

Integration of Human Information Processing Models for Human Centered AI

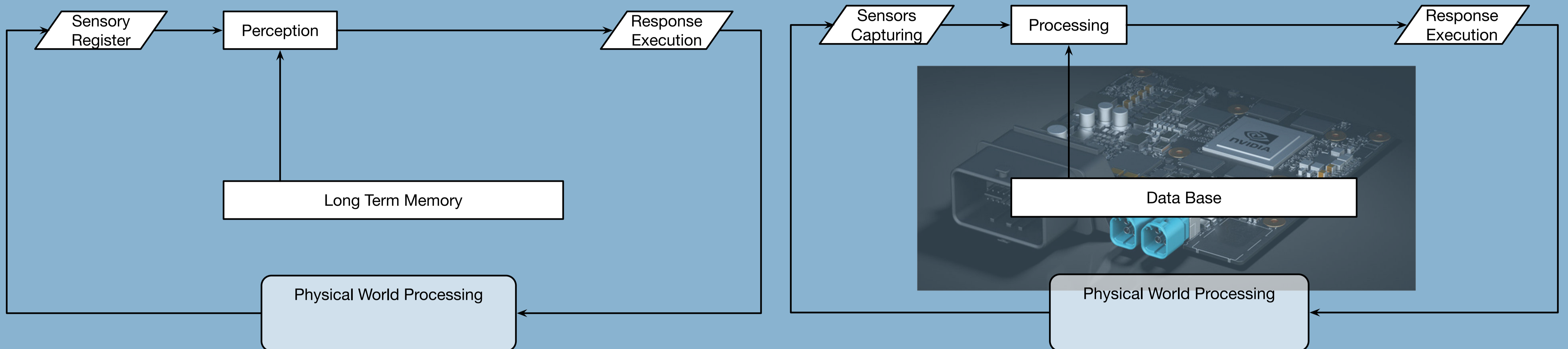
René van Egmond¹, Huib de Ridder¹ & Bram Bakker²

Introduction

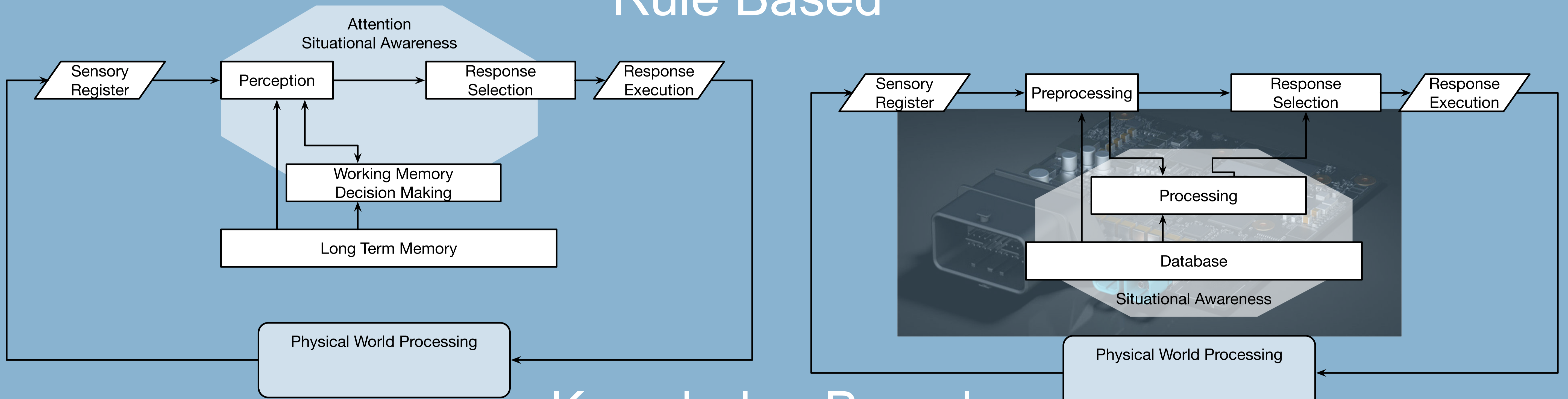
The development of autonomous driving systems cannot be achieved without the application of artificial intelligent (AI) systems. In Parasuraman et al (2000), It has been suggested that automation of systems shows parallels to the Human Information process. We will elaborate on this assumption in two steps. First, to integrate the Human Information Processing model (HIP) with the model of Rasmussen's Human Performance model (1983). Second, to apply this integrated model on Technology Information Processing (TIP). We will show where they are similar and where they differ. Furthermore, we will argue that AI systems on a Knowledge Based level are not likely to occur in the near future.

Human Information Processing Technology Information Processing

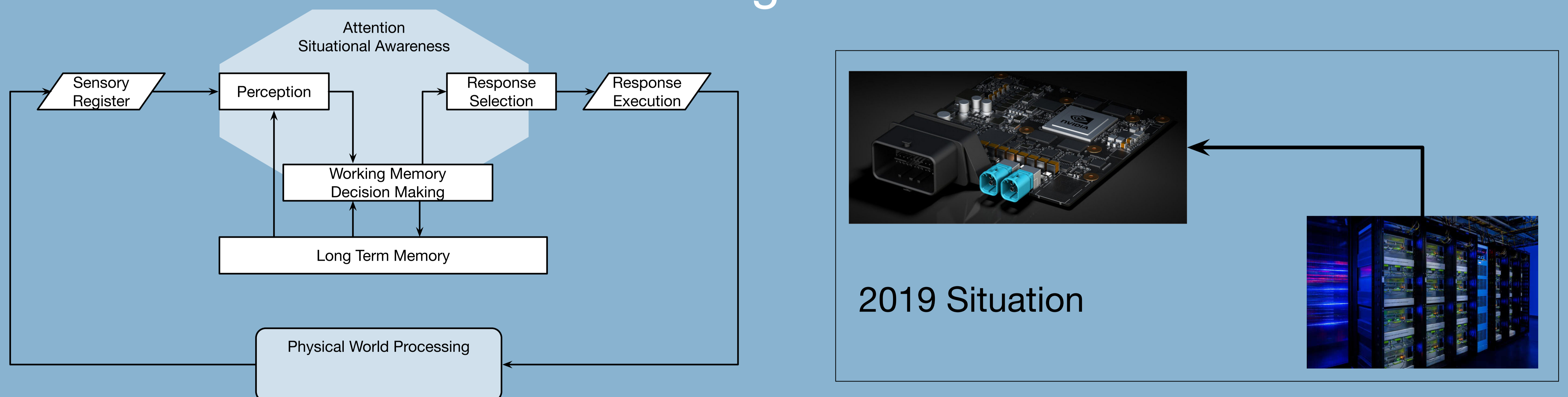
Skill Based



Rule Based



Knowledge Based



Conclusions

- We do not foresee fully automated driving in the near future because this requires "Knowledge" based processing of information.
- We foresee a scenario in which assessment of the rarity and (un)predictability of the driving situation, and the corresponding need for inclusion of the knowledge-based level, will play a major role in determining who is in control, Human or System.
- This means that the System needs to "plan" for a situation which it cannot handle and in which the human is in control and the system supports the human.
- This also means that the System is in control in the other situations.