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Multisensor Data Fusion for Data Analysis

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Data fusion is the process of combining data from multiple sensors into one framework to provide better data analysis and improve decision making. It is a rapidly evolving trend among other ones such as IoT, Industry 4.0 and Big Data. And like every method, data fusion has its own difficulties. From having to deal with heterogeneous data and noise, different sampling rates and improper weight assignment for the raw data to receiving inferences that are contradictory – all of these are issues that can be assessed with the help of Kalman filter or Bayesian/Demster-Shafer methods or some other well-known algorithms.

However, there are other complexities that have been known for more than 20 years and a lot of attempts were made to solve them however the ideal solution is yet to be found. The issues arising in data fusion implementation include the fact, that there is no ideal algorithm for any situation, a faulty sensor cannot be "replaced" by a complex framework, there is not enough sufficient training data due to changing environmental conditions and the value of output is hardly quantifiable. These problems possess a great interest in multiple fields and some solutions have been proposed however the determination of the best way to tackle them is yet to be determined.

The field which possesses the most promise for data fusion mining and analysis is the medical field. In the recent studies, a lot of attention is paid to human condition monitoring such as blood pressure, body temperature, heart rate and others. After processing the information from wireless sensors an accurate prediction about the overall state of the patient can be made.