

A pair of black-rimmed glasses is resting on a stack of books. A red bookmark is visible in the foreground. The background is blurred, showing more books and a wooden surface.

Practical assignment content

Necessary infrastructures

Hardware

- PC/ Laptop
- Access to WiFi

Software

- Web-browser/Grafana or Thingsboard

Task - Design an optimal dashboard layout to visualize data from a small-scale treatment plant

- Real-time data from IoT devices can be visualized in various forms using web widgets.
- A fundamental understanding of norms and standards is necessary to create an easy-to-understand dashboard layout of online sensor data.
- How do we arrange online sensor data shown in web widgets to create a comprehensive representation of data from online sensors installed in a wastewater treatment plant?

Deliverables

- A dashboard layout for visualization of data

Useful references

1. S. M. Ali, N. Gupta, G. K. Nayak and R. K. Lenka, "Big data visualization: Tools and challenges," 2016 2nd International Conference on Contemporary Computing and Informatics (IC3I), 2016, pp. 656-660, doi: 10.1109/IC3I.2016.7918044.
2. Manuela Aparicio and Carlos J. Costa. 2015. Data visualization. *Commun. Des. Q. Rev* 3, 1 (November 2014), 7–11. <https://doi.org/10.1145/2721882.2721883>
3. Antonis Protopsaltis, Panagiotis Sarigiannidis, Dimitrios Margounakis, and Anastasios Lytos. 2020. Data visualization in Internet of things: tools, methodologies, and challenges. In *Proceedings of the 15th International Conference on Availability, Reliability and Security (ARES '20)*. Association for Computing Machinery, New York, NY, USA, Article 110, 1–11. <https://doi.org/10.1145/3407023.3409228>
4. Rajeev Agrawal, Anirudh Kadadi, Xiangfeng Dai, and Frederic Andres. 2015. Challenges and opportunities with big data visualization. In *Proceedings of the 7th International Conference on Management of computational and collective intelligence in Digital EcoSystems (MEDES '15)*. Association for Computing Machinery, New York, NY, USA, 169–173.
5. M. Chaudhry, "Creating Effective Virtual Reality Learning Experiences: Lessons Learned," in *Education and Training in Optics & Photonics Conference 2021*, A. Danner, A. Poulin-Girard, and N. Wong, eds., OSA Technical Digest (Optica Publishing Group, 2021), paper Th4A.1.
6. Capece, N., Erra U.: StreamFlowVR: a tool for learning methodologies and measurement instruments for river flow through virtual reality. In: De Paolis (ed.) *6th International Conference AVR 2019*, LNCS 11614. Springer, Italy (2019) intelligence