker disaster response. | **consistent internet connection** for real-time updates. | Explore **offline solutions** for areas with limited connectivity. | local authorities on **ease of use** for decision-making. |

**References :**

1. **Centre for Artificial Intelligence and Robotics (CAIRO), Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra, 54100 Kuala Lumpur, Malaysia**
2. **Giovannettone J, Copenhaver T, Burns M, and Choquette S 2018 A statistical approach to mapping flood susceptibility in the Lower Connecticut River Valley Region. Water Resources Research.**